FY 2026 Learning Tools and Equipment - Science and Mathematics Equipment (Direct Release)

Technical Specifications

General Specifications	Inspection and Documentary Proof
1.All items must be brand new.	All items including its parts, components and/or peripherals must not have signs of wear, scratches, dirt, and/or discoloration.
2.All item markings, user manuals, and electronic copies must be in English.	Must be comprehensible English and not directly word per word translated from a different language.
3.All item markings and labels especially intended for proper identification, operation, function, graduation and assembly must be permanently marked on the item.	The markings and labels must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
4.Items requiring assembly must include an assembly manual in English and all necessary peripherals.	Assembly manuals must show a picture/drawing illustration of the assembly with proper worded instruction, labeling of parts and sequence of assembly.
5.Items with power line electrical requirements must conform to and operate on the standard electric supply in the Philippines	Must be compatible to 220V AC, 50/60 Hz, type A power sockets or type B provided that an adaptor for conversion to type A is included.
6.Items requiring consumables must include an initial quantity sufficient to conduct testing.	Must provide the initial necessary consumables to fully make the item functional for testing.
7.All items must have a brand name permanently marked on the item and/or its appropriate packaging.	The brand name marking must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
8.Brand Owner Certification	The bidder must submit a trademark registration proving its exclusive or non-exclusive brand ownership or an authorization from the brand owner that the bidder's manufacturer or the bidder itself will manufacture the items under the brand name for the Department of Education.

9.Manufacturer's Certification	Must submit a Certification from the item Manufacturer that it will manufacture the items for the Department of Education, indicating the following: •The Bidder's company name, company address, and authorized representative(s) •The project name •The list of items In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
10.Manufacturer's International Standards Compliance	Must submit the following valid and unexpired following Certifications: •ISO 9001:2015 – Quality Management System •ISO 14001:2015 – Environmental Management System •ISO 45001:2018 – Occupational Health and Safety Management System In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
11.Business Registration	Must submit a valid BIR Certificate of Registration (COR) under the Line of Business - Sub-Class 46900 (non-specialized wholesale trade).
12.Items requiring spare parts must have parts available to DepEd for a minimum of five (5) years, using the same supplied brand.	Must submit a Certificate of Spare Parts Availability indicating the item name(s) from the item Manufacturer that spare parts shall be made available to the Department of Education for a minimum of five (5) years, using the same supplied brand. In case of multiple Manufacturers, the Bidder must submit Certificates from each of the Manufacturer.

Documentary proof for Items 8, 9, 10, 11, 12, and 13 must be submitted as part of the bid submission. Meanwhile, Items 1, 2, 3, 4, 5, 6, 7, and all other item-specific certifications or documents outlined in the detailed technical specifications shall be submitted and verified during sample evaluation at the Post-Qualification stage.

The bidder shall also execute and submit, together with its bid, a notarized undertaking affirming compliance with all the foregoing requirements.

No.	Item Name	Technical Specifications
Biology - Laboratory Tools		
1	Dissecting Set with pan	Functional Specifications: Used to perform a wide variety of dissections.
		Performance Specifications: Must be able to aid in classifying different animal tissues during dissection.
		Design Specifications:
		1. 10 pc dissecting set that includes the following stainless steel instruments:
		• 1 piece surgical scissors, 110mm minimum length
		• 1 piece iris scissors,110mm minimum length
		• 1 piece fine point curved forcep, 110mm minimum length
		• 1 piece fine point straight tip forcep, 110mm minimum length
		• 1-piece mosquito forcep, curved tip
		• 1-piece scalpel minimum 4 cm blade length
		• 1-piece scalpel blade handle

No.	Item Name	Technical Specifications
		• 1-piece angular teasing needle with metal chuck
		• 1-piece straight teasing needle with metal chuck
		• 1-piece mall probe and seeker
		2. In a rectangular vinyl zippered case;
		3. With 1-piece stainless steel dissecting pan (minimum): 254 mm x 178 mm x 38 mm
		4. "Stainless steel" shall be embossed or engraved on the items whenever applicable.
		5. Must be branded and brand new. The brand shall be permanently printed on vinyl zippered case.
4	Gloves, Surgical	Functional Specifications: Used to protect hands from dirt and contamination.
		Performance Specifications: Must be able to protect hands against dirt, laceration and contamination.
		Design Specifications:
		1. Sterile, latex surgical gloves
		2. Smooth, powder-free and beaded cuff
		3. Color: White or beige
		4. Size range: Medium - Large
		5. Individually sealed pack pair of gloves with brand and type of material permanently printed on it.
		6. Must be brand new.
5	Hand Lens, 5x magnification	Functional Specifications: Used to produce a magnified image of an object.
		Performance Specifications: Must be able to magnify the image of an object.
		Design Specifications:
		1. Five times (5x) magnification power
		2. Glass lens; diameter range: 45mm - 50 mm
		3. Mounted in a circular chrome-plated metal frame with a cylindrical handle
		4. No sharp edges and other defects
		5. Safely packed in a box
		6. Must be branded and brand new. The brand shall be permanently printed on the box.
7	Pipette, Beral, 1 mL	Functional Specifications: Used to transfer/dispense liquid samples.
		Performance Specifications: Must be able to transfer/dispense liquid sample up to a volume of 1 mL.
		Design Specifications:
		1. One-piece pipette, made from flexible soft non-toxic plastic that has a protuberance on top that serves as liquid retention chamber (Certificate of non-toxicity is required)
		2. Capacity: 1 mL in 0.25 mL graduation interval
		3. No rubber head
		4. Total length (minimum): 140 mm
		5. With molded (embossed) graduations
		6. Must be brand new
8	Protein Synthesis Demonstration Set	Functional Specifications: Used to demonstrate the synthesis of protein.

No.	Item Name	Technical Specifications
		Performance Specifications: Must be able to illustrate the synthesis of protein using information from DNA.
		Design Specifications:
		1. Contains 33 pieces of reusable, non-toxic plastic (certificate of non-toxicity is required), magnetic, and colorful teacher manipulatives (large DNA, mRNA, ribosome, tRNA, and amino acid models)
		2. A 3' -5' DNA sense strand and a linear 5'-3' DNA anti-sense strand
		3. With 180 student manipulatives (smaller size models) where students can manipulate on their tables
		4. With teachers key for easy verification
		5. With instructional video on the use in USB
		6. Safely packed in a box
		7. With English User's manual that shall provide assessment questions in the identification of a resulting amino acid sequence from a unique DNA sequence.
		8. Manual details:
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)
		Cover: Paper board, 280 gsm (minimum 0.30 mm)
		b. Size (minimum): 165 mm x 215 mm Fold
		(minimum): 330 mm x 215 mm Spread
		c. Binding: Saddle Staple
		d. Font type: Arial and Font size (minimum): 10
		e. Pictures shall be in full color
		9. Packing dimensions (minimum):72 cm L x 34 cm W x 9 cm T
		10. Must be branded and brand new. The brand shall be permanently printed on the box.
9	Tong, Beaker	Functional Specifications: Used to hold heated beakers.
		Performance Specifications: Must be able to secure hot beakers.
		Design Specifications:
		1. Scissor-like tool with plastic-coated jaws
		2. Made of minimum 6.0 mm smooth finish chrome-plated steel
		3. With flat riveted joint
		4. Total length (minimum) : 254 mm
		5. Holds beakers from 50mL to 1000 mL
		6. Safely packed in a box
		7. Must be branded and brand new. The brand shall be permanently printed on the box.
10	Wash bottle, plastic, 250 mL	Functional Specifications: Used to store and dispense water for diluting solutions, washing precipitates and rinsing glass wares.
		Performance Specifications: Must be able to store and dispenses water in diluting, washing precipitates and rinsing activities.
		Design Specifications:
		1. Translucent and non-toxic plastic material (Certificate of non-toxicity is required)
		2. Cylindrical body shape
		3. Easy squeeze dispensing; no leaks
		4. Capacity: 250 mL.

No.	Item Name	Technical Specifications
		5. Screw type closure with its angled stem and draw tube molded in one piece
		6. Must be brand new.
Biology - Models of Other Biological Structures and Species		
1	Model, Animal Cell	Functional Specifications: Used as a visual representation of an animal cell.
		Performance Specifications: Must be able to illustrate structures in an animal cell.
		Design Specifications:
		1. Three-dimensional model with colorful cell structures and raised-relief organelles.
		2. Features: nucleus, nucleolus, nuclear pore, nucleoplasm, nuclear envelope, smooth endoplasmic reticulum, rough endoplasmic reticulum, mitochondrion, ribosome, Golgi apparatus, centriole, lysosome, peroxisome, cytoplasm, cell membrane and chromatin
		3. Dimensions (minimum): 30 cm L x 19 cm W x 42 cm H
		4. Made of non-toxic plastic material (Certificate of non-toxicity is required)
		5. Mounted on two post stand with stable base.
		6. The model is washable, free from any label, sharp parts and defects.
		7. Paint shall be permanent and not be removed when washed with soap and water.
		8. With name of the model: ANIMAL CELL MODEL (Font style: Arial, Font size: 40, UPPERCASE, BOLD) permanently marked on the base.
		9. Safely packed in a box
		10. Comes with a plastic laminated key card that shall contain the actual colored picture of the model including the name and labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout orientation: Landscape
		d. Lamination thickness: minimum 0.30 mm
		e. Title: ANIMAL CELL MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 32, UPPERCASE, BOLD).
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		12. Must be branded and brand new. The brand shall be permanently marked/printed on the base.
2	Model, Animal Meiosis	Functional Specifications: Used to visualize the different phases of animal meiosis.
		Performance Specifications: Must be able to make a comparison between meiosis and mitosis phases and their role in the cell-division cycle.

No.	Item Name	Technical Specifications
		Design Specifications:
		1. Three-dimensional relief model made of non-toxic plastic material (Certificate of non-toxicity is required)
		2. A set depicting 10 phases of meiosis namely:
		a) Interphase (G1-phase),
		b) Prophase I (leptotene),
		c) Prophase I (Zygotene and pachytene),
		d) Prophase I (diplotene),
		e) Prophase I (diakinesis),
		f) Metaphase I
		g) Anaphase I,
		h) Telophase I, Cytokinesis I,
		Interkinesis, Prophase II, and
		Metaphase II,
		j) Anaphase II,
		i)Telophase II and Cytokinesis II
		3. Labels of the phases must bear the correct spelling as stated above
		4. Shows the nucleus, centrioles, centrosome, chromatin, chromosomes, spindle fiber and aster;
		5. The color of the cell models shall be in accordance with the coloring methods of microscopy;
		6. Individual cell model is magnetic and detachable;
		7. Each model rests in a magnetic board/frame;
		8. Magnets shall not separate from the cell model;
		9. Cell models must not fall when the frame is vertically mounted
		10. Product measures (minimum): 59.8 cm long x 5.8 cm thick x 39.8 cm wide
		11. With a stable metal rod that can support the item for free standing storage or hanging up
		12. With name of the model: ANIMAL MEIOSIS MODEL (Font style: Arial, Font size: 36, UPPERCASE, BOLD) permanently marked on the board/frame.
		13. Safely packed in a box
		14. With English User's manual that includes the description in each phase of meiosis and storage instructions.
		15. Manual details:
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)
		Cover: Paper board, 280 gsm (minimum 0.30 mm)
		b. Size (minimum): 165 mm x 215 mm Fold
		(minimum): 330 mm x 215 mm Spread
		c. Binding: Saddle Staple
		d. Font type: Arial and Font size (minimum): 10
		e. Pictures shall be in full color
		16. Must be branded and brand new. The brand shall be permanently marked/printed on the board/frame.
3	Model, Animal Mitosis	Functional Specifications: Used to visualize the different phases of animal mitosis.

No.	Item Name	Technical Specifications
		Performance Specifications: Must be able to make a comparison between meiosis and mitosis phases and their role in the cell-division cycle.
		Design Specifications:
		1. Three-dimensional relief model made of non-toxic plastic material (Certificate of non-toxicity is required)
		2. A set depicting 9 phases of mitosis namely:
		a) Interphase,
		b) Prophase,
		c) Early Prometaphase,
		d) Late Prometaphase,
		e) Metaphase,
		f) Early Anaphase
		g) Late Anaphase,
		h) Telophase
		i) Cytokinesis
		3. Labels of the phases must bear the correct spelling as stated above
		4. Shows the nucleus, centrioles, centrosome, chromatin, chromosomes, spindle fiber and aster;
		5. The color of the cell models shall be in accordance with the coloring methods of microscopy;
		6. Individual cell model magnetic and detachable;
		7. Each model rests in a magnetic board/frame;
		8. Magnets shall not separate from the cell model;
		9. Cell models must not fall when the frame is vertically mounted
		10. Product measures (minimum): 59.8 cm long x 5.8 cm thick x 39.8 cm wide
		11. With a stable metal rod that can support the item for free standing storage or hanging up
		12. With name of the model: ANIMAL MITOSIS MODEL (Font style: Arial, Font size: 36, UPPERCASE, BOLD) permanently marked on the board/frame.
		13. Safely packed in a box
		14. With English User's manual that includes the description in each phase of meiosis and storage instructions.
		15. Manual details:
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)
		Cover: Paper board, 280 gsm (minimum 0.30 mm)
		b. Size (minimum): 165 mm x 215 mm Fold
		(minimum): 330 mm x 215 mm Spread
		c. Binding: Saddle Staple
		d. Font type: Arial and Font size (minimum): 10
		e. Pictures shall be in full color
		16. Must be branded and brand new. The brand shall be permanently marked/printed on the board/frame.
4	Model, Chloroplast	Functional Specifications: Used to show the complex internal structure of a chloroplast.

No.	Item Name	Technical Specifications
		Performance Specifications: Must be able to illustrate parts and the organelles involved in photosynthesis.
		Design Specifications:
		1. Colored 3D model with cut-away section to reveal internal structure.
		2. Made of non-toxic plastic material (Certificate of non-toxicity is required)
		3. Features: ribosome, DNA, starch granule, outer membrane, inner membrane, stroma, thylakoid, granum, lamellae, and lumen.
		4. The model is washable, free from any label, sharp parts and defects.
		5. Paints shall be permanent and not be removed when washed with soap and water
		6. With name of the model: CHLOROPLAST MODEL (Font style: Arial, Font size: 36, UPPERCASE, BOLD) permanently marked on the base.
		7. Mounted on two posts stand with a stable base.
		8. Dimensions (minimum): 20 cm H x 25 cm L x 23 cm W
		9.Safely packed in a box.
		10. Comes with a plastic laminated key card that shall contain the actual colored picture of the model including the name and labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d. Lamination thickness: minimum 0.30 mm
		e. Title: CHLOROPLAST MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 36, UPPERCASE, BOLD).
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		12. Must be branded and brand new. The brand shall be permanently marked/printed on the base.
5	Model, DNA	Functional Specifications: Used as a visual representation of the different components of a DNA structure.
		Performance Specifications: Must be able to illustrate accurately the phosphate, deoxyribose, and base pairs components of a DNA structure.
		Design Specifications:
		1. Depicts a minimum of 16 base pair section/layer DNA
		2. Pre-assembled DNA made of attractive, color-coded, non-toxic, abstract shaped plastic parts that represents each bases (Thymine, Adenine, Guanine & Cytosine), the sugar and phosphate components; (Certificate of non-toxicity is required)

No.	Item Name	Technical Specifications
		3. Stands upright with a support rod/central pillar that rotates in stable stand/base.
		4. Minimum model height : 60 cm
		5. The phosphate and deoxyribose can be disassembled along with individual base pairs
		6. Double helix structure
		7. The model can also be uncoiled and ""unzipped"" to produce two strands.
		8. Must be free from sharp parts and defects
		9. With name of the model: DNA MODEL (Font style: Arial, Font size: 24, UPPERCASE, BOLD) permanently marked on the base.
		10. Safely packed in a box
		11. With English User's manual that includes description of the product, its parts, assembly and storage instructions
		12. Manual details:
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)
		Cover: Paper board, 280 gsm (minimum 0.30 mm)
		b. Size (minimum): 165 mm x 215 mm Fold
		(minimum): 330 mm x 215 mm Spread
		c. Binding: Saddle Staple
		d. Font type: Arial and Font size (minimum): 10
		e. Pictures shall be in full color
		13. Must be branded and brand new. The brand shall be permanently marked/printed on the base.
6	Model, Invertebrates	Functional Specifications: Used to provide information on the anatomy of invertebrate animals.
		Performance Specifications: Must be able to show the major parts of the invertebrate animals.
		Design Specifications:
		1. No sharp parts, non-toxic plastic/rubber, true-to-life color, 3D replicas of invertebrates (Certificate of non-toxicity is required)
		2. With life-like shapes
		3. The models are washable and must be free from any labels.
		4. Paint shall be permanent and not be removed when washed with soap and water.
		5. Each is packed in resealable plastic bag
		6. Invertebrate models:
		a. Soft rubber Centipede - Length (minimum): 15 cm
		b. Plastic Scorpion - Length (minimum): 15 cm
		c. Plastic Crayfish or Shrimp - Length (minimum): 12 cm
		7. Each invertebrate model comes with a plastic laminated key card that shall contain the actual-colored picture of the model labeled with the required parts
		8. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d. Lamination thickness: minimum 0.30mm

No.	Item Name	Technical Specifications
		e. Titles of the key card as stated below: Shall be placed at the top-center (Font style: Arial, Font Size: 28, UPPERCASE, BOLD)
		e.1 INVERTEBRATE: CENTIPEDE MODEL KEY CARD
		Features: Tail-like rear pair of legs, segmented trunk, many legs, head, eye, antennae and maxilliped with poison fang
		e.2 INVERTEBRATE: CRAYFISH or SHRIMP MODEL KEY CARD
		SHRIMP features: Eye, antennae, rostrum, carapace, abdomen, swimming legs, walking legs, telson, tail
		CRAYFISH features: Eye, antennae, rostrum, carapace, cheliped, abdomen, walking legs, telson, tail
		e.3 INVERTEBRATE: SCORPION MODEL KEY CARD
		Features: Pedipalp (pincer), eyes, legs, carapace, chelicerae, anus, telson, stinger
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized)
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled
		9. Must be brand new.
7	Model, Mitochondrion	Functional Specifications: Used as a visual representation of the working organelles that keep the cell in full energy.
		Performance Specifications: Must be able to visually represent the structure of mitochondrion as the main organelle involved in respiration.
		Design Specifications:
		1. One-piece 3D model made of non-toxic plastic material (Certificate of non-toxicity is required)
		2. Features: Inner membrane, outer membrane, cristae, matrix, intermembrane space, DNA, ribosome and granule
		3. Shall be in cross-section longitudinal structure
		4. The model is washable, free from any label, sharp parts and defects.
		5. Paint shall be permanent and not be removed when washed with soap and water.
		6. With name of the model: MITOCHONDRION MODEL (Font style: Arial, Font size: 40, UPPERCASE, BOLD) permanently marked on the base.
		7. Mounted on a stable base
		8. Dimensions (minimum): 40 cm L x 20 cm W x 12 cm H
		9. Safely packed in a box
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d.Lamination thickness: minimum 0.30 mm

No.	Item Name	Technical Specifications
		e. Title: MITOCHONDRION MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 32, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		12. Must be branded and brand new. The brand shall be permanently marked/printed on the base
8	Model, Plant Cell	Functional Specifications: Used as a visual representation of a plant cell.
		Performance Specifications: Must be able to illustrate structures in a plant cell.
		Design Specifications:
		1. Two-piece plant cell 3D model
		2. Shape: Irregular
		3. With colorful cell structures and raised-relief organelles
		4. Features: cell wall, cytoplasm, ribosome, Golgi apparatus, mitochondrion, chloroplast, nucleus, nucleolus, nucelar envelope, nuclear pore, peroxisome, plasmodesma, smooth endoplasmic reticulum, rough endoplasmic reticulum and vacuole.
		5. Dimensions (minimum): 19.5 cm L x 11 cm W x 32.5 cm H
		6. Made of non-toxic plastic material (Certificate of non-toxicity is required)
		7. The model is free from any label, sharp parts and defects.
		8. Paint shall be permanent and not be removed when washed with soap and water.
		9. With name of the model: PLANT CELL MODEL (Font style: Arial, Font size: 20, UPPERCASE, BOLD) permanently marked on the model itself or onto the base if the model is supplied with a base.
		10. Safely packed in a box
		11. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including name and labeled with the required parts.
		12. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d. Lamination thickness: minimum 0.30mm
		e. Title: PLANT CELL MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 34, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled

No.	Item Name	Technical Specifications
		13. Must be branded and brand new. The brand shall be permanently marked/printed on the item or base whenever applicable.
9	Model, Vertebrates	Functional Specifications: Used to provide information on the anatomy of vertebrate animals.
		Performance Specifications: Must be able to show the major parts of the vertebrate animals.
		Design Specifications:
		1. No sharp parts, non-toxic plastic/rubber, true-to-life color, 3D replicas of vertebrates (Certificate of non-toxicity is required)
		2. With life-like shapes
		3. The models are washable and must be free from any labels.
		4. Paint shall be permanent and not be removed when washed with soap and water.
		5. Each is packed in a resealable plastic bag.
		6. Vertebrate models:
		a. Soft rubber SNAKE - Length (minimum): 60 cm.
		b. Plastic balancing eagle with transparent pyramid tower
		Eagle (minimum): 12.8 cm L x 9.8 cm W x 2.0 cm H
		Pyramid Stand (minimum): 3.8 cm L x 3.8 cm W x 4.8 cm H
		c. Plastic Shark - Length (minimum): 15 cm
		7. Each vertebrate model comes with a plastic laminated key card that shall contain the actual-colored picture of the model and labeled with the required parts.
		8. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d.Lamination thickness: minimum 0.30mm
		e. Titles of key cards as stated below: Shall be placed at the top-center (Font style: Arial, Font Size: 28, UPPERCASE, BOLD)
		e.1 VERTEBRATE: SHARK MODEL KEY CARD
		Features: Snout, eye, mouth, nostril, gill slit, first dorsal fin, second dorsal fin, pectoral fin, pelvic fin, and caudal fin
		e.2 VERTEBRATE: BIRD MODEL KEY CARD
		Features: Head, feather, tail, body, beak, eye, and wing
		e.3 VERTEBRATE: SNAKE MODEL KEY CARD
		Features: Head, eye, mouth, tongue, body, scales, and tail
		f. The model picture in white background shall be big enough to occupy the center part of the card before inserting labels.
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		9. Must be brand new

FY 2026 Learning Tools and Equipment - Science and Mathematics Equipment (Direct Release)

Technical Specifications

General Specifications	Inspection and Documentary Proof
1.All items must be brand new.	All items including its parts, components and/or peripherals must not have signs of wear, scratches, dirt, and/or discoloration.
2.All item markings, user manuals, and electronic copies must be in English.	Must be comprehensible English and not directly word per word translated from a different language.
3.All item markings and labels especially intended for proper identification, operation, function, graduation and assembly must be permanently marked on the item.	The markings and labels must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
4.Items requiring assembly must include an assembly manual in English and all necessary peripherals.	Assembly manuals must show a picture/drawing illustration of the assembly with proper worded instruction, labeling of parts and sequence of assembly.
5.Items with power line electrical requirements must conform to and operate on the standard electric supply in the Philippines	Must be compatible to 220V AC, 50/60 Hz, type A power sockets or type B provided that an adaptor for conversion to type A is included.
6.Items requiring consumables must include an initial quantity sufficient to conduct testing.	Must provide the initial necessary consumables to fully make the item functional for testing.
7.All items must have a brand name permanently marked on the item and/or its appropriate packaging.	The brand name marking must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
8.Brand Owner Certification	The bidder must submit a trademark registration proving its exclusive or non-exclusive brand ownership or an authorization from the brand owner that the bidder's manufacturer or the bidder itself will manufacture the items under the brand name for the Department of Education.

9.Manufacturer's Certification	Must submit a Certification from the item Manufacturer that it will manufacture the items for the Department of Education, indicating the following: •The Bidder's company name, company address, and authorized representative(s) •The project name •The list of items In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
10.Manufacturer's International Standards Compliance	Must submit the following valid and unexpired following Certifications: •ISO 9001:2015 – Quality Management System •ISO 14001:2015 – Environmental Management System •ISO 45001:2018 – Occupational Health and Safety Management System In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
11.Business Registration	Must submit a valid BIR Certificate of Registration (COR) under the Line of Business - Sub-Class 46900 (non-specialized wholesale trade).
12.Items requiring spare parts must have parts available to DepEd for a minimum of five (5) years, using the same supplied brand.	Must submit a Certificate of Spare Parts Availability indicating the item name(s) from the item Manufacturer that spare parts shall be made available to the Department of Education for a minimum of five (5) years, using the same supplied brand. In case of multiple Manufacturers, the Bidder must submit Certificates from each of the Manufacturer.

Documentary proof for Items 8, 9, 10, 11, 12, and 13 must be submitted as part of the bid submission. Meanwhile, Items 1, 2, 3, 4, 5, 6, 7, and all other item-specific certifications or documents outlined in the detailed technical specifications shall be submitted and verified during sample evaluation at the Post-Qualification stage.

The bidder shall also execute and submit, together with its bid, a notarized undertaking affirming compliance with all the foregoing requirements.

No.	Item Name	Technical Specifications
Biology - Models of Human Anatomy		
1	Model, Human Circulatory System	Functional Specifications: Used to show details of blood flow.
		Performance Specifications: Must be able to illustrate how the respiratory and circulatory systems work together to transport nutrients, gases, and other molecules to and from the different parts of the body
		Design Specifications:
		1. Life-size, colored relief model.
		2. Frontal plane is cutaway so blood circulation can be traced to the major organs and extremities.
		3. Made of non-toxic plastic material (Certificate of non-toxicity is required)

No.	Item Name	Technical Specifications
		4. With arterial system: aorta artery, brachial artery, iliac artery, renal artery, mesenteric artery, pulmonary artery, carotid artery, tibial artery, femoral artery, palmar digital artery, ulnar artery, radial artery, popliteal artery, subclavian artery
		5. With venous system: basilic vein, renal vein, iliac vein, pulmonary vein, femoral vein, popliteal vein, brachial vein, subclavian vein, palmar digital vein, tibial vein, dorsal venous arch, superior vena cava and inferior vena cava
		6. With heart, lungs, liver, spleen, kidneys, partial skeleton
		7. The model is washable and must be free from any labels.
		8. Paint shall be permanent and not be removed when washed with soap and water.
		9. With name of the model: HUMAN CIRCULATORY SYSTEM MODEL (Font style: Arial, Font size: 32, UPPERCASE, BOLD) permanently printed on the baseboard.
		10. With no sharp parts and defects.
		11. Mounted on a stable baseboard.
		12. Dimensions (minimum): 80cm H x 30cm L x 5cm W
		13. Safely packed in a box
		14. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.
		15. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Portrait
		d. Lamination thickness: minimum 0.30mm
		e. Title: HUMAN CIRCULATORY SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 24, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized,)
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled
		16. Must be branded and brand new. The brand shall be permanently marked/printed on the baseboard.
2	Model, Human Digestive System	Functional Specifications: Used to illustrate how food travels through the digestive tract from the mouth, esophagus, stomach, small intestine, large intestine, and excrete wastes to the anus
		Performance Specifications: Provide useful visual representations, which can be used to assist understanding of the various changes and processes that take place in the digestive system.
		Design Specifications:
		1. Made of non-toxic plastic material (Certificate of non-toxicity is required).

No.	Item Name	Technical Specifications
		2. Life size, 3-parts, colored relief model that features longitudinal section of head, bisected stomach, with removable transverse colon, full liver with gall bladder, with cutaway caecum to show the junction of small and large intestine.
		3. Mounted on a stable baseboard and can be hung.
		4. The model is washable, free from any label, sharp parts and defects..
		5. Paint shall be permanent and not be removed when washed with soap and water.
		6. With name of the model: HUMAN DIGESTIVE SYSTEM MODEL (Font style: Arial, Font size: 36, UPPERCASE, BOLD) permanently marked on the base.
		8. Dimensions (minimum): 82 cm H x 31cm L x 9 cm W
		9. Safely packed in a box.
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name; labeled with the required parts (nose, mouth, tongue, pharynx, trachea, esophagus, liver, gall bladder, stomach, spleen, pancreas, appendix, duodenum, jejunum, ileum, appendix, cecum, ascending colon, transverse colon, descending colon, rectum, anus).
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Portrait
		d. Lamination thickness: minimum 0.30 mm
		e. Title: HUMAN DIGESTIVE SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 26, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		12.Must be branded and brand new. The brand shall be permanently marked/printed on the baseboard.
3	Model, Human Endocrine System	Functional Specifications: Used as a visual representation of the endocrine glands in a human body.
		Performance Specifications: Must be able to illustrate the hormones involved in the female and male reproductive systems; and other hormones present in the human body.
		Design Specifications:
		1. Exhibits frontal section of the human body showing all the glands in the endocrine system.
		2. Both male and female glands are present.
		3. Features: Pineal, hypothalamus, pituitary, thyroid, parathyroid, thymus, adrenal cortex, kidney, pancreas, testes, ovary, and uterus
		4. Colorful relief model made of non-toxic plastic material (Certificate of non-toxicity is required)

No.	Item Name	Technical Specifications
		5. With no sharp parts and defects.
		6. The model is washable and must be free from any labels.
		7. Paint shall be permanent and not be removed when washed with soap and water.
		8. With name of the model: HUMAN ENDOCRINE SYSTEM MODEL (Font style: Arial, Font size: 28, UPPERCASE, BOLD) permanently marked/printed on the baseboard.
		9. Mounted on a stable baseboard.
		10. Dimensions (minimum): 38cm L x 24cm W x 6cm H
		11. Safely packed in a box
		12. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.
		13. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d. Lamination thickness: minimum 0.30mm
		e. Title: HUMAN ENDOCRINE SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 26, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		14. Must be branded and brand new. The brand shall be permanently marked/printed on the baseboard.
4	Model, Human Nervous System	Functional Specifications: Used to illustrate the schematic representation of the central and peripheral nervous system.
		Performance Specifications: Must be able to show the complex network of nerve cells and the motor nerves pathways.
		Design Specifications:
		1. One-half life-size, colored, relief model made of non-toxic plastic material (Certificate of non-toxicity is required).
		2. The model shows the structure of the nervous system (brain, cerebrum, cerebellum, spinal cord, radial nerve, ulnar nerve, median nerve, lumbar plexus, femoral nerve, sacral plexus, sciatic nerve, brachial plexus, intercostal nerve, common peroneal nerve, tibial nerve, saphenous nerve, finger nerve and toe nerve).
		3. The pathway of the main nerves is well illustrated in relation to the skeleton.
		4. The model is washable, free from any label, sharp parts and defects.
		5. Paint shall be permanent and not be removed when washed with soap and water.

No.	Item Name	Technical Specifications
		6. With name of the model: HUMAN NERVOUS SYSTEM MODEL (Font style: Arial, Font size: 30, UPPERCASE, BOLD) permanently marked/printed on the base.
		7. Mounted on a stable baseboard.
		8. Dimensions (minimum): 80cm H x 30cm L x 5 cm W
		9. Safely packed in a box.
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name; labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Portrait
		d. Lamination thickness: minimum 0.30 mm
		e. Title: HUMAN NERVOUS SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 20, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		12.Must be branded and brand new. The brand shall be permanently marked/printed on the baseboard.
5	Model, Human Nose (Nasal-Throat Anatomy)	Functional Specifications: Used to illustrate the anatomy of the human nose.
		Performance Specifications: Must be able to show the parts of the sense organs of the human body, specifically the human nose.
		Design Specifications:
		1. Life-size, colorful model that features nasal throat anatomy.
		2. Shows frontal sinus, sphenoid sinus, conchae, nasal vestibule, hard palate, soft palate, oral cavity, tongue, hyoid bone, epiglottis, pharynx, larynx and vocal fold.
		3. Made of non-toxic plastic material (Certificate of non-toxicity is required)
		4. The model is washable, free from any label, sharp parts and defects.
		5. Paint shall be permanent and not be removed when washed with soap and water.
		6. With name of the model: HUMAN NOSE MODEL (Font style: Arial, Font size: 26, UPPERCASE, BOLD) permanently marked/printed on the base.
		7. Mounted on a stable base.
		8. Dimensions (minimum): 12 cm x 12 cm x 21 cm (width x length x full height)
		9. Safely packed in a box.

No.	Item Name	Technical Specifications
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Portrait
		d. Lamination thickness: minimum 0.30 mm
		e. Title: HUMAN NOSE MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 26, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		12. Must be branded and brand new. The brand shall be permanently marked/printed on the base.
6	Model, Human Skeleton	Functional Specifications: Used as a visual representation of the internal framework of the body.
		Performance Specifications: Must be able to show the different types of bones.
		Design Specifications:
		1. Life-size model made of non-toxic, hard plastic material in natural bone color (Certificate of non-toxicity is required).
		2. Mounted on stable metal stand, stainless steel rod Ø minimum of 12 mm., with 5 legged unbreakable plastic with roller casters as support to the skeleton.
		3. All joints properly articulated and wired; all metal materials that interconnect the bones shall be stainless steel.
		4. Features: frontal, parietal, temporal, occipital, maxilla, mandible, hyoid bone, vertebral column, clavicle, scapula, sternum, xiphoid process, ribs, humerus, radius, ulna, carpals, metacarpals, phalanges, ilium, sacrum, coccyx, pubis, ischium, femur, patella, tibia, fibula, calcaneus, tarsals, metatarsals and phalanges
		5. The model is washable, free from any label, sharp parts and defects.
		6. Minimum height of the human skeleton: 158 cm
		7. Minimum height after mounting on the stand: 168 cm
		8. Some bones are removable for study.
		9. Enclosed in a plastic (dust cover) and packed in a sturdy box.
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Portrait
		d. Lamination thickness: minimum 0.30mm

No.	Item Name	Technical Specifications
		e.Title: HUMAN SKELETAL SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 26, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled
		12. Must be branded and brand new. The brand must be permanently marked/printed on the item.
7	Model, Human Torso	Functional Specifications: Used to visualize the structures/organs found in the human body.
		Performance Specifications: Must be able to illustrate how the organs are connected in a system.
		Design Specifications:
		1. Life-size, smooth-finish, plastic material mounted on a stable base.
		2. Detachable head
		3. Open back, exposed spine with 2 to 4 removable vertebra and spinal cord
		4. With interchangeable male and female reproductive organs
		5. (Minimum) 32 dissectible parts that include:
		a.) removable head (parts of mouth and nasopharynx exposed) b.) with brain exposed (1 to 8 parts) with arteries c.) eye with optic nerve d.) female breast plate with plate rib; e.) right and left lung (2 to 4 parts) f.) heart (2-parts) g.) stomach (2-parts) h.) liver with gall bladder, i.) intestinal tract with appendix flap (3 to 4 parts) j.) kidney half k.) 3-part female genital organ with removable fetus l.) 4-part male genital organ
		6. Height (minimum): 84.5 cm.
		7. True to life color and free from toxic materials (Certificate of non-toxicity is required).
		8. Will be able to stand upright with removable parts intact and not falling.
		9. The model is washable, free from any labels and sharp parts.
		10. Paint shall be permanent and not be removed when washed with soap and water.
		11. With name of the model: HUMAN TORSO MODEL (Font style: Arial, Font size: 36, UPPERCASE, BOLD) permanently marked/printed on the base.
		12. Enclosed in a polystyrene foam and packed in a sturdy box

No.	Item Name	Technical Specifications
		13. With English User's manual that includes description of the model, diagram with labels, and guide on how to assemble/disassemble the model.
		14. Manual details:
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)
		Cover: Paper board, 280 gsm (minimum 0.30 mm)
		b. Size (minimum): 165 mm x 215 mm Fold;
		(minimum): 330 mm x 215 mm Spread
		c. Binding: Saddle Staple
		d. Font type: Arial and Font size (minimum): 10
		e. Pictures shall be in full color
		15. Must be branded and brand new. The brand shall be permanently marked/printed on the base.
8	Model, Lung Demonstration	Functional Specifications: Used to demonstrate how the lungs work and the concept of respiration.
		Performance Specifications: Must be able to demonstrate the process of respiration.
		Design Specifications:
		1. This interactive, model consists of the following:
		a. clear plastic enclosure
		b. two (2) rubber balloons
		c. elastic rubber membrane
		d. rubber stopper (with one hole) that snugly fits the mouth of the bell jar
		e. Y-tube whose diameter fits the hole on the rubber stopper
		2. Made of non-toxic materials (Certificate of non-toxicity is required)
		3. Minimum base diameter : 18 cm
		4. Minimum height (including stopper): 32 cm
		5. Safely packed in a box
		6. With English User's manual that shall provide description of the model, it's operation and maintenance guide.
		7. Manual details:
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)
		Cover: Paper board, 280 gsm (minimum 0.30 mm)
		b. Size (minimum): 165 mm x 215 mm Fold
		(minimum): 330 mm x 215 mm Spread
		c. Binding: Saddle Staple
		d. Font type: Arial and Font size (minimum): 10
		e. Pictures shall be in full color
		8. Must be branded and brand new. The brand shall be permanently marked/printed on the item.
9	Model, Pumping Heart	Functional Specifications: Used to simulate blood flow through the heart chambers.
		Performance Specifications: Must be able to demonstrate basic heart and pulmonary blood flow.
		Design Specifications:
		1. An interactive model that illustrates how the heart and lungs work together for oxygen exchange
		2. With heart chambers, main artery, veins and lungs labeled clearly

No.	Item Name	Technical Specifications
		3. Made of non-toxic plastic material; with a rubber pump (Certificate of non-toxicity is required)
		4. The liquid is sealed in the model
		5. Inclusion: Two (2) extra stopper screws and packs of dye
		6. Dimensions (minimum): 29 cm L x 27 cm W x 12 cm D
		7. Safely packed in a box
		8. With User's manual that shall provide guide on how it works; with heart study/activity instructions
		9. Manual details:
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)
		Cover: Paper board, 280 gsm (minimum 0.30 mm)
		b. Size (minimum): 165 mm x 215 mm Fold
		(minimum): 330 mm x 215 mm Spread
		c. Binding: Saddle Staple
		d. Font type: Arial and Font size (minimum): 10
		e. Pictures shall be in full color
		10. Must be branded and brand new. The brand shall be permanently marked/printed on the item.
10	Model, Reproductive System, Female (Pelvic Anatomy)	Functional Specifications: Used to visually represent the female reproductive system.
		Performance Specifications: Must be able to show the parts of the female reproductive and genitourinary system.
		Design Specifications:
		1. Shows a longitudinal section of one-piece, life-size female pelvis.
		2. Exhibits colored internal structures of the genitourinary system: urinary bladder, urethra, vagina, cervix, uterus, ovary, fallopian tube, fimbria, rectum, labium minus and labium majus.
		3. Made of non-toxic plastic material (Certificate of non-toxicity is required)
		4. The model is washable, free from any labels and sharp parts.
		5. Paint shall be permanent and not be removed when washed with soap and water.
		6. With name of the model: FEMALE REPRODUCTIVE SYSTEM (PELVIC ANATOMY) MODEL (Font style: Arial, Font size: 16, UPPERCASE, BOLD) permanently marked/printed on the base
		7. Dimensions (minimum): 25 cm L x 18 cm W x 28 cm H
		8. Mounted on a stable base.
		9. Safely packed in a box.
		10. Comes with a plastic laminated key card that shall contain the actual colored picture of the model including the name and labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d. Lamination thickness: minimum 0.30 mm

No.	Item Name	Technical Specifications
		e.Title: FEMALE REPRODUCTIVE SYSTEM (PELVIC ANATOMY) MODEL KEY CARD shall be placed at the top- center (Font style: Arial, Font Size: 22, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		12. Must be branded and brand new. The brand shall be permanently marked/printed on the base.
11	Model, Reproductive System, Male	Functional Specifications: Used to visually represent the male reproductive system.
		Performance Specifications: Must be able to show the parts of the male urology and reproductive system.
		Design Specifications:
		1. Shows a longitudinal section of one-piece, life-size male pelvis.
		2. Exhibits bladder, prostate, rectum, seminal vesicle, testicle, epididymis, penis, vas deferens and urethra
		3. Made of non-toxic plastic material (Certificate of non-toxicity is required)
		4. The model is washable, free from any label, sharp parts and defects.
		5. Paint shall be permanent and not be removed when washed with soap and water.
		6. With name of the model: MALE REPRODUCTIVE SYSTEM MODEL (Font style: Arial, Font size: 26, UPPERCASE, BOLD) permanently marked/printed on the base.
		7. Mounted on a stable base
		8. Dimensions (minimum): 25 cm L x 18 cm W x 28 cm H
		9. Safely packed in a box
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d. Lamination thickness: minimum 0.30mm
		e. Title: MALE REPRODUCTIVE SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 26, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized)
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled

No.	Item Name	Technical Specifications
		12. Must be branded and brand new. The brand shall be permanently marked/printed on the base.

FY 2026 Learning Tools and Equipment - Science and Mathematics Equipment (Direct Release)

Technical Specifications

General Specifications	Inspection and Documentary Proof
1.All items must be brand new.	All items including its parts, components and/or peripherals must not have signs of wear, scratches, dirt, and/or discoloration.
2.All item markings, user manuals, and electronic copies must be in English.	Must be comprehensible English and not directly word per word translated from a different language.
3.All item markings and labels especially intended for proper identification, operation, function, graduation and assembly must be permanently marked on the item.	The markings and labels must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
4.Items requiring assembly must include an assembly manual in English and all necessary peripherals.	Assembly manuals must show a picture/drawing illustration of the assembly with proper worded instruction, labeling of parts and sequence of assembly.
5.Items with power line electrical requirements must conform to and operate on the standard electric supply in the Philippines	Must be compatible to 220V AC, 50/60 Hz, type A power sockets or type B provided that an adaptor for conversion to type A is included.
6.Items requiring consumables must include an initial quantity sufficient to conduct testing.	Must provide the initial necessary consumables to fully make the item functional for testing.
7.All items must have a brand name permanently marked on the item and/or its appropriate packaging.	The brand name marking must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
8.Brand Owner Certification	The bidder must submit a trademark registration proving its exclusive or non-exclusive brand ownership or an authorization from the brand owner that the bidder's manufacturer or the bidder itself will manufacture the items under the brand name for the Department of Education.

9.Manufacturer's Certification	Must submit a Certification from the item Manufacturer that it will manufacture the items for the Department of Education, indicating the following: •The Bidder's company name, company address, and authorized representative(s) •The project name •The list of items In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
10.Manufacturer's International Standards Compliance	Must submit the following valid and unexpired following Certifications: •ISO 9001:2015 – Quality Management System •ISO 14001:2015 – Environmental Management System •ISO 45001:2018 – Occupational Health and Safety Management System In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
11.Business Registration	Must submit a valid BIR Certificate of Registration (COR) under the Line of Business - Sub-Class 46900 (non-specialized wholesale trade).
12.Items requiring spare parts must have parts available to DepEd for a minimum of five (5) years, using the same supplied brand.	Must submit a Certificate of Spare Parts Availability indicating the item name(s) from the item Manufacturer that spare parts shall be made available to the Department of Education for a minimum of five (5) years, using the same supplied brand. In case of multiple Manufacturers, the Bidder must submit Certificates from each of the Manufacturer.

Documentary proof for Items 8, 9, 10, 11, 12, and 13 must be submitted as part of the bid submission. Meanwhile, Items 1, 2, 3, 4, 5, 6, 7, and all other item-specific certifications or documents outlined in the detailed technical specifications shall be submitted and verified during sample evaluation at the Post-Qualification stage.

The bidder shall also execute and submit, together with its bid, a notarized undertaking affirming compliance with all the foregoing requirements.

No.	Item Name	Technical Specifications
Chemistry - Laboratory Glasswares, Tools and Accessories		
1	Beaker, borosilicate, 100 mL	Functional Specifications: Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to more than 150°C for normal, standard use service
		Performance Specifications: Must be able to contain/hold /prepare solids and liquids during chemical reaction up to 100 mL capacity and heats them over a Bunsen burner's flame up to more than 150°C for normal, standard use service
		Design Specifications:
		1. Type : Griffin, low form
		2. Shape : Cylindrical container with straight sides, a flat bottom, and with a small spout (or "beak") to aid in pouring
		3. Material: Borosilicate, clear and transparent bubble-free glass with the following dimensions:

No.	Item Name	Technical Specifications
		a) Outside diameter : 50 mm-52 mm
		b) Height: 70 mm-72 mm
		c) Thickness : 1.5 mm-2.0 mm
		4. Capacity : 100 mL ± 5% etched onto the glass;"
		5. Graduation starts at : 20 mL in 10 mL increments.
		6. Graduation range : 20 mL to 80 mL
		7. With permanent white enamel graduations of approximate volumes, inscriptions
		8. With large white marking spot
		9. Features an easy-pour spout
		10. With single graduated metric scale
		11. Can withstand heating up to 200-230°C for normal, standard use service
		12. Wrapped in paper, enclosed in bubble wrap, and packed in a compartmentalized box
		13. Must be free from breakage, cracks , chipped rims and other defects
		14. Comes with a brand, with five (5) years existence in the glass wares industry
2	Beaker, borosilicate, 1000 mL	Functional Specifications: Used to serve as container for mixing and for heating liquids.
		Performance Specifications: Must be able to serve as container for mixing and for heating liquids.
		Design Specifications:
		1.Griffin type, borosilicate, transparent, bubble-free glass
		2. Shape: a cylindrical container with flat bottom
		3.Thickness range: 1.5 mm to 2.0 mm
		4. Permanent white graduations, with white enamel marking spot
		5. Features an easy-pour spout
		6. Capacity: 1000 mL; ± 10% enameled onto the glass
		7. Single graduated metric scale
		8. Graduation starts at 200 mL in 100 mL increments
		9. Height range: 140 mm to 160 mm
		10. Outside diameter: 100 mm to 110 mm
		11. There must be no cracks and sharp parts
		12. Safely packed in a compartmentalized box
3	Beaker, borosilicate, 250 mL	Functional Specifications: Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to more than 100°C for normal, standard use service
		Performance Specifications: Must be able to contain/hold /prepare solids and liquids during chemical reaction and heats them over a Bunsen burner's flame up to more than 100°C for normal, standard use service
		Design Specifications:
		1. Features a cylindrical container with straight sides, a flat bottom, with a beaded rim and with a small spout (or "beak") to aid in pouring.

No.	Item Name	Technical Specifications
		2. Material: Borosilicate, clear, smooth, and transparent bubble-free glass with the following dimensions:
		Outside diameter: 68-70mm
		Height: 90-92 mm
		Thickness: 1.5 mm to 2.0 mm
		3. Type: Griffin, low form
		4. Features an easy-pour spout
		5. With permanent colored graduations of approximate volumes, large colored easy to read block letters, numbers and inscriptions/markings enamelled onto the glass, which includes the following:
		a) Capacity: 250 mL
		b) Manufacturer's name or trademark
		c) With large white marking spot
		d) With double graduated metric scale
		d1) With marking graduation to fill: starts at 25 mL in 25mL increments
		d2) With marking graduation to empty: starts at 0 mL in 200 mL increments
		d3) Graduation interval: 25 mL
		d4) Graduation range: 25 mL to 200 mL
		6. Must be able to stand solidly/is stable when placed on a level surface
		7. Must be free from breakage, cracks, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		8. Must be able to withstand heating of water up to 150 deg C
		9. Wrapped in paper, enclosed in bubble wrap and packed individually in a compartmentalized box
		10. Comes with a brand enamelled permanently onto the glass
		11. Must be brand new
4	Beaker, borosilicate, 50 mL	Functional Specifications: Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to more than 100 °C
		Performance Specifications: Must be able to contain/hold /prepare solids and liquids during chemical reaction and heats them over a Bunsen burner's flame up to more than 100 °C
		Design Specifications:
		1. Features a cylindrical container with straight sides, a flat bottom with a beaded rim and a small spout (or "beak") to aid in pouring
		2. Material: Borosilicate, clear, smooth, and transparent bubble-free glass with the following dimensions:
		Outer diameter: 40-42 mm
		Height: 55-57 mm
		Thickness: 1.5 to 2.0 mm
		3. Type: Griffin, low form

No.	Item Name	Technical Specifications
		4. Features an easy-pour spout
		5. With permanent colored graduations of approximate volumes, large colored easy to read block letters, numbers and inscriptions/ markings enamelled onto the glass, which includes the following:
		a) Capacity: 50 mL
		b) Manufacturer's name or trademark
		c) With large white marking spot
		d) With single graduated metric scale
		d1)With marking graduation to fill: starts at 10 mL in 10 mL increments
		d2) Graduation interval: 10 mL
		d3) Graduation range: 10 mL to 40 mL
		6. Must be able to stand solidly/is stable when placed on a level surface
		7. Must be free from breakage, cracks, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		8. Wrapped in paper, enclosed in bubble wrap and packed individually in compartmentalized box.
		9. Comes with a brand enamelled permanently onto the glass
		10. Must be brand new
5	Beaker, borosilicate, 500 mL	Functional Specifications: a)Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to 150°C for normal, standard use service and b)to serve as a water bath when heating flammable chemicals instead of an open flame to prevent ignition.
		Performance Specifications: a) Must be able to contain/hold /prepare solids and liquids during chemical reaction and heats them over a Bunsen burner's flame up to 150°C for normal, standard use service and to serve as a water bath b) to serve as a water bath when heating flammable chemicals instead of an open flame to prevent ignition.
		Design Specifications: 1. Type: Berzellius, tall form
		2. Shape: Cylindrical container with straight sides, a flat bottom, with a small spout (or "beak") to aid pouring
		3. Material : Borosilicate, clear, bubble free glass , Berzellius. tall form with the following dimensions:
		a) Outside Diameter Range :75 mm- 80 mm
		b) Height range: 136 mm -140 mm
		c) Thickness :1.5 mm to 2.0 mm
		4. Capacity :500 mL ; ± 5% etched/embossed onto the glass
		5. With permanent white enamel graduations of approximate volumes, inscriptions and
		6. With large white marking spot
		7. With easy pour spout
		8. Double graduated metric scale
		9. Marked to fill: Graduation starts at 50 mL in 50 mL increments

No.	Item Name	Technical Specifications
		10. Marked to empty: Graduation starts at 0 mL in 50 mL increments
		11. Can withstand heating up to 200-230°C for normal, standard use service
		12. Wrapped in paper, enclosed in bubble wrap and packed individually in a compartmentalized box
		13. Must be free from breakage, cracks , chipped rims and other defects
		14. Comes with a brand, with five (5) years existence in the glass wares industry
6	Burette, 10 mL capacity (acid)	Functional Specifications: Used to hold/contain the acid up to 10 mL capacity as a titrant to be delivered/ dispensed to titrate the base in acid-base titration to determine unknown concentration of base
		Performance Specifications: Must hold/contain the acid up to 10 mL capacity as a titrant to be delivered/ dispensed to titrate the base (with color change from pink to colorless when end point is reached) in acid-base titration to determine unknown concentration of base
		Design Specifications:
		1. Features a long,vertical cylindrical glass tube with a volumetric graduation on its full length,with a leak-free plastic stopcock at its lower end and a tapered capillary tube at the stopcock's outlet.
		2. Material : Clear, transparent, smooth, bubble-free high quality borosilicate glass, with the following dimensions:
		Length of burette: 510-620 mm
		3. Fitted with grease-free interchangeable with 1.5 to 2 mm bore plastic leak-free stopcock plug. Material of of stopcock :PTFE key
		a) Manufacturer's name or trademark
		4. With permanent, durable colored markings in fine, clear, continuous, sharp, of uniform width, distinct colored graduation lines of approximate volumes, clearly legible and indelible block letters, inscriptions/ markings under normal conditions of use of the burettes, and large, easy-to-read numbers every 0.5 mL enamelled permanently onto the glass before the first graduation line which includes the following:
		b) Capacity: 10 mL
		c) Sub. Div. : 0.05 ml
		d)Tolerance: ± 0.02-±0.03 mL
		e) Class: A
		f) Unit of volume: mL
		g) Ex
		h) Reference Temp: 20°C-27°C
		5. With Statement of Accuracy /Certificate of Accuracy) latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin
		6. Marked with an individual serial number (Serially Numbered)
		7. Individually placed in bubble wrap, enclosed in a polystyrene and packed in a padded sturdy box.

No.	Item Name	Technical Specifications
		8. Must be free from breakage, leaks, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein.
		9. Includes Operations Manual in English
		10. With Activity Sheets/Teacher's Manual in English
		11. Comes with a brand enamelled permanently onto the glass
		12. Must be brand new
7	Burette, 10 mL capacity (base)	Functional Specifications: Used to hold/contain the base as a titrant to be delivered/ dispensed to tirate an acid up to 10 mL capacity in acid-base titration to determine unknown concentration of acid
		Performance Specifications: Must hold/contain the base as a titrant to be delivered/ dispensed to titrate an acid up to 10 mL capacity (with color change from colorless to very faint pink when end point is reached) in acid-base titration to determine unknown concentration of acid
		Design Specifications:
		1. Features a long, graduated glass tube, with a leakage-free stopcock at its lower end and a tapered capillary tube at the screw type stopcock's outlet.
		2. Material : Clear, transparent, bubble-free, smooth borosilicate glass, with the following dimensions:
		a) Length of burette: 444.5-520 mm
		3. With PTFE (screw-thread type/needle valve-Rotaflow leak-proof plastic) stopcock
		4. With permanent, durable colored markings in fine, clear, continuous, sharp, of uniform width, distinct colored graduation lines of approximate volumes, clearly legible and indelible block letters and inscriptions with large, easy-to-read numbers every 0.5-1.0 mL subdivisions enamelled permanently onto the glass, before the first graduation line, which includes the following:
		a) Manufacturer's name or trademark
		b) Capacity: 10 mL
		c) Sub. Div. : 0.05 ml
		d) Tolerance: 0.05 mL
		d) Class: B
		e) Unit of volume: mL
		f) Ex
		g) Reference Temp: 20°C-27°C
		5. With machine Jet flow control which is made from thick walled capillary tubing which forms an integral part of the burette shall have no cavity at the join likely to trap air bubbles.
		6. With Statement of Accuracy /Certificate of Accuracy) latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin
		7. Marked with an individual serial number (Serially Numbered).
		8. Individually placed in bubble wrap, enclosed in polystyrene and packed in a padded sturdy box

No.	Item Name	Technical Specifications
		10. Must be free from breakage, leaks, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein.
		11. Includes Operations Manual in English
		12. With Activity Sheets/Teacher's Manual in English
		13. Comes with a brand enamelled permanently onto the glass
		14. Must be brand new
8	Burner, Alcohol, glass, 150 mL Capacity	Functional Specifications: Used to produce hot, consistent open flame for slow/gentle heating of glasswares and substances
		Performance Specifications: Must be able to produce hot, consistent open flame a)for slow/gentle heating of glasswares and substances
		b)can withstand prolonged heating without breaking
		c) visually determine the identity of an unknown metal or metalloid ion based on the characteristic color the chemical/salt emits on the Bunsen flame to investigate reactions of ions and apply these in qualitative analysis through an activity, on Flame Test
		d) bend a glass tubing
		e) heat,to sterilize, to accelerate, and to trigger chemical reactions,
		f) for combustion purposes and techniques
		Design Specifications:
		1. Features a globe-shaped body and flat base (bottom) with threaded mouth
		2. Materia l : Sturdy, heavy walled, clear, transparent, smooth, bubble-free glass
		3. Capacity : 150 mL
		4. With rust/corrosive-free wick holder permanently attached to a threaded base
		a) Material of wick holder and cover/caps : Nickel- plated brass
		b) Type of wick holder : Threaded
		5. With one (1) pc cotton fiber/strand braided wick perfectly fitted to the wick tube
		a) Material of wick : Cotton fiber/strand
		b)Type of wick: Well-braided
		c)Length of wick : 178-1809 mm
		d)Diameter : 5-6 mm
		6. With shiny, smooth, and corrosion-free metal snuff/snap-on cover/cap
		7 With ten (10) pc replacement well-braided cotton fiber/strand wicks
		8. Wrapped in paper, enclosed in bubble wrap and packed in a compartmentalized box
		9. Must be free from rust, breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein.
		10. Comes with a brand printed permanently onto the box
		11. Must be brand new

No.	Item Name	Technical Specifications
9	Burner, Bunsen	Functional Specifications: Used to :
		a) produce single, hot, continuous, consistent open blue flame
		b) for slow/gentle heating of glasswares and substances,
		c) rapidly heat high-boiling liquids with low flammability like water
		d) heat, sterilize/accelerate/ trigger chemical reactions,
		e) for combustion purposes
		Performance Specifications: Must be able to produce a single, hot, continuous, consistent open blue flame to:
		a) visually determine the hottest part of the Bunsen flame
		b) visually determine the identity of an unknown metal or metalloid ion based on the characteristic color the chemical/salt emits on the Bunsen flame to investigate reactions of ions and apply these in qualitative analysis through an activity, on Flame Test
		c) bend a glass tubing
		d) used as a heating medium to demonstrate distillation, as one of the simple separation techniques
		e) slow/gentle heating of glasswares and substances
		f) rapidly heat high-boiling liquids with low flammability like water
		g) heat,to sterilize, to accelerate, and to trigger chemical reactions,
		h) for combustion purposes and techniques
		Design Specifications:
		1.Type : Gas type with accessories
		2. Features a long, hollow burner tube with stabilizer top and serrated inlet tube
		3. Material for burner tube : Aluminum, with the following dimensions:
		. a) Diameter of burner tube: 11-12 mm diameter
		b) Over-all height: 152-155 mm
		4. With flame stabilizer
		5.With threaded gas needle valve (located opposite to serrated inlet tube)
		6. Material of base: Nickel-plated zinc-alloy
		7. Must be able to stand solidly/is stable when placed on a level surface
		8. Individually packed in a sturdy box
		9. With User's Manual and Operations Guide in English
		10. Comes with Activity Sheets with Teacher's Manual in English
		11. For numbers #9 to 10; the technical specifications (a-e) must be followed:
		a) For Contents List of materials, In Table form
		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences grammatically correct and

No.	Item Name	Technical Specifications
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) In 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Margins on all sides with 2 point width border line
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		12. Must be free from rust, cracks, chipped rims and sharp edges, surface irregularities and all other defects not stated herein.
		13. Comes with a brand printed permanently on the box
		14. Must be brand new
10	Cork borer	Functional Specifications: Used to bore or to cut a round hole of six different diameters in a cork/rubber stopper with a steel ramrod/eject rod pushing the removed cork out of the borer
		Performance Specifications: Must be able to bore or to cut a round hole of six different diameters in a cork or rubber stopper and remove cork out of the borer by pushing it with a steel ramrod/eject rod
		Design Specifications:
		1. Shape of cork borer : Long, hollow round rod/tube with sharpened ends
		2. Material of tube/rod : Nickel-plated steel borer
		3. A set of six (6) different diameter sizes:(4 mm, 4.5 mm, 6 mm, 8 mm, 9.5 mm, 11 mm)
		4. Comes with a handles whch are individually and permanently numbered (1-6) for easy identificationhandle
		a) Shape of handle: T-shaped
		b) Material of handle : Hard plastic
		c) Finish: Smooth
		d)Color of handle: Red
		5. Includes a ramrod/eject rod pushing the removed cork out of the borer Material of ramrod/eject rod: Steel
		6. Packaging: Resealable plastic pouch
		7.Comes with a brand
11	Cork Stopper # 5 (for Ø 16mm test tube)	Functional Specifications: Used to seal the openings of 16 mm diameter test tubes and other laboratory glassware to prevent leaks, hazards and contamination to yield positive results during chemical reactions
		Performance Specifications: Must be able to seal the openings of 16 x 150 mm test tubesand other laboratory glassware and to prevent leaks, hazards and contaminationto yield positive results during chemical reactions

No.	Item Name	Technical Specifications
		Design Specifications:
		1. Features an extra Select Grade cylindrical with a tapered bottom end with fewer lenticels (crevices)
		2. Material of cork : Elastic and near impermeable with the following dimensions:
		a) Height : 22-22.5 mm
		b) Top Ø : 15-15.5 mm
		c) Bottom Ø: 13-13.5 mm
		3. Number of cork stopper: #5
		4. Must perfectly fit the 16 x 150 mm test tube
		5. Must be free from defect of discontinuities in the cork tissue such as "lung", exfoliation, and insect,ant/worm galleries and all other defects not stated herein.
		6. Packed in a resealable plastic bag
		7. With brand printed permanently on the resealable plastic bag
		8. Must be brand new
12	Crucible with lid/cover	Functional Specifications: Used as a container to heat metals or other substances may be melted or subjected to very high temperatures
		Performance Specifications: Must be able to contain elements, compounds, metals, organic compounds or other substances to be melted or subjected to very high temperatures to determine mass relationship in a chemical reaction
		Design Specifications:
		1. Features a high/tall form cylindrical crucible
		2. Capacity : 30 mL
		3. Material : Porcelain, with the following dimensions:
		a) Height : 43-50 mm
		b) Base diameter: 24-26 mm
		c) Top diameter: 33-40 mm
		4. Glazed inside and out, except outside bottom and rim.
		5. With crucible cover completely glazed except for rim.
		6.Must be able to stand solidly flat/is stable when placed on a level surface
		7.Must be free from breakage, cracks, chipped rims and and sharp edges, surface irregularities and all other defects not stated herein
		8. Comes with a brand printed permanently in the comparmentalized sturdy box
		9. Must be brand new
13	Dish, Evaporating, 75 mL	Functional Specifications: Used to contain/hold substances and to heat chemical solutions gradually, driving off the water to leave residual chemical solute
		Performance Specifications: Must be able to contain/hold substances and to demonstrate evaporation, as one of the techniques in separating mixtures, by heating chemical solutions gradually, driving off the water to leave residual chemical solute
		Design Specifications:

No.	Item Name	Technical Specifications
		1. Features a deep form, broad, and wider at the top, with round bottom
		2. Material : Porcelain, with the following dimensions:
		a) Diameter : 80-84 mm
		b) Height/depth : 30-35 mm high
		3. Capacity: 75 mL
		4. With pouring lip/spout
		5. Must be free from breakage, cracks, chipped rims and sharp edges, other surfaceirregularities and other defects not stated herein.
		6.Must be able to contain the salt solution for an experiment on evaporation
		7. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, surface irregularities including all other defects not stated herein.
		8. Each dish is individually packed,wrapped in paper, and packed in a sturdy box
		9. Comes with a brand printed permanently in the sturdy box
		10. Must be brand new
14	Double burette clamp/holder	Functional Specifications: Used to hold and secure two burettes on a stand, so that each burette is fixed and more convenient for the experiment.
		Performance Specifications: Must be used to hold and secure two burettes simultaneously on a stand, so that the burettes are fixed and more convenient to perform acid-base titration experiment to determine concentration of solutions.
		Design Specifications:
		1. Features a double Y-shaped or butterfly-shaped items which have spring action clamps.
		2. Material of body: Die cast aluminum with chemical resistant white enamel finish,with the following dimensions:
		Length range : 245-262 mm
		Width range : 120-127 mm
		Mounting hole diameter (Φ): 15-36 mm
		3. Color of body : White enamel
		4. Material of sleeves/jaws/grips : Vinyl or rubber for excellent grip
		5. Color of sleeves/jaws/grips : Colored
		Distance between sleeves/jaws/grips : 85 -120 mm
		6. With 4 spring action clamps, 2 on each opening
		7. With two separate adjusting knobs or squeeze clamping mechanism
		8. Color of adjusting knobs : Colored
		9. Mounts directly to standard support rod with built in hook connector.
		10. The dual metal burette clamp supports burettes from 10-100 mL (10-100 cc).

No.	Item Name	Technical Specifications
		11. They can be attached to support stand rods from16 mm to 17 mm diameter
		12. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein.
		13. Comes with a brand marked permanently onto the body/box
		14. Must be brand new
15	Filter Paper, crepe, 580mm x 580 mm sheet, Grade 0905	Functional Specifications: Used to filter/separate mixtures solids from liquids
		Performance Specifications: Must be able to filter solids from liquids to demonstrate filtration, as one of the techniques in separating mixtures (solids from liquids)
		Design Specifications:
		1. Type: Technical use
		2. Shape of filter paper : Square
		3. Material: Cellulose with the following dimensions:
		a) Length: 580-580.5 mm
		b) Width : 580-580.5 mm
		4. Color: White to cream
		5. Surface: Creped, very coarse textured surface
		6. Grade 0905
		7. Initial Filtration Speed: 5 sec/10 mL
		8. Flow rate : High
		9. Packed in a brown filter paper tube
		10.Must be free from dirt and all other surface imperfections including all other defects not stated herein
		11. Comes with a brand marked permanently printed in the filter paper tube
		12. Must be brand new
16	Flask, Erlenmeyer, borosilicate, narrow-mouth, 250 mL	Functional Specifications: Used to :
		a) contain/hold a small chemical reaction,
		b) mix solids and liquids,
		c)heat substances over a Bunsen/alcohol burner's flame up to over 100 °C or
		d)collect them in a titration/distillation experiment
		Performance Specifications: Must be able to:
		a) contain/hold a small chemical reaction ,
		b) mixes solids and liquids during chemical reaction,
		c) heats substances up to 100°C over a Bunsen burner's flame up to 250 mL, or
		d) serves as a reaction vessel in a titration experiment, and to collect distillate during distillation
		Design Specifications:

No.	Item Name	Technical Specifications
		1. Features a conical body, a cylindrical short neck , narrow mouth, with sloping sides, beaded rim, and with a flat bottom
		2. Material : Clear, and transparent bubble-free, smooth, borosilicate, glass with the following dimensions:
		a)Outside diameter: 80-82 mm
		b)Height: 130-132 mm
		c) Thickness: 1.5 to 2.0mm
		b) Neck inside diameter range : 28 to 30 mm
		3. With uniform wall thickness
		4. With narrow mouth, heavy duty beaded rim, graduated
		5. With permanent durable white enamel graduations of approximate volumes, large white block letters,numbers and easy to read inscriptions enamelled onto the glass, which includes the following:
		a) Manufacturer's name or trademark
		b) Capacity: 250 mL
		c) With large white marking spot
		d) With single graduated metric scale
		d1) Graduation range : 50 -200 mL
		d2) Graduation interval: 25 mL
		d3) Graduation starts at: 50 mL in 25 mL increments e) Tolerance: ±6% and other inscriptions enamelled onto the glass
		6. Wrapped in paper and individually packed in a compartmentalized box
		7. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		8. Must be able to withstand heating of water up to 100 deg C
		9. Placed in bubble wrap and packed in a sturdy box to help prevent glass breakage.
		10. Comes with a brand enamelled permanently onto the glass
		11. Must have a brand printed permanently on the glass
		12. Must be brand new
17	Funnel, borosilicate, fluted	Functional Specifications: Used to direct the smooth flow of the liquid or fine-grained substances into another container tp prevent spills
		Performance Specifications: Must be able to direct the smooth flow of the liquid or fine-grained substances into another container to prevent spills
		Design Specifications:
		1.Type : 60 ° angle, Fluted short stem funnel
		2. Shape: A wide, inverted conical top with narrow short circular tube at the bottom, with depressed inside flutings
		3. Material: Borosilicate, clear, transparent,bubble-free glass,with the following dimensions:
		a) Top outside diameter: 75-86 mm
		b) Stem outer diameter : 8-9.5 mm

No.	Item Name	Technical Specifications
		c) Stem length : 72-76 mm
		d) Total Height : 139-140 mm
		4. With heavy beaded rim/edge and heavy uniform wall for strength.
		5. With slanted fire polished tip, filter angle (angled 60°) and depressed inside fluting help reduce filtering time
		6. Wrapped in paper, enclosed in bubble wrap, and individually packed in a sturdy box
		7. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		8. Comes with a brand embossed onto the glass
		9. Must be brand new
18	Glass Tubing	Functional Specifications: Used to contain/hold/mix liquids or gases during chemical reactions and to connect other pieces of equipment/glasswares to a gas or liquid assembly
		Performance Specifications: Must be able to:
		a) be bent to onnect other pieces of equipment/glasswares to a gas or liquid assembly like in the activity " Flowing Up" and connect Florence flask to the Liebig condenser as a substitute for distilling flask for Distillation set up
		b) contain/hold/mix liquids or gases during chemical reactions, to relate the rate of gas effusion with molar mass and demonstrate Graham's law of effusion in an experiment where a white ring mass is observed
		Design Specifications:
		1. Shape : Long slender hollow glass
		2. Material : Soda lime, clear, transparent, bubble-free glass tubing, with the following dimensions:
		a) Outside diameter : 6.0-6.5 mm
		b) Wall thickness : 1.0-1.2 mm
		c)Length: 1219-1500 mm
		3. With fire polished ends
		4. Individually wrapped in used newspaper, enclosed in a bubble wrap, and packed in a sturdy box
		5. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		6. Comes with a brand printed permanently on its packaging (sturdy paper tube with cover)
		7. Must be brand new
19	Gloves, Hand, super nitrile	Functional Specifications: Used to protect hands against mechanical risks, microorganisms, chemical burns and splashes
		Performance Specifications: Must be able to protect hands against mechanical risks, microrganisms, chemical burns and splashes
		Design Specifications:
		1. Features a slightly curved fingers and forward-facing thumb correspond to the natural position of the hand (hand-shaped)
		2. Material : Nitrile, reusable, with the following dimensions:

No.	Item Name	Technical Specifications
		a) Length of gloves : 330-360 mm
		b)Thickness : 15 mil/0.38 mm minimum
		The thickness must be measured from the cuff, palm and fingers
		c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the hand gloves, is super nitrile, to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier. d) With Certification from the manufacturer that the hand gloves is reusable and not disposable
		3. Color : Green
		4. Size : 8/Medium
		5. Interior finish (liner material) : Flocklined acid/solvent resistant)
		6. Exterior finish : Embossed texture
		7. Cuff style: Straight
		8. Latex free to suit those with latex allergies
		9. Non-slip wear resistant high elasticity , waterproof
		10. Puncture resistant
		11.With detailed imprints on each glove, on the following:
		a) the glove size/s
		b) the name of manufacturer
		c) nitrile, flocklined
		d) individual manufacturing lot
		e) with pictograms for certification category requirements CE 0334 (EN 420, EN 388, EN 374) designed for protection against mechanical risks, chemical risks, and micro-organisms)
		12. Individually packed in pairs in a resealable plastic bag
		13 With a statement of conformity from the manufacturer that the gloves complies with the specifications currently published and has been subject to the strict quality conditions imposed by internal management systems.
		14.Comes with a brand printed permanently onto the gloves
		15. Must be brand new
20	Graduated Cylinder, borosilicate, 10 mL	Functional Specifications: Used to measure and to deliver the volume of liquids
		Performance Specifications: Must be able to measure and to deliver the volume of liquids up to 10 mL capacity
		Design Specifications:
		1. Features a narrow cylindrical container with a small turned-out lip
		2. Materia l: Borosilicate, clear, smooth,transparent and bubble-free glass
		a)Thickness range : 1.3-1.4 mm
		b) Outside diameter: 13-14 mm
		c) Height: 177-178 mm
		3. Features an easy-pour spout

No.	Item Name	Technical Specifications
		4. With permanent white enamel graduations of approximate volumes, large white block letters,numbers and inscriptions/markings easy to read etched/engraved onto the glass, before the first graduation, which includes the following:
		a) Manufacturer's name or trademark
		b) Capacity: 10 mL
		c) Graduations: 0.10
		d) Class: A
		e)) Tolerance : ± 0.10 - ±0.20
		f) EX/TD g) ISO/ASTM/Certification/s latest issued by the concerned institution which must conform to the standards appropriate to the goods' country of origin. institution appropriate to the goods' country of origin.
		h) 20°C-27°C
		5. Single metric scale
		a) Graduation Range : 1 to 10 mL
		b) Graduation interval : 0.1 mL
		6.With a hexagonal non-detachable glass base
		7. With a bumper guard
		8. With Statement of Accuracy (Certificate of Traceability) indicating accuracy traceable to standards of the country of origin
		9. Placed in bubble wrap,and packed individually in a compartmentalized box
		10. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		11. Comes with a brand marked permanently onto the glass
		12. Must be brand new
21	Graduated Cylinder, borosilicate, 100 mL	Functional Specifications: Used to measure and to deliver the volume of liquids
		Performance Specifications: a) Must be able to measure and to deliver the volume of liquids up to 100 mL capacity b) Used as a container to determine the volume of irregularly shaped solids by water displacement
		Design Specifications:
		1. Features a narrow cylindrical container with a small turned-out lip
		2. Material : Borosilicate, clear and transparent bubble-free glass with the following dimensions:
		a)Thickness range : 1.3-1.4 mm
		b)Outside diameter: 29-31 mm
		c) Height: 254-256 mm
		3. Features an easy-pour spout
		4. With permanent white enamel graduations of approximate volumes, large white block letters,numbers and inscriptions/markings easy to read etched/engraved onto the glass, before the first graduation, which includes the following:
		a) Manufacturer's name or trademark

No.	Item Name	Technical Specifications
		b) Capacity: 100 mL
		c) Graduations: 1 mL
		d) Class A
		e) Tolerance : ± 0.60 mL
		f) EX/TD
		g) ISO/ASTM/Certification/s latest issued by the concerned institution which must conform to the standards appropriate to the goods' country of origin.
		h) 20°C
		5. With single graduated metric scale
		a)Graduation range : 5 to 100 mL
		b) Graduation Interval : 1 mL
		6. With plastic bumper guard
		7. With a hexagonal non-detachable glass base
		8. With Statement of Accuracy (Certificate of Traceability) or Certification of Accuracy atest issued by the concerned institution which must conform to the authoritative standards lappropriate to the goods's country of origin
		9. Placed in bubble wrap,and packed individually in a compartmentalized box
		10. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		11. Comes with a brand marked permanently onto the item
		12. Must be brand new
22	Graduated pipette with rubber pipettor, borosilicate, 10 mL	Functional Specifications: Used to measure the amount of liquid being dispensed/delivered/transferred to another containeraccurate up to 10 mL capacity
		Performance Specifications: Must be able to measure the amount of liquid being dispensed/ delivered/transferred to another container accurate up to 10 mL capacity
		Design Specifications:
		1. Features a serological, transfer type straight tube with one constricted end
		2. Material : Borosilicate, reusable, clear, transparent bubble-free glass
		a) With Certification from the manufacturer that the graduated pipette is reusable and not disposable
		3. With permanent colored enamel graduations of approximate volumes, large white block letters, numbers and inscriptions/markings easy to read etched/engraved onto the glass, before the first graduation, which includes the following:
		a) Manufacturer's name or trademark
		b) Capacity : 10 mL
		c) Color band code for 10 mL cap :Orange
		d) Graduation interval: 0.1 mL
		e) Class A
		f) Marked "TD" /Ex
		g) Tolerance : ± 0.06

No.	Item Name	Technical Specifications
		h) ISO/ASTM/Certification/s latest issued by the concerned institution which must conforms to the authoritative standards appropriate to the goods' country of origin.
		i) 20°C
		4. Graduated to tip, zero at top
		5. Color code for 10 mL cap :Orange
		6. Top end is constricted
		7. Capacity: 10 mL
		8. Graduation interval: 0.1 mL
		9. Class A permanently marked on the glass
		Tolerance ±0.06 mL
		10. Graduations , approximate volumes, capacity, and other markings are in permanent amber stain which resists aggressive washing solutions
		11. With Statement of Accuracy/ Certification of Accuracy latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin
		12. With a statement of conformity from the manufacturer that the product complies with the specifications currently published and has been subject to the strict quality conditions imposed by internal management systems.
		13.Accessory :
		With Rubber pipettor
		a) Typ : Three (3) -way Safety Bulb-type Pipet Filler with S, E and A letters embossed on the rubber
		b) Material : Non-toxic natural rubber
		c) Color : Red/orange
		d) With pinch release valves that control air evacuation, liquid uptake, and liquid dispensing
		e) Fits standard size pipettes
		14. Packaging : Wrap glassware in newspaper and secure with a piece of masking tape and place in a bubble pouch, enclosed in polystyrene and packed in a sturdy box
		15. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		16.Comes with a brand printed permanently on the glass
		17. Must be brand new
23	Hydrometer for heavy liquids	Functional Specifications: Used to measure relative density of heavy liquids based on the concept of buoyancy
		Performance Specifications: Must be able to measure relative density of heavy liquids based on the concept of buoyancy, like glycerine
		Design Specifications:
		1. Type : Long Plain Form
		2. Features a long cylindrical hollow glass tube with a bulb weighted at the pointed bottom with a steel ballast with graduations on the arrow stem for measuring.

No.	Item Name	Technical Specifications
		3. Material : Clear , transparent bubble-free Glass, with the following dimensions:
		a) Length : 300 - 330 mm
		4. Specific Gravity Range: 1.00 - 2.00
		5. Subdivision : 0.01
		6. Comes with a ballast
		a) Material of ballast : Glass
		b) Heavy metals (lead, mercury)- free metal ballast
		c) Material inside the ballast : Steel pellets and
		d) With a binder
		7. With Statement of Accuracy/ Certification of Accuracy latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin
		8. Individually serialized
		9. Individually packed in a protective hard plastic case
		10. With User's Manual in English
		11. With Activity Sheets/Teacher's Manual in English
		12.For numbers #10-11, the technical specifications (a-e) must be followed:
		a) For Contents List of materials, In Table form
		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) in 0.3 minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size: 12
		iv) Margins on all sides with 2 point width border line
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		13. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein.
		14. Must have a brand etched/engraved onto the glass
		15. Must be brand new
24	Hydrometer for light liquids	Functional Specifications: Used to measure relative density of light liquids based on the concept of buoyancy like water
		Performance Specifications: Must be able to measure the relative density of liquids lighter than water based on the concept of buoyancy

No.	Item Name	Technical Specifications
		Design Specifications:
		1. Type : Long Plain Form
		2. Shape : Long cylindrical hollow glass tube with a bulb weighted at the bottom with a steel ballast with graduations on the narrow stem for measuring
		3. Material : Clear , transparent bubble-free Glass , with the following dimensions:
		a)Total Length: 300 - 330 mm
		b)Subdivision : 0.005
		4. Specific Gravity Range : 0.70 to 1.0
		5. Accuracy : ±1 subdivision
		6. Comes with a ballast
		a) With heavy metals (lead, mercury)- free metal ballast and glass
		b) Material inside the ballast: Steel pellets and
		c) With a binder
		7. With Statement of Accuracy/ Certification of Accuracy latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin
		8. Individually serialized
		9. Individually packed in a protective hard plastic case
		10. With User's Manual in English
		11. With Activity Sheets/Teacher's Manual in ENglish
		12.For numbers #10-11; the technical specifications (a-e) must be strictly followed:
		a) For Contents List of materials, In Table form
		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) in 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Margins on all sides with 2 point width border line
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		13. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		14. With a brand etched/printed onto the item
		15. Must be brand new
25	Manometer, Open U-tube	Functional Specifications: Used to indicate the difference in the heights of the manometric liquid to measure pressure

No.	Item Name	Technical Specifications
		Performance Specifications: Must be able to indicate the difference in the heights of the manometric liquid to measure pressure by getting the pressure difference
		Performance Specifications: Must be able to indicate the difference in the heights of the manometric liquid to measure pressure by getting the pressure difference
		Design Specifications:
		1. Type : Differential pressure manometer
		2. Shape : U-shaped glass tube partially filled with liquid, with no moving parts and requires no calibration
		3. Material : Glass
		4. With a 50-52 cm arm with funnel top on one arm and 4.5-5.5 cm bent (90°) with 15-16 mm rifted tip on another arm for easy connection
		5. U-tube is mounted on a board, fixed on a wooden stand for vertical mounting using metal clips
		a) Material of stand : Wood/en
		b) Dimensions of back plate
		i) Length : 540-542 mm
		ii) Width : 90-102 mm
		6. A millimeter scale is fitted between the arms of the tube.
		a) Scale having graduation range: 0-50 cm
		b) Graduation increment: 1 mm, with 0 at the bottom
		7. Accessories:
		a) With latex tubing, glass wall 2 mm thickness, 7.5-8.0 mm inner diameter.
		i) Material of rubber tubing: Non-toxic non-tacky latex rubber tubing for the laboratory activity.
		ii)Length of rubber tube: 3000-3005 mm
		8. Stand with glass tube placed in bubble wrap, enclosed in bubble wrap and packed individually in a sturdy box
		9. Accessories enclosed in resealable plastic bag
		10. With User's Manual in English
		11. With Assembly Guides and Activity Sheets
		12. For numbers #10 and 11; they must be:
		a) In Table form for List of materials, in A4 size, glossy paper,laminated
		b) In sentences format for instruction sheets/assembly guides
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c)Printed in original copy, not photocopied
		d) In colored drawings/illustrations
		e) in 0.3 minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm

No.	Item Name	Technical Specifications
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Margins on all sides with 2 point width border line
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		13. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein.
		14. Individually packed in a sturdy box
		15. Comes with a brand printed permanently onto the wooden stand
		16. Must be brand new
26	Mortar and Pestle, porcelain, 150 mL.	Functional Specifications: Used to pulverize/mash/grind and to mix materials in a mortar using a pestle
		Performance Specifications: Must be able to pulverize/mash/grind and mixes materials in a mortar using a pestle to demonstrate how particle size affects solubility and the rate of chemical reaction.
		Decreasing the size of the particles increases the rate of dissolving and speeds up the rate of reaction because the surface area of the reactant has been increased.
		Design Specifications:
		A. Mortar
		1. Shape of mortar : Deep form, bowl shape, with wide mouth , and with deeply molded, smooth rounded bottom
		2. Material for mortar and pestle: Porcelain, with the following dimensions:
		a) Outside diameter : 130-132 mm
		b) Height/Depth : 65-85 mm
		3. Capacity: 150 mL
		4. With pouring lip
		5. With unglazed grinding surface (interior) and uniformly glazed exterior
		B. Pestle:
		6. Shape of pestle: Cylindrical with bulbous bottom, with the following dimensions:
		a) Length range : 133-160 mm and
		b) Diameter range: 28-40 mm diameter at its widest point.
		7. Material of pestle: A heavy bat-shaped porcelain
		8. Uniformly glazed on its handle and rough on opposite end
		9. The set is individually wrapped, enclosed in a bubble wrap and packed in a sturdy box
		10. Must be free from breakage, cracks , chipped rims, sharpedges, all surface irregularities and all other defects not stated herein
		11. Comes with a brand marked permanently on the body/box
		12. Must be brand new
27	Nichrome wire. 0.4, 100 ft	Functional Specifications: Used as a wire loop and heating element on which a metal salt or solid ionic compound is made to adhere into it and is heated to emit a characteristic color on the Bunsen flame to identify the particular metal present in the compound

No.	Item Name	Technical Specifications
		Performance Specifications: Must be used as a wire loop on which a metal salt or solid ionic compound is made to adhere to, and is heated to emit a characteristic color on the Bunsen flame to identify the particular metal present in the compound in a laboratory activity, the Flame test
		Design Specifications:
		1. Shape: Round wire
		2. Material of wire: Nichrome-Alloy of nickel and chromium, Ni80 Cr20 with the following dimensions:
		a) AWG size: 26
		b) Diameter: 0.4 mm
		c) Length : 100 ft
		3. Form: Soft, rust-free wire
		4. Color: Silvery grey
		5. Resistance : 2.57 ohms/foot
		6. Annealed soft
		7. Perfectly tensioned. Zero elongation, scratches, or other flaws.
		8. Comes in a spool
		9. Packed in a resealable plastic pouch
		10. Comes with a brand
28	Reagent Bottle, narrow-mouth, amber, borosilicate, 250 mL	Functional Specifications: Used to contain/store and to provide UV protection of prepared light sensitive solutions/substances to prevent change/alteration in the composition of their contents
		Performance Specifications: Must be able to contains/store and to provide UV protection for the prepared light sensitive solutions/substances to prevent change/alteration in the composition of their contents.
		Design Specifications:
		1. Shape : Cylindrical narrow-mouth bottle
		2. Material : Borosilicate, smooth, bubble-free glass with the following dimensions:
		a) Bottle diameter range: 66-72 mm
		b) Neck I.D. range : 23-28 mm
		c) Over-all height: 130 to 150 mm
		3. Color: Amber
		4. With approximate volumes, capacity, and other markings are in permanent white enamel which resists aggressive washing solutions
		a) Manufacturer's name or trademark
		b) 250 mL
		c) white marking field/spot in permanent white enamel
		5. With octagonal plastic stopper Socket size: 19/26 that fits the mouth well
		6. With a white marking field/spot in permanent white enamel
		a) logo/brand name
		b) 250 mL
		7.Wrapped in paper, enclosed in bubble wrap and packed individually in a padded sturdy box

No.	Item Name	Technical Specifications
		8. Must be free from breakage, cracks , chipped rims, sharp edges, striae, all surface irregularities including all other defects not stated herein
		9. Comes with a brand enamelled permanently onto the glass
		10. Must be brand new
29	Reagent Bottle, wide-mouth, transparent, borosilicate, 250 mL	Functional Specifications: Used to hold/ contain/store prepared solutions/ substances
		Performance Specifications: Must be able to hold/contain/store prepared solutions/substances
		Design Specifications:
		1. Shape: Cylindrical wide-mouth bottle
		2. Material: Borosilicate, clear, smooth, transparent and bubble-free glass, with the following dimensions:
		a) Bottle diameter : 69 mm to 73 mm
		b) Mouth diameter: 34 mm to 44 mm
		c) Height : 129 mm to 142 mm
		3. With ground-in glass stopper
		4. With air tight seal
		5. With approximate volumes, capacity, and other markings are in permanent white enamel/stain which resists aggressive washing solutions
		a) Manufacturer's name or trademark
		b) 250 mL
		c) white marking field/spot in permanent white enamel
		6. Wrapped in paper, enclosed in bubble wrap and packed individually in a sturdy box
		7. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein
		8. Comes with a brand enamelled onto the glass
		9. Must be brand new
30	Rubber Stopper # 0 (for Ø 16mm test tube)	Functional Specifications: Used to seal the openings of 16 mm diameter test tubes and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance.to prevent leaks, hazards and contamination
		Performance Specifications: Must be able to seal the openings of 16 x 150 mm test tubes and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance.to prevent leaks, hazards and contamination
		Design Specifications:
		1. Shape: Cylindrical with a tapered bottom end
		2. Material : Rubber compound with the following dimensions:
		a) Height : 25-25.5 mm
		b) Top Ø : 17-17.50 mm
		c) Bottom Ø : 13-13.5 mm
		3. Hardness : 40-45 Duro
		4. Packed in resealable plastic bag
		5. With no. 0 embossed onto the rubber stopper

No.	Item Name	Technical Specifications
		6. Must be free from cracks, sharp edges, and all other surface imperfections including all other defects not stated herein
		7. Comes with a brand marked permanently in the bag
		8. Must be brand new
31	Rubber Stopper # 6 for Erlenmeyer Flask (narrow-mouth) 250 mL , 1 hole	Functional Specifications: Used to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance with one 1) hole opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction .to prevent leaks, hazards and contamination.
		Performance Specifications: Must be able to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance .with one (1) hole opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction to prevent leaks, hazards and contamination.
		Design Specifications:
		1. Shape: Cylindrical with a tapered bottom end
		2. Material : Premium grade SBR black rubber compound with the following dimensions:
		a) Height: 25 mm
		b) Top Ǿ: 32 mm
		c)Bottom Ǿ : 26 mm
		d) Hole Ǿ: 5 mm
		3. Number of holes :With one (1) hole
		4. Dimension tolerance on height, top and bottom diameter : ± 0.5 mm
		5. Hardness : 40 ± 5 Duro
		6. Packed in resealable plastic bag
		7. Comes with a brand
32	Rubber Stopper # 6 for Erlenmeyer Flask (narrow-mouth) 250 mL , 2 holes	Functional Specifications: Used to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance with two (2) holes opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction to prevent leaks, hazards and contamination.

No.	Item Name	Technical Specifications
		Performance Specifications: Must be able to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance with two (2) holes opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction to prevent leaks, hazards and contamination.
		Design Specifications:
		1. Shape: Cylindrical with a tapered bottom end
		2. Material : Premium grade SBR black rubber compound with the following dimensions:
		a) Height: 25 mm
		b) Top Ø: 32 mm
		c) Bottom Ø : 26 mm
		d) Hole Ø: 5 mm
		3. Number of holes : Two (2) holes
		4. Dimension tolerance on height, top and bottom diameter : ± 0.5 mm
		5. Hardness : 40 ± 5 Duro
		6. Packed in resealable plastic bag
		7. Comes with a brand
33	Safety Goggles, polycarbonate	Functional Specifications: Used to protect eyes and face against chemical burns and splashes
		Performance Specifications: Must be able to protect eyes and face against chemical burns and splashes
		Design Specifications:
		1 Features an angled vented portion that does not allow direct straight line from the exterior to the interior of the eyewear which encloses wide area surrounding the eyes
		2. Material of lens : Polycarbonate lens

No.	Item Name	Technical Specifications
		a) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the lens of the safety goggles, is polycarbonate, to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier. b) With Certification from the manufacturer that the pair of hand gloves is reusable and not disposable
		3. Color of the lens: Clear
		4. Lens type : Anti-splash, anti-fog treated/anti-scratch coating
		5. With indirect ventilation channels (preventing penetration of splashes) one through each side of the frame to keep out large particles, dust, and liquids and splash hazards, improves air circulation and reduces fogging in hot/humid conditions
		6. With wrap around elasticized adjustable headband integrated with goggle frame to prevent slippage and holds the goggle more securely
		7. With pivoting headband clips to adjust strap around hard hats or hearing protection
		8. Peel-off goggle covers available to extend the life of the lens
		9. Can be worn over most prescription eyewear (OTG compatible)
		10. With firm comfortable seal around forehead, cheeks, nose and temples protects against chemicals, dust and grindings
		11. Shall bear mark ANZI Z87.1-2010 Standard for Chemical Splash and Dust Protection, Z87+D3 to indicate an impact protector type (ANSI Z87.1, CE EN 166 or CSA Z94.3 certification compliance) on the frame and the lens
		12. The manufacturer or supplier certification mark must be present on all approved safety lenses, frames (front and temple), removable side shields, and other parts of the glasses, or goggles.
		13. Individually packed in a transparent plastic bag
		14. Labeling of the primary packaging displays, product name, product reference, manufacturer name, size, type, performance testing information for particular storage conditions (temperature, pressure, light, humidity, as appropriate or harmonized symbol as applicable.
		15. With issuance of certification statement from the manufacturer as to the:
		a) Non-toxicity of the materials used
		b) Material of the lens : polycarbonate
		c) It is fog coated/scratch and impact resistant
		16. Individually packed in a sturdy box/plastic bag
		17. Must be free from cracks, sharp edges, and all other surface imperfections including all other defects not stated herein
		18. Comes with a brand marked permanently on the box
		19. Must be brand new

No.	Item Name	Technical Specifications
34	Spatula, spoon, porcelain and glazed	Functional Specifications: Used to hold/contain and transfer solids and liquids from one container to the other
		Performance Specifications: Must be able to hold/contain and transfers solids and liquids from one container to the other
		Design Specifications:
		1. Features a white, broad, flat, blade (spatula) on one end and a spoon on the other end.
		2. Material : Uniformly glazed smooth finish porcelain
		a) Capacity: 0.3 mL
		b) Over all Length : 121-142 mm
		3. Must be free from breakage, cracks,chipped edges and all other defects not stated herein
		4. Wrapped in paper, enclosed in bubble wrap and packed in a sturdy box.
		5. Must be free from cracks, sharp edges, and all other surface imperfections including all other defects not stated herein.
		6. Comes with a brand marked permanently in the box
		7. Must be brand new
35	Stirring Rod, Ǿ 6 mm x 250 mm long	Functional Specifications: Used to mix liquids and solids
		Performance Specifications: Must be able to mix liquids and solids well to speed up the dissolving process and increases the rate of reaction
		Design Specifications:
		1. Features a long, slender cylindrical solid glass, with the same thickness and slightly longer than a drinking straw and with rounded fire polished ends.
		2. Materia l: Clear, transparent bubble-free stir stick solid borosilicate glass with the following dimensions:
		a) Diameter(Ø) : 6-6.3 mm
		b) Length: 250-254 mm long
		3. With rounded and fire polished ends
		4. Wrapped in paper, enclosed in bubble wrap and packed in a sturdy box
		5. Must be free from breakage, cracks, chipped unpolished ends, all other surface imperfections icluding all other defects not stated herein
		6. Comes with a brand marked permanently in the box
		7. Must be brand new
36	Test tube brush	Functional Specifications: Used to clean test tubes and other small sized glasswares
		Performance Specifications: Must be able to clean test tubes and other small-sized glasswares with densely filled radial tip and head brush to make complete contact with walls, corners and bottom.
		Design Specifications:

No.	Item Name	Technical Specifications
		1. Features a radial tufted tip white nylon bristles and brush head lined against a rather sturdy wire handle with a looped end to make complete contact with walls, corners and bottom to clean test tubes and other small sized glasswares .
		2. Material of bristles : Medium stiff nylon with the following dimensions:
		a) Diameter of bristle section: 18-19 mm
		b) Length of bristle section : 82-102 mm
		c) Over-all length: 228 -229 mm
		3. Material of handle: Galvanized steel wire
		4. Type of wire handle : Common loop twisted wire
		5. With circular wire loop for hanging
		6. Packed in a resealable plastic bag
		7. Must be free from rust, sharp edges, all other surface irregularities including all other defects not stated herein
		8. Comes with a brand marked permanently in the box
		9. Must be brand new
37	Test Tube, borosilicate, Ø 16 mm x 150 mm long	Functional Specifications: Used to contain/hold a small chemical reaction , to mix small quantities of solids and liquids, and to heat small quantities of substances
		Performance Specifications: Must be able to contain/hold a small chemical reaction and , mixes solids and liquids, heats small quantitiy of substances up to more than 100°C over a Bunsen burner's flame
		Design Specifications:
		1. Features a finger-like length of glass tubing, open at the top, usually with a rounded lip at the top, and a rounded 'U' shaped bottom
		2. Material of test tube: Borosilicate , clear, transparent and bubble-free, reusable glass, with rim, with the following dimensions:
		a) Outside Diameter: 15.8-16.0 mm
		b) Thickness: 1.3 -1.4 mm
		c) Length: 150-152 mm
		d) Comes with a certification from the manufacturer that the test tube is reusable and not disposable
		3. Capacity: 20 mL
		4. With heavy uniform wall thickness, excellent heat resistance
		5. With large, white enamel marking spot
		6. Test tubes must be reusable (not disposable)
		7. Wrapped individually in tissue paper, enclosed in bubble wrap and packed in compartmentalized box
		8. Must be free from breakage, cracks, chipped rims, surface irregularities and all other defects not stated herein
		9. Comes with a brand enamelled permanently in the glass
		10. Must be brand new
38	Thermometer, Laboratory type, Alcohol, -20^{0}C to 110^{0}C	Functional Specifications: Used to measure the temperature

No.	Item Name	Technical Specifications
		Performance Specifications: Must measure the temperature , -20° to 110°C
		Design Specifications:
		1. Type : Alcohol filled, partial immersion thermometer
		2. Features a small sealed tube made of glass that has a small hollow bulb filled partly with ethanol and partly with nitrogen and ethanol vapors on one end and a thin capillary opening running through the length of its center
		3. Material : Glass
		4. Color : White/yellow
		5. Non-toxic red-filled thermometer
		6. Partial immersion type with immersion line indicator and ring top
		7. With precision red alcohol-filled, reinforced bulbs, and with expansion chamber
		8. With white back with non-roll sleeve
		9. With clear and permanent markings; scale never washes out
		10. Provided with non-roll plastic case
		11. With continuous alcohol column with no separations
		12. All graduation lines, figures, and letters should be clear-cut, distinct, and filled with a permanent pigment of suitable color with the following dimensions:
		a) Length : 200 mm (min)
		b). Accuracy: ± 1° C
		c) Range : -20°C to 110°C
		d) Division: 1°C
		e) Diameter: 5.8 to 6.2 mm f) Immersion line: 76 mm
		13. With Statement of Accuracy/ Certification of Accuracy latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin
		14. Must be free from breakage , cracks, chipped and sharp edges and surface irregularities including all other defects not stated herein.
		15. Comes with a brand printed premanently onto the glass
		16. Must be brand new
39	Tong, Crucible	Functional Specifications: Used to lift and hold crucibles,remove the lids from crucibles, transfer evaporating dishes or picking small objects out of a reaction container
		Performance Specifications: Must be able to lift and hold crucibles, remove the lids from crucibles, transfer evaporating dishes or picking small objects out of a reaction container.
		Design Specifications:
		1. Features a scissor-like and a long bent neck tongs, with two anti-skid pincers or pieces of metals that concave together, which allow the users to grasp a hot crucible, flasks, evaporating dishes, or even small beakers
		2. Material : Stainless steel,durable, stable, rust and heat resistant
		a) Color: Silver
		b) Finish: Smooth

No.	Item Name	Technical Specifications
		c) Overall Length: 228 -229 mm
		3. With riveted joints
		4. With serrated tips.
		5. Enclosed in resealable bag and packed in a sturdy box
		6. Must be free from rust, dirt, cracks, chipped and sharp edges and surface irregularities including all other defects not stated herein
		7. Comes with a brand marked permanently in a box
		8. Must be brand new
40	Universal pH indicator	Functional Specifications: Used as an indicator to determine/measure the pH of substances, whether it is an acid, neutral or a base
		Performance Specifications: Must be used as an indicator to effect a color change when it is dipped into the different substances to determine/measure the pH of each, through comparison with the pH color chart provided, which corresponds to:
		a) For an acid : pH 0-pH 6;
		b) For a base : pH 8-pH 14.
		c) For distilled water : pH 7
		Design Specifications:
		1. Type: Test strips
		2. Shape: Rectangle
		3. Material: Cellulose/Paper based
		4. Dimension of pH strip :
		a) Length : 69 mm x 6 mm
		5. Number of colors in indicator test strip: In four colors to test pH values
		6. Number of test strips : 100 pc strips
		7. Packaging: Clear, transparent box
		8. Shape of box: Square
		9. With complete color chart for comparison with the color change to get the pH reading of the sample being tested
		10. No sharp edges on box
		11. Measures pH 0-pH 14
		12. Comes with a brand
41	Vial, screw-neck, 25 ml. (with screw-type plastic cap)	Functional Specifications: Used to hold/contain/store/mix small quantities of samples/ solutions/substances up to 25 mL
		Performance Specifications: Must be able to hold/contain/store/mix small quantities of samples up to 25 mL
		Design Specifications:
		1. Type : Bottle with threaded Screw cap
		2. Shape : Bottle-like shape with a threaded neck, solid plastic closure and with a flat bottom.
		3. Material : Borosilicate clear, transparent, and bubble-free glass, with the following dimensions:
		a) Outside Diameter : 25-50 mm
		b) Length: 60-80 mm
		4. With screw- type solid plastic cap
		5. Shape of neck : Cylindrical, round

No.	Item Name	Technical Specifications
		6. Neck finish : Continuous thread
		7. Cap Color: Colored
		8. Cap Attached: No
		9. Cap Material : Plastic
		10. Closure style : Solid top, screw thread cap
		11. Capacity: 25 mL
		12. Packed individually in a compartmentalized/partitioned box
		13. Must be free from breakage , cracks, chipped and sharp edges and surface irregularities including all other defects not stated herein
		14. Comes with a brand marked permanently on the box
		15. Must be brand new
42	Vial, screw-neck, 50 mL. (with screw-type plastic cap)	Functional Specifications: Used to hold/contain/store/mix small quantities of samples/ solutions/substances up to 50 mL
		Performance Specifications: Held/contained/stored/mixed samples/solutions/substances up to 50 mL
		Design Specifications:
		1. Type : Bottle with threaded Screw cap
		2. Features a bottle-like shape with a threaded neck, screw cap plastic closure and with a flat bottom
		3. Material : Borosilicate,clear, transparent, and bubble-free glass with the following dimensions:
		a) Outside Diameter : 25-50 mm
		b) Length : 100-108 mm
		4. Capacity: 50 mL
		5. Shape of neck : Cylindrical, round
		6. Neck finish : Continuous thread
		7. Cap Color :Colored
		8. Cap Attached: No
		9. Cap Material : Plastic
		10. Closure style : Solid top, screw thread cap
		11. Packed individually in a compartmentalized box
		12. Must be free from breakage , cracks, chipped and sharp edges and surface irregularities including all other defects not stated herein
		13. Comes with a brand marked permanently on the box
43	Volumetric Flask, borosilicate 250 mL	Functional Specifications: Used to measure/prepare/contain a precise volume of standard solutions at a certain temperature and precise dilution of solutions up to 250 mL
		Performance Specifications: Must be able to measure/prepare/contain a precise volume of standard solutions at a certain temperature and precise dilution of solutions up to 250 mL
		Design Specifications:
		1. Type: Class A
		2. Shape : A round or pear-shaped bulb, a long thin neck topped by a snap cap and with flat bottom
		3. Material of body: Borosilicate , clear, transparent and bubble-free, glass with the following dimensions:

No.	Item Name	Technical Specifications
		a) Height: 225 mm
		b) Outside diameter : 78 mm (approx.)
		c) Size: 250 mL
		d) Tolerance: ± 0.12 mL
		4. With heavy duty rim
		5. Comes with snap cap
		a) Material of snap cap :High density plastic (polyethylene)
		b) With octagonal grip
		c) Snap-cap : No. 250
		d) Color of snap cap: Blue
		6. Must meet ASTM E- 694 for volumetric ware, ASTM E-542 for calibration of volumetric ware and ASTM E-288 for volumetric flasks.
		7. Calibrated "to contain" (marked "TC" or "IN")
		8. Manufacturer should be accredited by NIST standards or its equivalent to the country of origin to certify that their items are calibrated.
		9. Must be free from breakage, cracks, sharp rims and other defects
		10. Packaging : Roll up glassware in newspaper and secure with a piece of masking tape and place in a bubble pouch and individually packed in a sturdy box
		11. Comes with a brand, with five (5) years existence in the glasswares industry
		14. Must be brand new
44	Watch Glass, Ø 90 mm	Functional Specifications: Used to:
		a) cover glasswares like beakers
		b) evaporates solvents in a sample and
		c) holds/contains liquids and solids prior to heating.
		Performance Specifications: Must be able to:
		a) cover glasswares like beakers
		b) evaporate solvents in a sample and
		c) hold/contain liquids and solids prior to heating.
		Design Specifications:
		1.Shape : Circular concave
		2. Material : Borosilicate, clear, transparent, and bubble-free glass with the following dimensions:
		a) Diameter : 90-91 mm
		b) Thickness range : 1.5 mm to 2.0 mm
		3. Fire-polished rims/edges
		4. Individually wrapped in used newspaper, enclosed in a bubble wrap, and packed in a sturdy box
		5. Must have fire polished edges/rims, be free from breakage, cracks, chipped and sharp edges, surface irregularities including all other defects not stated herein
		6. Comes with a brand marked permanently in the box
		7. Must be brand new

FY 2026 Learning Tools and Equipment - Science and Mathematics Equipment (Direct Release)

Technical Specifications

General Specifications	Inspection and Documentary Proof
1.All items must be brand new.	All items including its parts, components and/or peripherals must not have signs of wear, scratches, dirt, and/or discoloration.
2.All item markings, user manuals, and electronic copies must be in English.	Must be comprehensible English and not directly word per word translated from a different language.
3.All item markings and labels especially intended for proper identification, operation, function, graduation and assembly must be permanently marked on the item.	The markings and labels must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
4.Items requiring assembly must include an assembly manual in English and all necessary peripherals.	Assembly manuals must show a picture/drawing illustration of the assembly with proper worded instruction, labeling of parts and sequence of assembly.
5.Items with power line electrical requirements must conform to and operate on the standard electric supply in the Philippines	Must be compatible to 220V AC, 50/60 Hz, type A power sockets or type B provided that an adaptor for conversion to type A is included.
6.Items requiring consumables must include an initial quantity sufficient to conduct testing.	Must provide the initial necessary consumables to fully make the item functional for testing.
7.All items must have a brand name permanently marked on the item and/or its appropriate packaging.	The brand name marking must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
8.Brand Owner Certification	The bidder must submit a trademark registration proving its exclusive or non-exclusive brand ownership or an authorization from the brand owner that the bidder's manufacturer or the bidder itself will manufacture the items under the brand name for the Department of Education.

9.Manufacturer's Certification	Must submit a Certification from the item Manufacturer that it will manufacture the items for the Department of Education, indicating the following: •The Bidder's company name, company address, and authorized representative(s) •The project name •The list of items In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
10.Manufacturer's International Standards Compliance	Must submit the following valid and unexpired following Certifications: •ISO 9001:2015 – Quality Management System •ISO 14001:2015 – Environmental Management System •ISO 45001:2018 – Occupational Health and Safety Management System In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
11.Business Registration	Must submit a valid BIR Certificate of Registration (COR) under the Line of Business - Sub-Class 46900 (non-specialized wholesale trade).
12.Items requiring spare parts must have parts available to DepEd for a minimum of five (5) years, using the same supplied brand.	Must submit a Certificate of Spare Parts Availability indicating the item name(s) from the item Manufacturer that spare parts shall be made available to the Department of Education for a minimum of five (5) years, using the same supplied brand. In case of multiple Manufacturers, the Bidder must submit Certificates from each of the Manufacturer.

Documentary proof for Items 8, 9, 10, 11, 12, and 13 must be submitted as part of the bid submission. Meanwhile, Items 1, 2, 3, 4, 5, 6, 7, and all other item-specific certifications or documents outlined in the detailed technical specifications shall be submitted and verified during sample evaluation at the Post-Qualification stage.

The bidder shall also execute and submit, together with its bid, a notarized undertaking affirming compliance with all the foregoing requirements.

No.	Item Name	Technical Specifications

No.	Item Name	Technical Specifications

No.	Item Name	Technical Specifications
Chemistry - Chemicals		
1	Benedict's Solution, 100 mL/bottle	Functional Specifications: Used to test for levels/ traces of simple reducing sugars
		Performance Specifications: Must be able to test for the presence (levels of traces) of reducing sugars such as glucose.
		A positive test with Benedict's reagent is shown by a color change from clear blue to:
		a) blue solution - 0 g % (no trace of simple reducing sugar)
		b) green precipitate- 0.5 to 1.0 g % (traces of simple reducing sugar)
		c) yellow precipitate- 1.0-1.5 g % (low simple reducing sugar)
		d) orange precipitate - 1.5 to 2.0 g % (moderate simple reducing sugar)
		e) brick-red precipitate - greater than 2.0 g % (high presence of simple reducing sugar)
		Design Specifications:
		1. Features an aqua blue liquid
		2. Chemical Formula: $CuSO_4.5H_2O + Na_2CO_3 + Na2C_6H_5O_7$
		3. Capacity: 100 mL
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. Comes with a brand printed permanently on the product label
		10. Must be brand new
2	Boric Acid, 100 grams/bottle	Functional Specifications: Used as a substrate in Flame test to visually identify boron or its specific unknown metalloid ion based on the characteristic color it emits on the Bunsen flame.
		Performance Specifications: Must be used as a substrate in Flame test to visually identify boron, or its ion based on the characteristic color it emits on the Bunsen flame. Boric acid emits a bright green color which indicates the presence of boron or its ion
		Design Specifications:
		1. Features a colorless or white, odorless and crystalline solid
		2. Chemical formula : H3BO3
		3. Mass/bottle : 100 g
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.

No.	Item Name	Technical Specifications
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS(Safety Data Sheet)
		9. Comes with a brand printed permanently on the product label
		10. Must be brand new
4	Calcium Chloride, 100 grams / bottle	Functional Specifications: Used as a substrate in Flame test to visually identify calcium or its ion based on the characteristic color it emits on the Bunsen flame.
		Performance Specifications: Used as a substrate in Flame test to visually identify calcium element, or an unknown metalloid ion based on the characteristic color the chemical emits on the Bunsen flame. Calcium chloride emits an orange red/yellowish red color which indicates the presence of the calcium ion
		Design Specifications:
		1. Features a white powder, crystals or granules
		2. Chemical Formula : $CaCl_2$
		3. Mass per bottle : 100 grams
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning.
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and with SDS (Safety Data Sheet)
		9. With brand printed permanently on the product label
		10. Must be brand new
5	Copper Sulfate, $CuSO_4$, 100 grams/bottle	Functional Specifications: Used as : a) an oxidizing agent or oxidant and is reduced in a spontaneous [chemical (redox) reaction decreasing its oxidation state with metals above it, like zinc, in the Activity Series of Metals]
		b) a substrate in Flame test to visually identify copper or its ion based on the characteristic color it emits on the Bunsen flame .
		Performance Specifications: Must be able to
		a) oxidize the other reactant of a spontaneous redox reaction by gaining electrons reducing its oxidation state with metals above it, like zinc, in the Activity Series of Metals, resulting in copper in the free state and the salt of the metal being displaced.
		b) a substrate in Flame test to visually identify copper or its ion based on the characteristic color it emits on the Bunsen flame. Copper sulfate emits blue green color on the Bunsen flame.

No.	Item Name	Technical Specifications
		Design Specifications:
		1. Features a blue, odorless crystalline solid
		2. Chemical formula : $CuSO_4$
		3. Mass per bottle : 100 g
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning.
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. With brand printed permanently on the product label
		10. Must be brand new
8	Magnesium Ribbon, 25 grams, 1 roll	Functional Specifications: Used as a reactant and is ignited over a flame to demonstrate a highly exothermic combustion reaction
		Performance Specifications: Must be able to produce a highly exothermic combustion reaction resulting in a blinding white light and intense heat when ignited over a flame. A white powdery solid, magnesium oxide is produced
		Design Specifications:
		1. Features a relatively soft, lightweight solid metal
		2. Color : Shiny silvery gray--white
		3. Chemical formula : Mg
		4. Form : Solid (ribbon)
		5. Mass per roll : 25-27 g
		6. Number of roll : 1 roll
		7. Comes in original plastic packing
		8. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning.
		9. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		10. Expiration dates should be at least two years
		11. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		12. Comes with a brand printed permanently on the product label
		13. Must be brand new
9	Manganese Dioxide, 50 grams / bottle	Functional Specifications: Used as a catalyst to demonstrate decomposition reaction of hydrogen peroxide and observe its effect on the rate of chemical reaction

No.	Item Name	Technical Specifications
		Performance Specifications: Must be used as a catalyst and to undergo a spontaneous chemical reaction in the decomposition of hydrogen peroxide to produce bubbles of oxygen gas and water and to demonstrate its effect on the rate of chemical reaction
		Design Specifications:
		1. Form: Solid powder
		2. Color : Brown-black solid/ blackish or brown solid
		3. Chemical formula : MnO_2
		4. Mass per bottle : 50 g
		5.Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		6. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning.
		7. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		8. Expiration dates should be at least two years
		9. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		10. Comes with a brand printed permanently on the product label
		11. Must be brand new
11	Phenolphthalein, 100 grams/bottle	Functional Specifications: Used as an indicator to effect a color change to distinguish an acid from a base and in perforing acid base titration
		Performance Specifications: Must be used as an indicator to distinguish and acid from a base and in performing acidbase titration, as it indicates the change in pH by changing its color , the results vary:
		a) For a base, it gives a pink color
		b) For an acid, it is colorless
		Design Specifications:
		1. Features a white to cream, odorless solid powder
		2. Chemical formula : C20H14O4
		3. Mass per bottle : 100 g
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula,the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7.Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. Comes with a brand printed permanently on the product label
		10. Must be brand new

No.	Item Name	Technical Specifications
12	Potassium Chloride, 100 grams / bottle	Functional Specifications: Used as a substrate in Flame test to visually identify a specific element or an unknown metalloid ion based on the characteristic color it emits on the Bunsen flame.
		Performance Specifications: Must be used as :
		a) a substrate in Flame test to visually identify potassium element, or its ion based on the characteristic color it emits on the Bunsen flame.
		Potassium chloride emits a light lilac color which indicates the presence of the potassium ion
		b) as a catalyst and to undergo a spontaneous chemical reaction in the decomposition of hydrogen peroxide to produce bubbles of oxygen gas and water to demonstrate the effect of catalyst on the rate of chemical reaction
		Design Specifications:
		1. Features a white crystalline solid
		2. Chemical formula : KCl
		3. Mass per bottle: 100 g
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula,the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. Comes with a brand printed permanently on the product label
		10. Must be brand new
13	Potassium Iodide, 100 grams / bottle	Functional Specifications: Used as : a) a substrate in Flame test to visually identify potassium or its ion based on the characteristic color it emits on the Bunsen flame
		b) a catalyst to demonstrate decomposition reaction of hydrogen peroxide to form water and oxygen
		Performance Specifications: Must be : a) used as a substrate in Flame test to visually identify potassium , or its ion based on the characteristic color the chemical emits on the Bunsen flame. Potassium iodide emits a lilac color which indicates the presence of the potassium ion
		b) able to undergo a spontaneous decomposition of hydrogen peroxide into bubbles of oxygen gas and water
		Design Specifications:
		1. Features white granules and crystals solid
		2. Chemical formula: KI
		3. Mass per bottle: 100 g

No.	Item Name	Technical Specifications
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula,the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. Comes with a brand printed permanently on the product label
		10. Must be brand new
14	Sodium Hydroxide (Lye), 250 grams/bottle	Functional Specifications: Used :
		a) to differentiate an acid from a base
		b) as a titrant added from a base burette in acid base titration
		Performance Specifications: a) Must turn pink when added with drop/s of phenolphthalein and be able to neutralize an acid to form salt and water
		b) In acid-base titration, the sodium hydroxide is used as a titrant added from an base buret to a known quantity of the analyte (the unknown solution) until the reaction is complete. Knowing the volume of titrant added allows the determination of the concentration of the unknownusing the formula : Na=NbVb/Va
		c) pH value : pH 13-14
		Design Specifications:
		1. Features a white semi-transparent odorless hygroscopic solid
		2. Chemical formula : NaOH
		3. Mass per bottle : 250 grams
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula,the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. Comes with a brand printed permanently on the product label
		10. Must be brand new
15	Zinc Chloride, 100 grams / bottle	Functional Specifications: Used as a substrate in Flame test to visually identify zinc or its ion based on the characteristic color it emits on the Bunsen flame.

No.	Item Name	Technical Specifications
		Performance Specifications: Must be used as a substrate in Flame test to visually identify zinc element or its ion based on the characteristic color it emits on the Bunsen flame. Zinc chloride emits a blue green to pale green/colorless color which indicates the presence of the zinc ion
		Design Specifications:
		1. Features a white crystalline/granular solid powder
		2. Chemical Formula : $ZnCl_2$
		3. Mass per plastic bottle: 100 grams
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula,the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. Comes with a brand marked permanently on the product label
		10. Must be brand new
16	Zinc metal, pellets/mossy, 100 grams / bottle	Functional Specifications: Used as a reducing agent to reduce the other reactant of a single displacement (redox reaction) with metals above it in the Activity Series of Metals
		Performance Specifications: Must be able to reduce the other reactant of a single displacement (redox) reaction with metals above it in the Activity Series of Metals, , like zinc, to produce salt and the displaced metal in its free state
		Design Specifications:
		1. Features a bluish white, or as a grey powder/pellets/mossy solid
		2. Chemical Formula : Zn
		3. Mass per plastic bottle : 100 grams
		4. Comes in original screw type plastic packing, with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula,the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. Comes with a brand printed permanently on the product label
		10. Must be brand new
Chemistry - Molecular Geometry Models		

No.	Item Name	Technical Specifications
1	Model, Atomic Orbital, 82-pc	Functional Specifications: Used as a model/visual three dimensional (3D) representation of the shapes of the 14 different atomic orbitals
		Performance Specifications: A) Must be able to
		a) represent visually the 14 different atomic orbitals
		b) assemble/build the 14 atomic orbitals (basic s, p and d atomic orbitals)
		i) one (1) pc 1s-orbital, unhybridized
		ii) one (1) pc 2s-orbital, unhybridized
		iii) three (3) pc 2p-orbital unhybridized
		iv) five (5) 3d-orbital- unhybridized
		v) one unit with one 2s plus three 2p- orbitals as well vi) as one sp hybrid orbital
		vii) one (1) pc sp unhybridized change to one pc sp hybridized
		viii) one (1) pc sp2 unhybridized change to one pc sp2 hybridized
		ix) one (1) pc sp3 unhybridized change to one pc sp3 hybridized.
		Design Specifications:
		1. The pink & purple pear-shaped lobes to represent the 2-wave (positive and negative) phases of the s, p & d atomic orbitals.The pink and purple, pear-shaped lobes represent the phase Material : Plastic
		2. Opaque white spheres represent atomic nuclei. Material : Plastic
		3. With 14 easy-to-assemble atomic orbitals ((basic s, p and d atomic orbitals) a) 1 pc - 1s, Unhybridized b) 1 pc - 2s, Unhybridized c) 3 pc - 2p, Unhybridized d) 5 pc - 3d, Unhybridized e) 1 pc with one 2s plus three 2p orbitals, Unhybridized f) 1 pc sp, hybrid orbital, Hybridized g) 1 pc sp2 hybrid orbital, Hybridized h) 1 pc sp3 hybrid orbital, Hybridized
		4. Approximate model heights including clear, colorless base range from 50–90 mm. a) 50 mm (s orbital), b) 90 mm (p orbital), and c) 80 mm (d orbital).
		5. The set is composed of the following:
		a) 9 pc Grey atomic orbital parts
		b) 17 pc Purple atomic orbital parts
		c) 19 pc Pink atomic orbital parts
		d) 2 pc White octahedral atom parts
		e) 1 pc Black octahedral 23-24 mm carbon atom part
		f) 1 pc Pink monovalent 17-18 mm atom part
		g) 1 pc Pink monovalent 23-24 mm atom part

No.	Item Name	Technical Specifications
		h) 1 pc Purple d atomic disc-shaped orbital part
		i) 1 pc Black tetrahedral 23-24 mm carbon atom part
		j) 1 pc Black trigonal bipyramidal 23-24 mm carbon atom part
		k) 1 pc Pink octahedral 23-24 mm atom part
		l) (1) Hydrogen H- Bond 17-18 mm atom part
		m) 2 pc White 3-hole 17-18 mm atom parts
		n) 2 pc White 7-hole atom parts
		o) 8 pc Grey rigid 27-28 mm bonds
		p) 14 pc clear transparent Pedestal Stand/ bases
		6. With durable storage case with four compartments for segregation of parts a) Material of storage box: ABS plastic b) Color: Grey c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the compartmentalized storage box, is Acrylonitrile butadiene styrene (ABS), to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier.
		7.) For Contents/ List of materials, In Table form a) For atoms: quantity, name of element(symbol), color code, (number of holes, type of bond angles), diameter of the sphere
		b) For links; bond types and use
		8. With assembly guides, individual worksheets and instructional sheets/leaflets in English
		9. With User's Manual/Teacher's manual in English with full background information
		10. For numbers #8-9, the technical specifications (a- e) must be followed:
		a) For Contents/ List of materials, In Table form
		b) for User's Manual, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences, grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) in 0.3 mm minimum thickness plastic laminated User's Manual/Teacher's Manual/Assembly Guides/ instructional leaflets that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Margins on all sides with 2 point width border line

No.	Item Name	Technical Specifications
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		11. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein.
		12. Comes with a brand marked permanently in the box
		13. Must be brand new
2	Model, Biochemistry Molecular, (262 atom parts)	Functional Specifications: Used as a model/visual 3D representation of some biomolecules: proteins, nucleic acids, lipids, and carbohydrates, their structures
		Performance Specifications: A) Must be able to visually
		a) represent some biomolecules proteins, nucleic acids, lipids, and
		carbohydrates, their structures, and relate them to their function.
		b) observe the chemical bonding
		c) determine whether the biomolecule is polar or non polar given its structure
		B) Assemble all the different biomolecules and study them
		Design Specifications:
		1. Type : Compact/Semi-space filling models
		2. Shape of atom parts : Solid spheres
		3. Material of spheres : Plastic
		4. Diameter of sphere/atom
		a) Hydrogen atom : 16-17mm
		b) Carbon, nitrogen and oxygen atom: 22-23.5 mm
		5. For compact models, bonds are represented by
		a) short links
		b) v-bonds links
		6. Material of links : Plastic
		7. Length of links
		a) short link : 2 mm-11 mm
		b)v-bonds links : 13-14 mm
		8. Color of links:
		a) short link : white/translucent
		b) v-bonds link : white links
		9. With 262 color-coded plastic atoms and 260 links
		10. The Biochemistry Molecular Model set includes the following:
		A. 262 color-coded plastic atom parts
		Quantity(pc) Element Color Number of holes Shape
		i) 68 Black Carbon atoms
		42 pc Carbon Black Four holes Tetrahedral
		. 24 p Carbon Black Three holes Trigonal.
		2 pc Carbon Black Two holes Linear
		ii) 34 Blue nitrogen atoms
		12 pc Nitrogen Blue Four holes Tetrahedral
		12 pc Nitrogen Blue Three holes Trigonal
		10 pc Nitrogen Blue Two hole Angular

No.	Item Name	Technical Specifications
		iii) 40 red oxygen atoms
		20 pc Oxygen Red Two hole Angular
		10 pc Oxygen Red Two hole Linear
		10 pc Oxygen Red Single hole
		iv) 110 White Hydrogen atom parts
		100 pc White molydome links
		10 pc Hydrogen White Two hole Linear
		v) Two (2) Yellow two hole angular sulfur atoms
		2 pc Sulfur Yellow Two hole Angular
		vi) Six (6) purple tetrahedral atoms
		6 pc Phosphorus Purple Four hole Tetrahedral
		vii) 2 grey metal atoms
		One (1) pc Metal Grey Four hole Tetrahedral
		One (1) pc Metal Grey Six hole Octahedral
		viii) 150 NV-links, colorless
		ix) 100 Short white links
		x) 10 V-links, grey
		C. With two pc link remover tool
		Color : cream
		11. With two durable large storage boxes a) Material of storage boxes: ABS plastic b) Color: Grey c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the two large storage boxes, is Acrylonitrile butadiene styrene (ABS), to validate the conformity of the material the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier, with the following dimensions:
		Length : 238-239 mm
		Width : 167-169 mm
		Thickness : 6.0-9.0 mm
		12. With contents/ list of materials in table form, as to:
		a) For atoms: quantity, name of element(symbol), color code, (number of holes, type of bond angles), diameter of the sphere
		b) For links; bond types and use
		13. With Assembly Guides, individual worksheets and instructional leaflets in English
		14. With User's Manual/Teacher's instruction manual in English with full background information
		15. For numbers #13 to 14; technical specifications(a-e) must be followed:

No.	Item Name	Technical Specifications
		a) For Contents List of materials, In Table form
		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) in 0.3 mm minimum thickness plastic laminated Assembly guides/instructional leaflets that shall containthe actual colored picture of the model including the name labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Margins on all sides with 2 point width border line
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		16. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein
		17. Must be have a brand printed permanently on the box
		18. Must be brand new
3	Model, Crystal Structures Set (Graphite, diamond, sodium chloride, carbon dioxide)	Functional Specifications: Used as a model/ visual 3D represention of five crystal compounds
		Performance Specifications: A) Must be able to visually:
		a) represent the four different types of crystals and their properties: ionic, covalent, molecular, and metallic
		b) describe the difference in structure of crystalline (diamond) and amorphous (graphite) solids and
		d) observe the difference of the ionic, covalent and metallic bonds and
		e) determine whether a crystal molecule is polar or non polar given its structure
		B) Assemble the four crystal structures
		Design Specifications:
		1. Type : Open/Ball and stick
		2 Shape of atom parts :Solid spheres
		3 Material of spheres : Plastic with the following dimensions:
		a)Sodium, carbon: 22-23.5 mm
		b) Copper : 25-25.5 mm
		c) Chlorine : 32-32.5 mm
		4. Types of links/bonds
		a) Medium (Single, rigid) links
		b) Long (double/triple, flexible) links

No.	Item Name	Technical Specifications
		5. Material of links: Flexible plastic low density plastic
		6. Length of solid links/rods
		a)Medium: 19-27 mm
		b) Long : 43-44 mm
		7. Color of links/bonds
		Medium links: grey white/purple
		Long links : gray
		8. The Crystal structure set is composed of the following:
		a) Diamond- covalent crystal model (30 atoms) + links = 70 pc
		I. Element Number of holes Angle Shape Color
		i) Carbon (4 hole) 109.5° Tetrahedral Black 30
		ii) Placed in resealable plastic bag
		II. Links/Bonds Color Quantity (pc)
		i) Medium links/ Bonds Grey white 40
		ii) Placed in resealable plastic bag
		b) Sodium chloride (NaCl)-i/onic crystal model (27 atoms)+links= 81 pc
		I. Element Number of holes Shape Color Quantity(pc)
		i) Chlorine 6 hole Octahedral Green 13
		ii) Sodium 6 hole Octahedral Silver gray/grey 14
		iii) Placed in two (2) separate resealable plastic bags
		II. Links/Bonds Color Quantity (pc)
		i) Medium Grey white 54
		ii) Placed in resealable plastic bag
		c) Graphite - covalent crystal model (45 atoms) + links = 100 pc
		This kit is designed to make a three layer model of graphite having 15 carbon atoms in each layer.
		I. Element Number of holes Color Quantity (pc)
		i) Carbon 5 hole Black 39
		ii) Placed in resealable plastic bag
		II. Links/Bonds Color Quantity (pc)
		i) Long connectors Grey/ white 15
		ii) Medium connectors(single, rigid) Grey/ white 46
		iii) Placed in two (2) separate resealable plastic bag
		d) Copper - metallic crystal model/ 14 atoms + links = 50 pc
		Crystal structure : face center cubic
		I. Element Number of holes Color Quantity (pc)
		i) Copper 8 hole Red 8
		ii)Copper 6 hole Red 6

No.	Item Name	Technical Specifications
		iii) Placed in two (2) separate Ziploc plastic bag
		II. Links/Bonds - 36 pc
		Links/Bonds Color Length Quantity (pc)
		i) Medium Grey white 65 mm 24
		ii) Long Grey white 100 mm 12
		iii) Placed in two (2) separate resealable plastic bag
		9. With Link remover tool/Assembly tool
		10. With 1 pc durable plastic storage box a) Material: ABS plastic b) Color: Grey c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the compartmentalized storage box, is Acrylonitrile butadiene styrene (ABS), to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier, with the following dimensions:
		11. Package Dimensions
		a) Length : 235-239 mm
		b) Width : 167-171 mm
		c) Thickness : 68-71 mm
		12. With contents/ list in table form, as to:
		a) For atoms: quantity, name of element(symbol), color code, (number of holes,type of bond angles), diameter of the sphere
		b) For links; bond types and use
		13. With Assembly Guides, individual worksheets and instructional leaflets in English
		14. With User's Manual/Teacher's instruction manual in English with full background information
		15. For numbers #12 to 14; they must follow technical specifications a-e:
		a) For Contents List of materials, In Table form
		b) for User's Manual, Instruction Sheets/Assembly Guides, In
		format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations

No.	Item Name	Technical Specifications
		e) in 0.3 minimum thicness plastic laminated keycard that shall containthe actual colored picture of the model including the name: labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Margins on all sides with 2 point width border line
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled.
		16. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein
		17. Comes with a brand marked permanently in the box
		18. Must be brand new
4	Model, Molecular, Inorganic/Organic (307-pc)	Functional Specifications: Used as a model/visual three dimensional (3D) representation of the different inorganic/organic compounds
		Performance Specifications: Must be able to :
		a) visually represent the molecular structures of many inorganic/organic molecules and
		b) assemble inorganic/organic compounds to show covalent and ionic bonding and c) determine whether a molecule is polar or non polar given its structure
		Design Specifications:
		1. Type : Ball and stick
		2. Shape of atom parts : Solid spheres
		3. Material of spheres : Plastic
		4. Diameter of sphere/atom
		a) Hydrogen and chlorine atoms : 17-17.5 mm
		b) Other atoms : 23-23.5 mm
		5. Material of links: Flexible plastic low density polyethylene (LDPE) solid links
		6. Length, color and quantity of solid links/rods
		a) Short links
		i) Type : For space filling
		ii) Length : 11-12 mm
		ii) Color : Translucent/white
		iii)Quantity: 60 pc
		b) Medium links
		i) Type : Single, rigid
		ii) Length : 27-28 mm
		iii) Color : Grey
		iv)Quantity: 60 pc
		c) Long links
		i) Type : Double/triple/flexible
		ii) Length : 43-44 mm
		iii) Color : Grey
		iv) Quantity : 30 pc

No.	Item Name	Technical Specifications
		7. With 126 atoms, 30 orbitals, 150 links and 1 short link remover tool
		8. The inorganic/organic molecular model set is composed of the following:
		I. Shape — No. of holes — Angles — Element/atom — Color — Qty(pc)
		a) Tetrahedral — 4 holes — 109°28' — Carbon — Black — 30
		b) Trigonal bipyramidal — 5 holes — 90°/120° — Carbon — Black — 8
		c)Linear — 2 holes — 180° — Carbon — Black — 2
		d) Trigonal — 3 holes — 120° — Carbon — Black — 6
		e) Divalent — 2 holes — 105° — Oxygen — Red — 14
		f) Monovalent — 1 hole — Hydrogen — White — 45
		g)Tetrahedral — 4 holes — 109°28' — Nitrogen — Blue — 4
		h)Divalent — 2 holes — 105° — Sulfur — Yellow — 1
		i) Tetrahedral — 4 holes — 109°28' — Sulfur — Yellow — 1
		j) Tetrahedral — 4 holes — 109°28' — Phosphorus — Purple — 4
		k) Monovalent — 1 hole — 180° — Chlorine — Green — 8
		l) Octahedral — 6 holes — 90° — Metal — Silver/grey — 2
		m) Divalent atom — Grey — 1
		II. Orbitals: 30 pc
		Orbitals — Lengths — Color — Quantity (pc)
		a) Pi orbitals — 38 mm — purple — 6
		b) Pi orbitals — 38 mm — pink — 6
		c) P orbitals — 38 mm — purple — 6
		d) P orbitals — 38 mm — pink — 6
		e) P orbitals — 38 mm — beige — 6
		III. Links (represented the bonds): 150 links
		Material of bonds/links : Rigid, non-toxic Flexible plastic (LDPE)
		Links — Type/Kind of bonds — Length — Color — Quantity(pc)
		a) Medium links — (single, rigid) — 27 mm — Grey — 60
		b) Long links — double/triple/flexible — 43 mm — Grey — 30
		c) Short links (for space filling) — 11 mm — Translucent/ White — 60
		9. One (1) pc Link remover tool/Assembly tool

No.	Item Name	Technical Specifications
		10. With durable storage box a) Material of storage box: ABS plastic b) Color: Grey c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the compartmentalized storage box, is Acrylonitrile butadiene styrene (ABS), to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier, with the following dimensions :
		a) Length : 238-239 mm
		b) Width : 167-168 mm
		c) Thickness : 68-70 mm
		11. With contents/ list of materials, in table form, as :
		a) For atoms: quantity, name of element(symbol), color code, (number of holes, type of bond angles), diameter of the sphere
		. b) For links; bond types and
		12. With Assembly guides, Individual Worksheets and Instructional leaflets
		13. With User's Manual/Teacher'sManual in English with full background information
		14. For numbers #12 to 13; technical specifications (a-e) must be strictly followed:
		a) For Contents/ List of materials, In Table form
		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) With colored pictures, drawings/illustrations
		e) in 0.3 mm minimum thickness plastic laminated that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Margins on all sides with 2 point width border line
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled

No.	Item Name	Technical Specifications
		15. Comes with a brand marked permanently on the box
		16. Must be brand new
5	Model, Sublevel Orbitals of the Atom (Quantum)	Functional Specifications: Used as a visual representation of the spatial three-dimensional (3D) model of the shapes of the orbitals (azimuthal quantum number) of the sublevels of the major energy levels of the first ten elements of the Periodic Table
		Performance Specifications: Must be able to :
		A)visually represent the spatial three-dimensional (3D) model of the shapes of the orbitals to describe the quantum mechanical model (azimuthal quantum model) of the first ten elements in the Periodic Table
		a) two (2) pc s orbitals
		i)1s-orbital and
		ii)2s-orbital,
		b) the three (3) p orbitals
		i) $2p_x$-orbital
		ii) $2p_y$-orbital, and
		iii) $2p_z$-orbital
		c) the position and number of electrons along the x, y and z axis
		d) the orbitals of the sublevels of the major energy levels
		B) Assemble the sublevel orbital of the first ten elements of the Periodic Table based on the electronic configuration of each, to review on the four (4) quantum numbers and rules in filling up the orbitals (the Aufbau Principle, Pauli's exclusion principle, and Hund's rule) , to study and learn the correct position and number of electrons along the x, y and z axis,as well as the orbitals of the sublevels of the major energy levels
		Design Specifications:
		1.With 12 Models of the Sublevel orbitals of the atom
		2. With color-coded components which include the following:
		3. ORBITALS
		a) 1s-orbitals (K shell)
		Shape of 1s orbital: Small sphere
		Material : Plastic
		Color : Blue
		Quantity : 12 pc
		b) 2s-orbitals (L shell)
		Shape of 2s orbital : Large sphere
		Material : Plastic
		Color : Orange
		Quantity : 12 pc
		c) p-orbitals (M shell)
		i)p_x -orbitals
		Shape of orbital : Pear shaped lobes
		Material : Plastic
		Color : Red
		Quantity : 24 pc
		ii) p_y-orbitals

No.	Item Name	Technical Specifications
		Shape of orbital: Pear shaped lobes
		Material : Plastic
		Color : Yellow
		Quantity : 24 pc
		iii) p_z -orbital
		Shape of orbital : Pear shaped lobes
		Material : Plastic
		Color : Green
		Quantity : 24 pc
		d) Bases
		Shape : Spherical
		Material : Plastic
		Color : White
		Quantity : 12 pc
		e) Crossbars (x and z axes)
		Shape : Cross-shaped
		Material : Durable non-toxic plastic
		Color : White
		Quantity : 12 pc
		f) Electrons
		Shape : Small circular cutouts in a plastic sheet
		Material : Plastic
		Color : Black
		Quantity : 1 whole plastic sheet with cut out 128 pc electrons
		g) Uprights (y axes)
		Shape : Long, cylindrical sticks
		Material : Plastic
		Color : Cream
		Quantity: 12 pc
		4. Individually packed per item as segregated above in separate resealable plastic bags
		5. With durable plastic storage box a) Material: ABS plastic b) Color: Grey c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the storage box, is Acrylonitrile butadiene styrene (ABS), to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier.
		6. With List of Contents in the set
		7 With Teacher's Guide
		8. With 30 Student Worksheets and Guides, Part I and Part II
		9. With quantum numbers chart provided on each student worksheet to help students assemble the models starting with the 1s orbitals.
		10. Detailed instructions provided.

No.	Item Name	Technical Specifications
		11. For numbers 6-10, the following technical specifications from (a-e) must be followed:
		a) For Contents/ List of materials, In Table form
		b) For User's Manual, Teacher's Guide, StudentWorksheets, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) in 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Orientation:Portrait
		v) Margins on all sides with 2 point width border line
		vi) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		12. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein
		13. Comes with a brand marked permanently on the box
		14. Must be brand new
6	Model, VSEPR, 14 shapes (50-pc)	Functional Specifications: a) Used as a visual 3D representation of the 14 different shapes of simple molecules with corresponding angles to perform exercises on VSEPR theory using models
		b) describe the geometry of simple compounds
		Performance Specifications: A) Must be able to visually:
		a) represent all the 14 different shapes of simple molecules with corresponding angles to perform exercises on VSEPR theory
		b) describe the geometry of simple compounds
		B) Assemble the 14 different shapes of VSEPR Models and study them
		Design Specifications:
		1. Type : Ball and stick
		2. Shape of atom parts : Solid spheres
		3. Material of spheres : Plastic
		4. Diameter of sphere/atom
		a) Hydrogen, halogen, and metal sphere/atom:-16-17.5 mm
		b) Other atoms : 22-23.5 mm
		5. The VSEPR Theory model set is composed of the following:
		I. With central atoms to construct 14 VSEPR shapes;
		Color Number of holes Shape Example
		metallic grey 2 hole linear (e.g.,beryllium in $BeCl_2$
		yellow 3 hole trigonal planar (e.g., sulfur in SO_3)
		yellow 3 hole trigonal (e.g., sulfur in SO_2)

No.	Item Name	Technical Specifications
		black 4 hole tetrahedral (e.g., carbon in CH_4)
		yellow 4 hole tetrahedral (e.g., sulfur in SO_3^{2-})
		red 4 hole tetrahedral (e.g., oxygen in H_2O)
		light green 4 hole tetrahedral (e.g., flourine in HF)
		light brown 5 hole trigonal bipyramidal (e.g., phosphorus in PCl_5)
		yellow 5 hole trigonal bipyramidal (e.g., sulfur in SF_4)
		green 5 hole trigonal bipyramid (e.g., chlorine in ClF_3)
		purple 5 hole trigonal bipyramidal (e.g., xenon in XeF_2)
		grey 6 hole octahedral (e.g., metal complexes)
		brown 6 hole octahedral (e.g., bromine in BrF_5)
		copper 6 hole octahedral (e.g., copper complexes)
		b. With the following links/bonds:
		Quantity(pc) Color Links Bonds
		50 grey medium links single bonds
		15 purple medium links lone pairs
		6 white short links cyanide group
		6. Comes with short link remover tool
		7. With durable plastic storage box a) Material: ABS plastic b) Color: Grey c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the four compartmentalized storage box, is Acrylonitrile butadiene styrene (ABS), to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier
		8. With contents/ list of materials in table form
		9. With detailed assembly guides and instructional leaflets s provided.
		10. With assembly guides, individual worksheets and instructional leaflets
		11. With User's Manual/Teacher's instruction manual in English with full background information.
		12. For numbers #8 to 10 technical specifications (a-e) must be strictly followed:
		a) For Contents List of materials, In Table form
		b) for User's Manual, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others

No.	Item Name	Technical Specifications
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) in 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Orientation: Portrait
		v) Margins on all sides with 2 point width border line
		vi) Line with arrow head of 1.25 point with width shall point to the specific part being labeled.
		13. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein
		14.Comes with a brand printed permanently onto the box
		15. Must be brand new

FY 2026 Learning Tools and Equipment - Science and Mathematics Equipment (Direct Release)

Technical Specifications

General Specifications	Inspection and Documentary Proof
1.All items must be brand new.	All items including its parts, components and/or peripherals must not have signs of wear, scratches, dirt, and/or discoloration.
2.All item markings, user manuals, and electronic copies must be in English.	Must be comprehensible English and not directly word per word translated from a different language.
3.All item markings and labels especially intended for proper identification, operation, function, graduation and assembly must be permanently marked on the item.	The markings and labels must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
4.Items requiring assembly must include an assembly manual in English and all necessary peripherals.	Assembly manuals must show a picture/drawing illustration of the assembly with proper worded instruction, labeling of parts and sequence of assembly.
5.Items with power line electrical requirements must conform to and operate on the standard electric supply in the Philippines	Must be compatible to 220V AC, 50/60 Hz, type A power sockets or type B provided that an adaptor for conversion to type A is included.
6.Items requiring consumables must include an initial quantity sufficient to conduct testing.	Must provide the initial necessary consumables to fully make the item functional for testing.
7.All items must have a brand name permanently marked on the item and/or its appropriate packaging.	The brand name marking must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
8.Brand Owner Certification	The bidder must submit a trademark registration proving its exclusive or non-exclusive brand ownership or an authorization from the brand owner that the bidder's manufacturer or the bidder itself will manufacture the items under the brand name for the Department of Education.

9.Manufacturer's Certification	Must submit a Certification from the item Manufacturer that it will manufacture the items for the Department of Education, indicating the following: •The Bidder's company name, company address, and authorized representative(s) •The project name •The list of items In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
10.Manufacturer's International Standards Compliance	Must submit the following valid and unexpired following Certifications: •ISO 9001:2015 – Quality Management System •ISO 14001:2015 – Environmental Management System •ISO 45001:2018 – Occupational Health and Safety Management System In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
11.Business Registration	Must submit a valid BIR Certificate of Registration (COR) under the Line of Business - Sub-Class 46900 (non-specialized wholesale trade).
12.Items requiring spare parts must have parts available to DepEd for a minimum of five (5) years, using the same supplied brand.	Must submit a Certificate of Spare Parts Availability indicating the item name(s) from the item Manufacturer that spare parts shall be made available to the Department of Education for a minimum of five (5) years, using the same supplied brand. In case of multiple Manufacturers, the Bidder must submit Certificates from each of the Manufacturer.

Documentary proof for Items 8, 9, 10, 11, 12, and 13 must be submitted as part of the bid submission. Meanwhile, Items 1, 2, 3, 4, 5, 6, 7, and all other item-specific certifications or documents outlined in the detailed technical specifications shall be submitted and verified during sample evaluation at the Post-Qualification stage.

The bidder shall also execute and submit, together with its bid, a notarized undertaking affirming compliance with all the foregoing requirements.

No.	Item Name	Technical Specifications
Earth and Space - Models, Tools and Instruments		
1	Anemometer with Wind Vane, Cup type	Functional Specifications: Used to measure wind speed in real time and indicate the direction where the wind is coming from and where it is heading
		Performance Specifications: Should be able to measure wind speed in real time and indicate the direction where the wind is coming from and where it is heading
		Design Specifications:
		1. Anemometer and wind vane combined in 1 unit
		2. Dimension of unit : 340-350 mm x 75-80 mm x 75-80 mm (H x W x D)
		3. Powered by AA dry cells
		4. Direct digital reading of wind speed, can display wind speed in m/s and km/hr, can measure average wind speed and instantaneous wind speed by means of selector switch

No.	Item Name	Technical Specifications
		5. Wind vane should be free moving to indicate wind direction, wind vane should have arrow head on one end and arrow tail on the other end
		6. Made of corrosion resistant material
		7. All labels, inscriptions, and instructions should be in English
		8. The item should be free from toxic materials
		9. The item should be branded and permanently marked on the item
2	Barometer-Thermometer-Humidity (3-in-1 Analog Instrument)	Functional Specifications: Used to measure simultaneously the prevailing local: atmospheric pressure, air temperature, relative humidity
		Design Specifications:
		1. Main scale: Barometer scale analog:
		Dial Diameter: 98 mm - 135 mm; Depth: 20 - 30 mm
		Should have millibar (mbar) or hecto pascal (hpPa) with range of 960 to 1060 mbar or hPa, at 1 mbar or 1 hPa graduations
		Materials: Plastic or metal body casing, clear transparent cover
		With adjustment screw/knob
		2. Secondary and tertiary analog scales for temperature and humidity
		Dial diameter for temperature and humidity: 20-25 mm
		3. Temperature scale range: -30 to 60 0C, 10C graduations, analog
		4. Humidity scale range 0-100%, 1% or 2% graduations analog
3	Compass, Magnetic	Functional Specifications: Used to find direction on the earth's surface by the alignment of the compass needle with the earth's magnetic field
		Performance Specifications: Should be able to find direction on the earth's surface by the alignment of the compass needle with the earth's magnetic field
		Design Specifications:
		1. Outside Diameter: 48-50 mm
		2. Needle mounted in an Aluminum case with clear, scratch-free plastic or glass face
		3. Graduated dial marked in cardinal points (North, South, West, East, Northwest, Northeast, Southwest, and Southeast).
		4. Must be branded and permanently marked on the item
4	Hand Lens, 10x magnification	Functional Specifications: Used for enlarging the appearance of objects 10 times its actual size
		Performance Specifications: Should be able to enlarge the appearance of objects 10 times its actual size
		Design Specifications:
		1. Magnification: x 10
		2. Diameter (viewable area) 18-20 mm
		3. Body: Stainless steel;
5	Model, Seismograph	Functional Specifications: Used to demonstrate how a seismograph records earthquakes and their comparative strengths

No.	Item Name	Technical Specifications
		Performance Specifications: Should be able to demonstrate how a seismograph records earthquakes and their comparative strengths, specifically: 1. The recording pen is attached to a weight suspended from a support that is connected to a metal base stand. 2. The support moves with the vibrations & the pen records on a recording paper as the paper is manually pulled through a metal frame 3. Earthquakes are simulated by vibrating the table on which the model is mounted.
		Design Specifications:
		1. Consist of a roll of recording paper (63-65 mm wide) with mounting, recording pens, suspended weight, support with a painted metal base stand, recording frame, and table clamp (opening-63-65 mm). The metal stand rod (320-325 mm long) and metal support are chrome-plated. The metal frame is of galvanized iron sheet.
		2. Base dimensions : 293-298mm x 152-157mm x 23-28mm
		3. With English User's manual that includes the operation and guide on how to assemble the model.
		4. Brand must be permanently marked in the item.
6	Model, Solar System	Functional Specifications: Used to show the sun and the eight (8) major planets of the solar system in three dimensions, in correct order from the nearest to the farthest from the sun
		Performance Specifications: Should be able to show the sun and the eight (8) major planets of the solar system in three dimensions, in correct order from the nearest to the farthest from the sun
		Design Specifications:
		1. shows the eight (8) major planets of the solar system namely: a) Mercury, b) Venus, c) Earth, d) Mars, e) Jupiter, f) Saturn, g) Uranus, and h) Neptune with each planet color code and shaded correctly
		2. each planet can be manually operated to revolve around sun
		3. Dimensions: Sun: 5.75-6.5" diameter, Total dimension: height 13.5-14.5 inches; length 20.5-21.5 inches, plated steel arm
		4. Sun made of plastic material, support base made of metal
		5. Must be branded and permanently marked on the item
7	Model, Sun-Earth-Moon	Functional Specifications: Used to show the relative locations of the sun, the earth and the moon three dimensions, and the synchrous revolutions of the moon around the earth and the earth's revolution around the sun
		Performance Specifications: Should be able to show the relative locations of the sun, the earth and the moon three dimensions, and the synchrous revolutions of the moon around the earth and the earth's revolution around the sun
		Design Specifications:

No.	Item Name	Technical Specifications
		1. Hand-operated gear drive that moves the Earth and moon in relation to the Sun. Shows the Earth's rotation, revolution, day and night, tilt of its axis, phases and eclipses of the Moon. Supported by a sturdy base and chrome-plated steel parts
		2. Sun's sphere is illuminated with hole to focus a beam of light always to the globe; also indicates the month and phase of the moon in relation to the sun.
		3. All spheres (Sun, Earth, Moon) made of plastic; sizes must reflect relative differences of sizes between Sun, Moon, and Earth. Sun's diameter 5.5-6.5 inches.
		4. The Nine Dash Line should not appear.
		5. With English User's Manual that includes operation guide and guide on how to replace the bulb in the model
8	Rain Gauge	Functional Specifications: Used to measure the amount of rainfall at a certain period
		Performance Specifications: Should be able to measure the amount of rainfall at a certain period
		1. Made of clear and transparent plastic; thickness: 2-3 mm
		2. Permanently marked accurate scale at 1 mm or 2 mm graduations
		3. Maximum measuring graduation at least 150 mm
		4. Straight or tapered type design
		5. Comes with mounting bracket for mounting onto post
		6. Must have packaging
9	Reaction Plates with 6 Wells	Functional Specifications: Used to contain small amount of samples of specimens under study
		Performance Specifications: Should be able to contain small amount of samples of specimens under study
		Design Specifications:
		1. Made of clear, non-toxic plastic material that is free from sharp edges.
		2. Plate Shape: Rectangular
		3. Plate Length: 110-120mm
		4. Plate Width: 85-100mm
		5. Six Well per Plate
		6. Well Shape: Circular/ Round
		7. Well diameter: 30-35 mm
		8. Well deep: 6-8mm
		9. Well capacity: 1.6 mL -2.0mL
		10. Used for soil and water testing
		11. Must be branded and permanently marked on the item
10	Sedimentator Tube	Functional Specifications: Used to demonstrate how soil sediments settle in water
		Performance Specifications: Should be able to demonstrate how soil sediments settle in water
		Design Specifications:
		1. 10 1/2 inches - 12 inches height with a diameter of 1 - 1 1/2 inches
		2. Sealed and leak free
		3. The body made of clear, transparent plastic tube.

No.	Item Name	Technical Specifications
		4. With different sediment and crystal clear water.
		5. Functions:
		a. Use for observing movement, deposition, and layering of sediments and organic materials.
		b. Observations apply to sedimentary rock formation and fossil formation
		6. With English User's Manual that includes
		a. operation guide.
		b. Guide on how to use
		c. Student Activity Sheets
		7. Brand must be permanently marked on the item.
11	Soil pH, Moisture, Sunlight Meter	Functional Specifications: Used to measure pH, moisture content of soil and measure sunlight available to the soil sample in real time
		Performance Specifications: Should be able to measure pH, moisture content of soil and measure sunlight available to the soil sample in real time
		Design Specifications:
		1. Compose of two electrodes, 7 inches -10 inches long
		2. pH/ Moisture/ Sunlight Switch
		3. pH Range: 3.5 - 8 pH (3.5-6.5 Acidic, 7-8 Alkaline)
		4. Moisture Range: 1-10 (1-3 Dry; 4-6 Normal; and 7-10 Wet)
		5. Light Range: 0 - 2000 lux (0-200 Low, 200-500 Low+, 500-1000 Normal, and 1000-2000 High)
		6. With English User's Manual that includes:
		a. Operation Guide
		b. Procedure on the proper use, handling and storage.
		c. Student Activity in using the item.
		7. Comes with a training video that shows the actual equipment submitted and approved during the sample evaluation and shall contain the following:
		I. Training Video Contents:
		a. Name of the equipmentb. Parts of the equipmentc. Instruction on how to use the equipmentd. Sample Experiment/Activity using the equipmente. Maintenance of the equipmentf. Troubleshootingg. Storage and safekeeping (include cleaning) of the equipment
		II. Training Video details:
		a. Shall be in MP4 format.b. Shall be saved in a USB 3.0 Flash Drive.c. Shall have a High-Definition resolution of at least 1080p.d. Shall have a readable subtitle (font style & size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle.e. Shall comply an aspect ratio of 4:3.f. Shall have a cover video pane containing the equipment name and a video pane for each video content.g. The video, voiceover (audio), and subtitle shall be in sync.h. The training video shall cover all the above requirement (video contents).
		8. Brand must be permanently marked on the item.
12	Soil/Test Sieve	Functional Specifications: Used to separate and segragate different size soil particles

No.	Item Name	Technical Specifications
		Performance Specifications: Should be able to separate and segragate different size soil particles
		Design Specifications:
		1. Diameter range: 8 inches - 10 inches
		2. Mesh sizes: 5 Mesh, 10 mesh, 35 Mesh, 60 mesh, 120 mesh, and 230 mesh
		3. Made of stainless steel metal
		4. Set of Six Sieves
		5. Includes lid and catch pan
		6. Must be branded and permanently marked on the item

FY 2026 Learning Tools and Equipment - Science and Mathematics Equipment (Direct Release)

Technical Specifications

General Specifications	Inspection and Documentary Proof
1.All items must be brand new.	All items including its parts, components and/or peripherals must not have signs of wear, scratches, dirt, and/or discoloration.
2.All item markings, user manuals, and electronic copies must be in English.	Must be comprehensible English and not directly word per word translated from a different language.
3.All item markings and labels especially intended for proper identification, operation, function, graduation and assembly must be permanently marked on the item.	The markings and labels must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
4.Items requiring assembly must include an assembly manual in English and all necessary peripherals.	Assembly manuals must show a picture/drawing illustration of the assembly with proper worded instruction, labeling of parts and sequence of assembly.
5.Items with power line electrical requirements must conform to and operate on the standard electric supply in the Philippines	Must be compatible to 220V AC, 50/60 Hz, type A power sockets or type B provided that an adaptor for conversion to type A is included.
6.Items requiring consumables must include an initial quantity sufficient to conduct testing.	Must provide the initial necessary consumables to fully make the item functional for testing.
7.All items must have a brand name permanently marked on the item and/or its appropriate packaging.	The brand name marking must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
8.Brand Owner Certification	The bidder must submit a trademark registration proving its exclusive or non-exclusive brand ownership or an authorization from the brand owner that the bidder's manufacturer or the bidder itself will manufacture the items under the brand name for the Department of Education.

9.Manufacturer's Certification	Must submit a Certification from the item Manufacturer that it will manufacture the items for the Department of Education, indicating the following: •The Bidder's company name, company address, and authorized representative(s) •The project name •The list of items In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
10.Manufacturer's International Standards Compliance	Must submit the following valid and unexpired following Certifications: •ISO 9001:2015 – Quality Management System •ISO 14001:2015 – Environmental Management System •ISO 45001:2018 – Occupational Health and Safety Management System In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
11.Business Registration	Must submit a valid BIR Certificate of Registration (COR) under the Line of Business - Sub-Class 46900 (non-specialized wholesale trade).
12.Items requiring spare parts must have parts available to DepEd for a minimum of five (5) years, using the same supplied brand.	Must submit a Certificate of Spare Parts Availability indicating the item name(s) from the item Manufacturer that spare parts shall be made available to the Department of Education for a minimum of five (5) years, using the same supplied brand. In case of multiple Manufacturers, the Bidder must submit Certificates from each of the Manufacturer.

Documentary proof for Items 8, 9, 10, 11, 12, and 13 must be submitted as part of the bid submission. Meanwhile, Items 1, 2, 3, 4, 5, 6, 7, and all other item-specific certifications or documents outlined in the detailed technical specifications shall be submitted and verified during sample evaluation at the Post-Qualification stage.

The bidder shall also execute and submit, together with its bid, a notarized undertaking affirming compliance with all the foregoing requirements.

No.	Item Name	Technical Specifications
Mathematics - Manipulatives		
2	Balance, Double-pan	Functional Specifications: Used to compare object masses.
		Performance Specifications: 1. Must be able to measure mass of an object up to 2000 grams. 2. Pre-adjusted i.e., as the Balance is on a level and stable surface with the main rider and supplementary rider are zero "0" and the taring poise/weight at utmost left end, the Balance can be set to equilibrium zero "0" by turning the fine tuning knob.
		Design Specifications:
		1) Used for comparative weighing to determine the difference in mass between two (2) objects, the double-platform beam balance comes equipped with built-in sliding masses and taring poise.
		2) Capacity: 2,000 grams
		3) Readability: 2 grams

No.	Item Name	Technical Specifications
		4) Weigh Beam Capacity x Readability: 10 g x 0.1 g, 200 g x 10 g
		5) NTEP Resolution: 1 : 5,000
		6) Platform size: Ø15-16 cm
		7) Platform type: Plate (metal)
		8) Dimensions (w x d x h): 35-37 cm x 24-26 cm x 17-19 cm
		9) Comes with four (4) Weights as follows:
		9.1) 1 pc. 1,000-gram Weight
		9.2) 1 pc. 500-gram Weight
		9.3) 1 pc. 200-gram Weight
		9.4) 1 pc. 100-gram Weight
		10) Comes with an Instruction Manual in English.
		11) Comes with a storage plastic case.
		12) Manufacturer of the country of origin shall issue certificate of calibration for every item.
		13) Brand/Model must be permanently marked on the item.
		Performance Specifications: Must be able to show relationship among sides and angles of special right triangles.
		Design Specifications:
		1. Material: Plastic, smooth, not flexible and with handle
		2. Permanent graduation markings in cm in all sides
		3. For 30° x 60°:
		Base: 50 cm minimum
		Thickness: 4 mm minimum
		4. For 45° x 45°:
		Base: 50 cm minimum
		Thickness: 4 mm minimum
		5. Individually packed in a sturdy plastic bag with zipper
		6. The items shall be free from toxic materials.
		7. Brand must be permanently marked on the item.
3	Base Ten Blocks	Functional Specifications: Used to demonstrate abstract mathematical concept of the number system such as one-to-one correspondence, place value, and basic addition and subtraction
		Performance Specifications: Must be able to demonstrate a number's value and place value and vice versa.
		Design Specifications:
		1). Made of plastic, smooth surface and edges, and free from toxic materials
		2). The set includes 100 units (1 cm x 1 cm x 1 cm [minimum]), 10 rods (1 cm x 1 cm x 10 cm [minimum]), 10 flats (1 cm x 10 cm x 10 cm [minimum]), and 1 cube (10 cm x 10 cm x 10 cm [minimum]).
		Note: Each block should have distinct color from each other (e.g.: Unit - Red, Rod - Yellow, Flat - Green, Cube - Blue).
		3). Comes with a plastic container with cover to accommodate all the items.
		4). Shall be free from toxic materials. (Certificate of Non-Toxicity)
		5). Brand must be permanently marked on the plastic container.
4	Beads	Functional Specifications: Used to reinforce counting, sorting, patterning and sequencing.

No.	Item Name	Technical Specifications
		Performance Specifications: Must be able to scaffold learners in counting and grouping of numbers, colors, patterns, etc.
		Design Specifications:
		1) Comprises 5 sets of beads. A set is composed of 100 beads of 10 different colors, pre-inserted in color group array in a cord that can be easy to be moved within. Cord knotted on ends to prevent loose but can be untied for easy change of grouping and patterns.
		2) Beads hole passes through the center.
		3) Bead diameter: 9.5 mm to 16 mm
		4) Cord length: at least 25% longer than the total length of the 100 beads.
		5) Comes with a plastic transparent storage container with cover.
		6). The items shall be free from toxic materials. (Certificate of Non-Toxicity)
		7). Comes with nylon string of 5-6 meters long that fit loosely to beads hole
5	Circle Area Demonstrator	Functional Specifications: Used to demonstrate area of a circle.
		Performance Specifications: Performance: Must be able to show/demonstrate derivation of circle's area and how dimensions of a parallelogram is related to it.
		Design Specifications:
		1). Material: Plastic
		2). Circle Diameter: 196 mm (minimum) - Each half comes in different colors or all sectors come in one color to cater item availability.
		3). Thickness: 5 mm (minimum)
		4). Dissectible into at least 16 sectors
		5). Comes with base for mounting the circle and the sectors.
		6). Shall be free from toxic materials. (Certificate of Non-Toxicity)
6	Compass, Drawing, student type	Functional Specifications: Used to draw/construct arcs, semi-circles and circles.
		Performance Specifications: Must be able to draw/construct arcs, semi-circles and circles.
		Design Specifications:
		1). Compass, two legs, solid metal,rigid (not bending); corrosion resistant and smooth
		2). Length: 150mm - 200mm;
		3). With pencil adaptor attached at or integrated on one end of one of the legs. The said adaptor must be able to adapt, also, to any kind of pencil available in the local market;
		4). Solid metal, rigid (not bending);
		5). Comes with transparent plastic case or box; and
		6). Brand must be permanently printed on the item/case.
7	Cuisenaire Rods, set of 5	Functional Specifications: Used to provide an interactive, hands-on way to explore mathematics and learn mathematical concepts, such as the four basic arithmetical operations, working with fractions and finding divisors.

No.	Item Name	Technical Specifications
		Performance Specifications: Must be able to demonstrate four fundamental operations, part-to-whole concept, decimals and other concepts related to number sense and measurement.
		Design Specifications:
		1). Made of hard, smooth finish plastic materials.
		2). One (1) set is composed of 74 cuisenaire rods of different colors.
		3). Each color represents a specific rod length.
		4). Rod Lengths are: 1cm -white, 2cm - red, 3cm - yellow green, 4cm - purple, 5cm - yellow, 6cm - green, 7cm - black, 8cm - brown, 9cm - blue, and 10cm - orange.
		5). Comes in a plastic storage container with cover that accomodates 5 sets of cuisenaire rods.
		6). The item shall be free from toxic materials. (Certificate of Non-Toxicity)
		7). Brand must be permanently printed on the case.
8	Elapsed Time (Clock) Set	Functional Specifications: Used to demonstrate time and other related concepts.
		Performance Specifications: Must be able to represent and demonstrate time using hour hand and minute hand.
		Design Specifications:
		1). A set includes:
		a. Two Twelve (12) hour demonstration clock, magnetic
		b. Segmented timeline, 24-hour timeline (AM and PM) which makes up of 4 segments
		c. Removable guide numbers
		d. Start and End arrows
		2). Dial diameter measures 24-26 cm
		3). The hour number must be printed in Hindu Arabic numeral and with corresponding minute(s) number in the same numeral format.
		4). The item shall be free from toxic materials. (Certificate of Non-Toxicity)
		5). Brand must be permanently printed on the case.
9	Geoboard, 11 x 11	Functional Specifications: Used to explore basic concepts in plane geometry such as perimeter, area and the characteristics of triangles and other polygons.
		Performance Specifications: Must be able to demonstrate or visually represent different kinds of polygons and circles and how to compute their respective area, perimeter, and circumference.
		Design Specifications:
		1). Double sided geoboard - square pattern on one side (11 x 11), circle on the other;
		2). Made of plastic material and comes in any color;
		3). The surfaces and edges must be smooth, no warps, must sits flat when laid on the table;
		4). Board Dimensions (W x L): 229 mm x 229 mm (minimum);
		5). Edging Height (all sides): 6 mm from the board (minimum);
		6). Board and Edging Thickness: 3 mm (minimum);
		7). Array Pin Diameter: 3 mm (Minimum);
		8). Array Pin Height: 5 mm (Minimum);

No.	Item Name	Technical Specifications
		9). Comes with a transparent plastic case;
		10). Comes with Instruction Manual in English with illustrations;
		11). Comes with assorted size and color rubber bands (25 pcs); and
		12). Brand must be permanently printed on the case
		13). Shall be free from toxic materials. (Certificate of Non-Toxicity)
10	Geoboard, 5 x 5	Functional Specifications: Used to explore basic concepts in plane geometry such as perimeter, area and the characteristics of triangles and other polygons
		Performance Specifications: Must be able to demonstrate or visually represent different kinds of polygons and circles and how to compute their respective area, perimeter, and circumference.
		Design Specifications:
		1). Enables the students to perform different kinds of shapes (like square, triangle, circle, etc.) using rubber bands.
		2). On the top surface is the Square Geoboard with 25 guiding posts arranged 5 x 5 (forming a square) at 40mm distance apart between centers.
		3). On the bottom surface is the Circle Geoboard with 13 guiding posts. Twelve (12) of these guiding posts are arranged at 30˚ apart on a circle of 150mm diameter while the remaining one (1) guiding post is on the center of the said circle.
		4). Made of plastic, color blue.
		5). Board Dimensions (W x L): 200mm x 200mm (minimum)
		6). Guiding post approximate Diameter: 6mm (minimum)
		7). Guiding post approximate Height: 20mm (minimum)
		8). Approximate Height of the Base (Edging Height): 25mm (minimum)
		9). Board Thickness: 3-5mm
		10). Comes with a plastic case with content description on its cover.
		11). The surfaces and edges of the Geoboard and its Case must be smooth.
		12). Comes with Instruction Manual in English.
		13). Brand must be permanently printed on the case.
		14). Shall be free from toxic materials. (Certificate of Non-Toxicity)
		Note: There must be no warping of the board and base. The Geoboard must be flat when laid on a table.
11	Geostrips	Functional Specifications: Used to make and represent different shapes.
		Performance Specifications: Must be able to show/demonstrate different kinds of angles and shapes.
		Design Specifications:
		1). The strips are made of plastic minimum of 1.8 mm thickness and minimum of 18 mm wide in assorted colors with rounded ends;

No.	Item Name	Technical Specifications
		2). Comes in various lengths ranging from 50 mm to 350 mm. Example: Red: Blue: a) Shortest: 93-94mm a) Shortest: 124-125mm b) Shorter: 169-170mm b) Longest: 233-234mm c) Longest: 323-324mm Yellow: White: a) Shortest: 150-151mm a) Shortest: 175-176mm b) Longest: 283-284mm b) Longest: 233-234mm
		3). They are designed to be fastened together with a plastic coated brads or plastic coated round head fasteners to form plane geometric figures.
		4). One (1) set consists of 68 strips, a minimum of 100 pieces plastic coated brads and a protractor.
		5). The set comes in a transparent plastic case for proper storage.
		6). The items shall be free from toxic materials.
		7). Brand must be permanently marked on the plastic case.
		8). Shall be free from toxic materials. (Certificate of Non-Toxicity)
12	Ghost Grid Whiteboard, Mobile Magnetic	Functional Specifications: Used to aid classroom instructions especially in graphical representations such as linear, quadratic, polynomial, histogram, normal curve, etc.
		Performance Specifications: Must be able to move from one place to another and to clearly show illustrations that do not exceed from 1 meter vertically and 1.2m horizontally guided with lines with 20mm spacing (horizontally and vertically).
		Design Specifications:
		1). Mobile Magnetic Ghost Grid Whiteboard; plain white on the other side
		2). Material: Painted Steel
		3). Frame: Aluminum, 1" edging;
		4). Surface Material: Magnetic Painted Steel;
		5). Grid Pattern: 2" x 2", ghots grid;
		6). Full Dimensions: 74-75"W x 23-24"D x 69-70"H;
		7). Board Dimensions: 72-73"W x 40-41"H;
		8). Base Dimensions: 74-75"W x 23-24"D;
		9). Tray Style: Full length
		10). Casters: 4 pieces, 2-inch casters, two with locking brakes;
		11). Must be properly packed using shipping carton.
13	Linking Cubes	Functional Specifications: Used to assist with the understanding of mathematical concepts
		Performance Specifications: Must be able to interlock together to build various shapes and structures
		Design Specifications:
		1). Linking Plastic Cubes: 100pcs in 10 different colors (10 pcs per color).
		a. Dimension: 1 cm x 1 cm x 1 cm (minimum)
		c. With interlocking feature for connecting the cubes.
		2). Comes with plastic transparent storage bucket with cover.

No.	Item Name	Technical Specifications
		3). Fitting is push fit which can be assembled or disassembled without extra effort.
		4). Shall be free from toxic materials. (Certificate of Non-Toxicity)
		5). Brand must be permanently marked on the storage.
		Functional: Used to demonstrate relational geometric concepts between polygons and polyhedrons; aid derivation of formula (surface area and volume) of polyhedrons.
		Performance: Must be able to demonstrate geometrical relationships between polygons (2D) and polyhedrons (3D) in terms of deriving formula on surface area and volume.
		Design Specifications:
		1). Set includes 12 solids made of clear plastic with rounded corners and edges, and 12 folding nets in 5 or 6 colors made from soft plastic to fit inside the corresponding solids:
		2). Base size of solids: 7.8 to 10.5cm
		Height of solids: 9.5 to 10.5 cm
		3). Pairs of solid prism and pyramid shall of the same base and height the following:
		a,b) Cube and Square pyramid
		c,d) Cylinder and Cone
		e,f) Triangular prism and Triangular pyramid
		g,h) Rectangular prism and Rectangular pyramid
		i.j) Pentagonal prism and Pentagonal pyramid
		k.l) Hexagonal prism and Hexagonal pyramid
		4). With activity guide.
		5). Comes with a plastic transparent storage container with cover that can accomodate all the solids and the activity guide.
		6). Shall be free from toxic materials. (Certificate of Non-Toxicity)
	Model, Basic 3D Geometrical Collapsible	Functional: Used to demonstrate relational geometric concepts between polygons and polyhedrons; aid derivation of formula (surface area and volume) of polyhedrons.
		Performance: Must be able to demonstrate geometrical relationships between polygons (2D) and polyhedrons (3D) in terms of deriving formula on surface area and volume.
		Design Specifications:
		1). Set includes 12 solids made of clear plastic with rounded corners and edges, and 12 folding nets in 5 or 6 colors made from soft plastic to fit inside the corresponding solids:
		2). Base size of solids: 7.8 to 10.5cm
		Height of solids: 9.5 to 10.5 cm
		3). Pairs of solid prism and pyramid shall of the same base and height the following:
		a,b) Cube and Square pyramid
		c,d) Cylinder and Cone
		e,f) Triangular prism and Triangular pyramid
		g,h) Rectangular prism and Rectangular pyramid
		i.j) Pentagonal prism and Pentagonal pyramid
		k.l) Hexagonal prism and Hexagonal pyramid
		4). With activity guide.

No.	Item Name	Technical Specifications
		5). Comes with a plastic transparent storage container with cover that can accomodate all the solids and the activity guide.
		6). Shall be free from toxic materials. (Certificate of Non-Toxicity)
15	Model, Basic 3D Geometrical Solids	Functional Specifications: Used to represent basic three-dimensional figures.
		Performance Specifications: Must be able to demonstrate geometrical concepts related to properties of geometrical solids.
		Design Specifications:
		1). At least 17 types of Hollow Geometrical 3D Solids Shapes that includes:
		a) Cube: 9.5-10.5cm x 9.5-10.5cm x 9.5-10.5cm
		b) Cone: Height = 9.5-10.5cm; Base diameter = 9.5-10.5cm
		c) Cylinder: Height = 9.5-10.5cm; Base diameter = 9.5-10.5cm
		d) Hexagonal prism: Height = 9.5-10.5cm; Length of sides (Base) = 5-6cm
		e) Hexagonal pyramid: Height = 9.5-10.5cm; Length of sides (Base) = 5-6cm
		f) Pentagonal prism: Height = 9.5-10.5cm; Length of sides (Base) = 6-7cm
		g) Pentagonal pyramid: Height = 9.5-10.5cm; Length of sides (Base) = 6-7cm
		h) Rectangular prism: 9.5-10.5cm x 5-6cm x 9.5-10.5cm
		i) Square pyramid: Height = 9.5-10.5cm; Base diameter = 9.5-10.5cm
		j) Triangular prism: Height = 9.5-10.5cm; Length of sides (Base) = 9.5-10.5cm;and
		h) Triangular pyramid: Height = 9.5-10.5cm; Length of sides (Base) = 9.5-10.5cm
		i) Sphere: Diameter of Great Circle = 9.5-10.5cm
		j) Semisphere: Diameter of Great Circle = 9.5-10.5cm
		k) Square prism: 9.5-10.5cm x 5-5.5cm x 5-5.5cm
		l) Small cube: 5-5.5cm x 5-5.5cm x 5-5.5cm
		m) Small Triangular Prism: Height = 9.5-10.5cm; Length of sides (Base) = 5-6cm
		n) Small Cylinder: Height = 9.5-10.5cm; Base diameter = 5-6cm
		2). Made of hard plastic
		3). Comes in a transparent plastic container with cover to accommodate the 17 or more types of geometric solids.
		4). Surface finish is smooth on all items.
		5). Brand must be permanently printed on the case.
		6). Shall be free from toxic materials. (Certificate of Non-Toxicity)
16	Pattern Blocks, 250 pcs/set	Functional Specifications: Used to explore mathematical concpets, including congruence, similarity, symmetry, area, perimeter, patterns, functions, fractions, and graphing
		Performance Specifications: Used to demonstrate different kinds of polygons.
		Design Specifications:

No.	Item Name	Technical Specifications
		1). One (1) set of pattern blocks contains a total of 250 pieces of six geometrical shapes and six colors - 25 each of hexagons and squares; 50 each of trapezoids, triangles, parallelograms, and rhombi.
		2). Made of smooth surface plastic material.
		3). Minimum thickness: 5 mm
		4). Comes with a plastic transparent storage container with cover.
		5). Brand must be permanently marked on the storage container.
		6). Shall be free from toxic materials. (Certificate of Non-Toxicity)
17	Pentominoes	Functional Specifications: Used to develop spatial thinking
		Performance Specifications: Must be able to demonstrate concepts pertaining to perimeter and area using the 12 kinds of 5-squared geometric shape.
		Design Specifications:
		1). Geometry puzzle consists of 12 pentominoes, each are made up of 5 equal-sided squares connected edge-to-edge. Dimension of square is 2.54cm x 2.54cm (minimum).
		2). Twelve (12) pentominoes are classified as the letters F, I, L, N, P, T, U, V, W, X, Y, and Z; each are made up of sturdy plastic. Comes in assorted colors that are free from toxic materials.
		3). Comes in set of 6 equivalent to 72 pieces (minimum) contained in a plastic storage box.
		4). Shall be free from toxic materials. (Certificate of Non-Toxicity)
		5). Brand must be permanently marked on the storage.
18	Plastic Two-colored Counters, 1-inch diameter, 200 pcs/set	Functional Specifications: Used to represent integers and demonstrate fundamental operations on integers.
		Performance Specifications: Must be able to demonstrate/represent set of numbers, skip counting and integers; perform fundamental operations on integers.
		Design Specifications:
		1). Material: Hard Plastic
		2). Minimum of 200 pieces per set (double-sided color)
		3). Must have smooth surface and edges
		4). Chip's diameter: 22mm (minimum)
		5). Chip's thickness: 1mm (minimum)
		6). Comes with a transparent plastic container with cover
		7). Shall be free from toxic materials. (Certificate of Non-Toxicity)
		8). Brand must be permanently marked on the item.
19	Probability Kit	Functional Specifications: A set of mathematical manipulative used to demonstrate different concept-formation activities in probability.
		Performance Specifications: Must be able to demonstrate probability concepts using cards, counters, dice, spinners, coins, bills and/or combination of these mathematical manipulatives.
		Design Specifications:
		1). Demonstrate probability, random and selective sampling.
		2). Class kit, at least 180 pcs in a box for large group or individual learning.
		Consist of the following:

No.	Item Name	Technical Specifications
		a. 30 combination of activities and teacher demonstration on cards
		b. 52 pcs (1 set) playing cards
		c. 9 pcs different spinners;
		d. 50 pcs coins;
		e. 5 pcs polyhedral number dice;
		f. 3 pcs dot dice;
		g. 30 two-color (back-to-back) counters or red and yellow chips;
		h. 2 pcs coin dice
		i. 6 pcs number dice
		3). Comes with transparent plastic container with cover.
		4). Shall be free from toxic materials. (Certificate of Non-Toxicity)
		5). Brand must be permanently marked on the container.
20	Square Units/Tiles, plastic	Functional Specifications: Used basically to illustrate and estimate the area of a square or rectangle.
		Performance Specifications: Able to illustrate, estimate and leads in the derivation of formulas for the squares and rectangles.
		Design Specifications:
		1. Made of plastic.
		1. Set of 400 pcs plastic square tiles in four (4) different colors.
		2. Size: 24 to 30 mm, Thickness: 3.8 mm to 6 mm.
		3. Must have smooth edges and surfaces.
		4. Shall be free from toxic materials. (Certificate of Non-Toxicity)
		5. Activity guide included.
		6. Comes in a transparent storage container with lid.
		7. Brand permanently mark on the container.
21	Tangrams, set of 30	Functional Specifications: Used to introduce spatial relationships
		Performance Specifications: Must be able to use as an aid in developing mathematical concepts such as area, perimeter and patterns.
		Design Specifications:
		1). Tangram includes seven geometric shapes made up of five triangles (two small triangles, one medium triangle, and two large triangles), a square, and a parallelogram that are in 6 distinct colors.
		2). The three different-size Tangram triangles are all similar, right isosceles triangles. Thus, the triangles all have angles of 45°, 45°, and 90°, and the corresponding sides of these triangles are proportional.
		3). All the angles of the Tangram pieces are multiples of 45—that is, 45°, 90°, or 135°, and that the small Tangram triangle is the unit of measure that can be used to compare the areas of the Tangram pieces.
		4). Material: Plastic that are free from toxic materials.
		5). The size of the largest square that the 7 tangram pieces can form is 114 x 114 mm (minimum) with thickness of 7mm (minimum).
		6). Includes an Activity Guide.
		7). Comes with a sturdy plastic that stores set of 30 tangram (210 pieces) and free from toxic materials.
		8). Shall be free from toxic materials.(Certificate of Non-Toxicity)
		9). Brand must be permanently marked on the plastic storage.

FY 2026 Learning Tools and Equipment - Science and Mathematics Equipment (Direct Release)

Technical Specifications

General Specifications	Inspection and Documentary Proof
1.All items must be brand new.	All items including its parts, components and/or peripherals must not have signs of wear, scratches, dirt, and/or discoloration.
2.All item markings, user manuals, and electronic copies must be in English.	Must be comprehensible English and not directly word per word translated from a different language.
3.All item markings and labels especially intended for proper identification, operation, function, graduation and assembly must be permanently marked on the item.	The markings and labels must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
4.Items requiring assembly must include an assembly manual in English and all necessary peripherals.	Assembly manuals must show a picture/drawing illustration of the assembly with proper worded instruction, labeling of parts and sequence of assembly.
5.Items with power line electrical requirements must conform to and operate on the standard electric supply in the Philippines	Must be compatible to 220V AC, 50/60 Hz, type A power sockets or type B provided that an adaptor for conversion to type A is included.
6.Items requiring consumables must include an initial quantity sufficient to conduct testing.	Must provide the initial necessary consumables to fully make the item functional for testing.
7.All items must have a brand name permanently marked on the item and/or its appropriate packaging.	The brand name marking must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
8.Brand Owner Certification	The bidder must submit a trademark registration proving its exclusive or non-exclusive brand ownership or an authorization from the brand owner that the bidder's manufacturer or the bidder itself will manufacture the items under the brand name for the Department of Education.

9.Manufacturer's Certification	Must submit a Certification from the item Manufacturer that it will manufacture the items for the Department of Education, indicating the following: •The Bidder's company name, company address, and authorized representative(s) •The project name •The list of items In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
10.Manufacturer's International Standards Compliance	Must submit the following valid and unexpired following Certifications: •ISO 9001:2015 – Quality Management System •ISO 14001:2015 – Environmental Management System •ISO 45001:2018 – Occupational Health and Safety Management System In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
11.Business Registration	Must submit a valid BIR Certificate of Registration (COR) under the Line of Business - Sub-Class 46900 (non-specialized wholesale trade).
12.Items requiring spare parts must have parts available to DepEd for a minimum of five (5) years, using the same supplied brand.	Must submit a Certificate of Spare Parts Availability indicating the item name(s) from the item Manufacturer that spare parts shall be made available to the Department of Education for a minimum of five (5) years, using the same supplied brand. In case of multiple Manufacturers, the Bidder must submit Certificates from each of the Manufacturer.

Documentary proof for Items 8, 9, 10, 11, 12, and 13 must be submitted as part of the bid submission. Meanwhile, Items 1, 2, 3, 4, 5, 6, 7, and all other item-specific certifications or documents outlined in the detailed technical specifications shall be submitted and verified during sample evaluation at the Post-Qualification stage.

The bidder shall also execute and submit, together with its bid, a notarized undertaking affirming compliance with all the foregoing requirements.

No.	Item Name	Technical Specifications
Mathematics - Tools and Instruments		
2	Calculator, Scientific	Functional Specifications: Used to show mathematical computations.
		Performance Specifications: Must be able to show correct mathematical calculations using its built-in functions/formula.
		Design Specifications:
		1. Display: LCD, 2 line(s) X 10 characters (minimum), stably shows input-expressions/equation, calculation result, and various indicators;
		2. Built-in functions not less than 240 inclusion of the following:
		a) Basic Calculations: arithmetic, fraction, percentage, degrees, minutes, seconds, radian (including conversion of the mentioned Basic Calculations);
		b) Memory calculation, Logarithm and Hyperbolic functions;
		c) Statistical functions (e.g.: Statistical relationships, standard deviation, Permutation, Combination, etc.); and

No.	Item Name	Technical Specifications
		d) Trigonometric functions: sin, cos, tan, sin-1, cos-1, tan-1;
		3. Basic keys and function keys are labeled permanently (resistant to finger rub and light acid (vinegar) contamination) and operates as such correspondingly;
		4. Power requirement: two way dual (battery, built-in solar system), the unit consistently operational after replacing the battery for three trials, its solar system powers the unit normally in a well lit room without the battery;
		5. Brand must be permanently printed on the case.
3	Digital Clock, tabletop	Functional Specifications: Used to show/display the time in numerals.
		Performance Specifications: Must be able to display hh:mm format.
		Design Specifications:
		1. Font Height: 30mm to 40mm;
		2. Dry Cell Battery operated
		3. LCD display; With or wihout On/Off switch
		4. Minimum Display: Time (hour, minutes & seconds);
		5. Two display format, can be set to 12-hr and 24-hr.
		6. The item shall be free from toxic materials; (Certificate of Non-Toxicity)
		7. Ready to use and comes with a new battery.
4	Measuring Kit (Volume)	Functional Specifications: Used primarily to measure the volume of liquid or bulk solid
		Performance Specifications: Must be able to measure volume of liquid using different types of measuring tools
		Design Specifications:
		1) Material: Plastic, translucent so that liquid inside can be seen easily
		2) Kit includes the following measuring tools:
		a. Set of Measuring Jars:
		i) 1 gallon/4000 mL
		ii) 1/2 gallon/2000 mL
		iii) 1 quart/1000 mL
		iv) 1 pint/500 mL
		v) 1 cup/250 mL
		b. Set of measuring pitchers:
		i) 1 quart = 32 oz/1000 mL
		ii) 1 pint = 16 oz/500 mL
		iii) 1 cup = 8 oz/250 mL
		c. Set of measuring cups:
		i) 1 cup/236 mL
		ii) 1/2 cup/118 mL
		iii) 1/3 cup/79 mL
		iv) 1/4 cup/59 mL
		v) 1/8 cup/29.5 mL
		d. Set of measuring spoons:
		i) 1 Tbsp (15mL)
		ii) 1/2 Tbsp (7.5mL)
		iii) 1 tsp (5mL)

No.	Item Name	Technical Specifications
		iv) 1/2 tsp (2.5mL)
		v) 1/4 tsp (1.25mL)
		3) Features include both customary and metric measurement showing appropriate graduations in each kind of measuring tools.
		4) Permanent graduations and labels.
		5) Materials used shall be free from toxic materials. (Certificate of Non-Toxicity)
		6) Brand must be permanently printed on the case.
5	Meterstick, plastic	Functional Specifications: Used to measure length.
		Performance Specifications: Must be able to measure length of objects in flat surfaces up to 1000mm in Metric and 39.37" in English standards of measurement.
		Design Specifications:
		1. Material: Plastic;
		2. Thickness: 6 mm (minimum);
		3. Width: 24 mm (minimum);
		4. Length: 1,005 mm (minimum);
		5. The front is scaled in centimeters, numbered in every centimeter with 0.1 cm (or 1 mm) divisions;
		6. The back is scaled in inches, numbered in every inch with 1/8 inch divisions;
		7. The numbers and division lines are in dark color;
		8. Must be straight and flat; and free from toxic materials; (Certificate of Non-Toxicity)
		9. Edges and Surfaces should be smooth and even;
		10. Comes with plastic jacket;
		11. Standard abbreviation of the measurement unit/s must be followed.
6	Protractor (for student)	Functional Specifications: Used to measure angles in degrees.
		Performance Specifications: Must be able to draw/construct and measure angles and arcs up to 180°.
		Design Specifications:
		1. Protractor, student-type, plastic, transparent, semi-circular, 180^0;
		2. Ø150mm (or 75mm radius), 1mm thick (minimum);
		3. Angular graduations are in degrees, from 0^0 to 180^0. With two (2) sets of numerals, one reading clockwise and the other reading counterclockwise;
		4. Linear graduations are in milimeters, from 0 to 100mm;
		5. With a hole at vertex point enough for a fine string to pass through it;
		6. Plastic Surface Finish: Smooth, clear, and free from scratches;
		7. It must be horizontally level when laid flat on a table - no warping;
		8. Comes with a plastic case; and shall be free from toxic materials. (Certificate of Non-Toxicity)
7	Ruler, Plastic, 12 inches or 30 cm	Functional Specifications: Used to measure length and draw straight lines
		Performance Specifications: Must be able to measure length of objects in metric units up to 30cm or 300 mm.
		Design Specifications:

No.	Item Name	Technical Specifications
		1. 30cm/300mm Ruler, plastic, flexible shatter resistant, transparent, smooth surface;
		2. Width x Length: 28 mm x 314 mm (minimum); 1mm thick (minimum);
		3. Metric graduations only, one side is numbered in centimeters (cm) x 1mm division and the other side numbered in millimeters (mm) x 1mm division.
		*Metric graduations are in centimeters, from 0 cm to 30 cm, with every cm subdivided by 1mm graduation.
		*English graduations are in inches, from 0 inches to 12 inches, with every inch subdivided by 1/16 graduation.
		4. Clear, readable black, non-groove permanent prints (will not fade and cannot be scratched off);
		5. Bendable up to U-shape when held at both ends; and comes with plastic jacket;
		6. The item shall be free from toxic materials. (Certificate of Non-Toxicity)
8	Scale, Spring, Hanging type	Functional Specifications: Used to measure weight or force by hanging objects
		Performance Specifications: Must be able to measure mass of an object up to 25,000 grams.
		Design Specifications:
		1. Capacity 25kg, 100g division, starting from zero (0) to 25kg mark. Note: 0 and 25kg should at different point on the dial's scale.
		2. Metric unit of measure only.
		3. Mechnanical spring type; With zero (0) adjust knob.
		4. With 2 pieces S-hook.
		5. Rust resistant metal body.
		6. Face/Dial Diameter: 165mm (minimum)
		7. Manufacturer of the country of origin should issue certificate of calibration for every item.
		8. Labels of Brand, Capacity, Division or Graduation are permanently printed on the dial.
9	Scale, Weighing, analog, 10 kg. capacity	Functional Specifications: Used to measure weight and/or mass of an object
		Performance Specifications: Must be able to measure mass of an object up to 10 kilograms.
		Design Specifications:
		1. 10kg Capacity, 50g division, starting from zero "0" to "10kg". Note: 0 and 10kg should at different point on the dial's scale.
		2. Metric unit of measure only.
		3. Mechnanical spring type; With zero (0) adjust knob.
		4. Removable stainless bowl, dishwasher safe.
		5. Metal body, coated.
		6. Face/Dial Diameter: (W) 165mm (minimum)
		7. Manufacturer of the country of origin should issue certificate of calibration for every item.
		8. Labels of Brand, Capacity, Division or Graduation are permanently printed on the dial.

No.	Item Name	Technical Specifications
10	Scale, Weighing, bathroom-type	Functional Specifications: Used to measure a person's weight
		Performance Specifications: Must be able to measure weight from 0 to 120 kg
		Design Specifications:
		1. Capacity 120kg or13kg, 1kg division starting from zero (0) to capacity.
		2. Metric unit of measure only.
		3. Mechanical type; rotating dial. With zero (0) adjust knob.
		4. Metal bod, anti-rust coated. With textured platform non-slip.
		5. Should be made of metal and plastic combination with powder coating finish for metal parts.
		6. Scale size: (W) 250mm (minimum) x (L) 250mm (minimum)
		7. Manufacturer of the country of origin should issue certificate of calibration for every item.
		8. Free from toxic materials. (Certificate of Non-Toxicity)
		9. Labels of Brand permanently printed on the item/dial.
		Performance Specifications: Must be able to measure mass of an object up to 2000 grams. 2. Pre-adjusted i.e., as the Balance is on a level and stable surface with the main rider and supplementary rider are zero "0" and the taring poise/weight at utmost left end, the Balance can be set to equilibrium zero "0" by turning the fine tuning knob.
		Design Specifications:
		1). Used for comparative weighing to determine the difference in mass between two (2) objects, the double-platform beam balance comes equipped with built-in sliding masses taring poise.
		2). Capacity: 2,000 grams
		3). Readability: 2 grams
		4). Weigh Beam Capacity x Readability: 10 g x 0.1 g, 200 g x 10 g
		5). NTEP Resolution: 1 : 5,000
		6). Platform size: Ø15-16 cm
		7). Platform type: Plate (metal)
		8). Dimensions (w x d x h): 35-37 cm x 24-26 cm x 17-19 cm
		9). Comes with four (4) Weights as follows:
		a. 1 pc. 1,000-gram Weight
		b. 1 pc. 500-gram Weight
		c. 1 pc. 200-gram Weight
		d. 1 pc. 100-gram Weight
		10). Comes with an Instruction Manual in English.
		11). Comes with a storage plastic case.
		12). Manufacturer of the country of origin shall issue certificate of calibration for every item.
		13). Brand/Model must be permanently marked on the item.
11	Tape Measure, 1.5 meters	Functional Specifications: Used to quantify the size of an object or the distance between objects
		Performance Specifications: Must be able to measure size/distance of an object up to 1.5 meters.
		Design Specifications:

No.	Item Name	Technical Specifications
		1. Tape Measure, 12 mm width x 1.5 meter long (minimum)
		2. Made of flexible fiberglass fabric with metal end pieces
		3. Any color with dark color graduation markings.
		4. Graduation: in cm on one side and inches on the other side, smallest graduation in mm, on the opposite side in 1/16 of an inch.
		5. Comes with a plastic case.
12	Template, shapes	Functional Specifications: Used to scaffold drawing of basic geometrical shapes.
		Performance Specifications: Must be able to aid drawing different geometrical shapes.
		Design Specifications:
		1. A transparent plastic template; minimum of 24 geometric shapes *Note: The kinds of geometric shapes approved during post qualification shall be the same shapes to be approved during the pre-delivery inspection.*
		2. Ideal for drawing geometric shapes.
		3. Minimum dimensions: 14 cm x 20 cm
		4. Minimum thickness: 2 mm
		5. The items shall be free from toxic materials. (Certificate of Non-Toxicity)

FY 2026 Learning Tools and Equipment - Science and Mathematics Equipment (Direct Release)

Technical Specifications

General Specifications	Inspection and Documentary Proof
1.All items must be brand new.	All items including its parts, components and/or peripherals must not have signs of wear, scratches, dirt, and/or discoloration.
2.All item markings, user manuals, and electronic copies must be in English.	Must be comprehensible English and not directly word per word translated from a different language.
3.All item markings and labels especially intended for proper identification, operation, function, graduation and assembly must be permanently marked on the item.	The markings and labels must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
4.Items requiring assembly must include an assembly manual in English and all necessary peripherals.	Assembly manuals must show a picture/drawing illustration of the assembly with proper worded instruction, labeling of parts and sequence of assembly.
5.Items with power line electrical requirements must conform to and operate on the standard electric supply in the Philippines	Must be compatible to 220V AC, 50/60 Hz, type A power sockets or type B provided that an adaptor for conversion to type A is included.
6.Items requiring consumables must include an initial quantity sufficient to conduct testing.	Must provide the initial necessary consumables to fully make the item functional for testing.
7.All items must have a brand name permanently marked on the item and/or its appropriate packaging.	The brand name marking must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
8.Brand Owner Certification	The bidder must submit a trademark registration proving its exclusive or non-exclusive brand ownership or an authorization from the brand owner that the bidder's manufacturer or the bidder itself will manufacture the items under the brand name for the Department of Education.

9.Manufacturer's Certification	Must submit a Certification from the item Manufacturer that it will manufacture the items for the Department of Education, indicating the following: •The Bidder's company name, company address, and authorized representative(s) •The project name •The list of items In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
10.Manufacturer's International Standards Compliance	Must submit the following valid and unexpired following Certifications: •ISO 9001:2015 – Quality Management System •ISO 14001:2015 – Environmental Management System •ISO 45001:2018 – Occupational Health and Safety Management System In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
11.Business Registration	Must submit a valid BIR Certificate of Registration (COR) under the Line of Business - Sub-Class 46900 (non-specialized wholesale trade).
12.Items requiring spare parts must have parts available to DepEd for a minimum of five (5) years, using the same supplied brand.	Must submit a Certificate of Spare Parts Availability indicating the item name(s) from the item Manufacturer that spare parts shall be made available to the Department of Education for a minimum of five (5) years, using the same supplied brand. In case of multiple Manufacturers, the Bidder must submit Certificates from each of the Manufacturer.

Documentary proof for Items 8, 9, 10, 11, 12, and 13 must be submitted as part of the bid submission. Meanwhile, Items 1, 2, 3, 4, 5, 6, 7, and all other item-specific certifications or documents outlined in the detailed technical specifications shall be submitted and verified during sample evaluation at the Post-Qualification stage.

The bidder shall also execute and submit, together with its bid, a notarized undertaking affirming compliance with all the foregoing requirements.

No.	Item Name	Technical Specifications
Physics		
1	Air Blower	Functional Specifications: Used to blow air into light balls to keep them airborne to demonstrate Bernoulli's principle.
		Performance Specifications: Should be able to blow air into light balls to keep them airborne to demonstrate Bernoulli's principle
		Design Specifications:
		1. Cordless Blower, with Battery 20V Lithium-Ion, and charger
		2. With at least 2 variable speed settings (example high and low)
		2. With English User's Manual that includes operation guide
		4. Brand permanently marked on the item
2	Connector, Black (# 18 copper, AWG stranded) with alligator clip on one end and banana plug on the other end	Functional Specifications: Used to effectively interconnect components in an electrical circuit

No.	Item Name	Technical Specifications
		Performance Specifications: Should be able to effectively interconnect components in an electrical circuit
		Design Specifications: # 18 copper, AWG stranded, end to end 345-450 mm gross length, with insulated brass alligator clip, 18 mm - 20 mm jaw length, on one end and 4 mm brass banana plug, on the other end soldered; all black
3	Connector, Red (# 18 copper, AWG stranded) with alligator clip on one end and banana plug on the other end	Functional Specifications: Used to effectively interconnect components in an electrical circuit
		Performance Specifications: Should be able to effectively interconnect components in an electrical circuit
		Design Specifications: # 18 copper, AWG stranded, end to end 345-450 mm length, with insulated brass alligator clip, 18 mm-20 mm jaw length, on one end and 4 mm brass banana plug, on the other end, soldered, all red
5	Dry Cell Holder (size D)	Functional Specifications: Used to securely mount size D dry cell in place
		Performance Specifications: Should be
		able to securely mount size D dry cell in place
		Design Specifications:
		1. Single Holder for size D dry cell, snap-on type;
		2. With built-in nickel plated brass plate connectors;
		3. Holders can be interconnected in series or parallel;
		4. Plastic body, should be sturdy, thickness: 1.98-2 mm
		5. Crack resistant when dropped from 91 cm height, mounted with dry cell;
		6. Any color
		7. Brand name permenently marked on the item
6	Dry Cell, 1.5 volts, size D	Functional Specifications: Used to provide 1.5 volts DC power source for a basic electrical circuit
		Performance Specifications: Should be able to provide 1.5 volts DC power source for a basic electrical circuit
		Design Specifications:
		1. industry standard size D 1.5 volt dry cell
8	Iron Core Rod (non-corrugated)	Functional Specifications: Used to perform activities on electromagnet
		Performance Specifications: Should be able to perform activities on electromagnet
		Design Specifications:
		1. Iron rod diameter: 10.5-12 mm, length: 98-100 mm
10	Long Nose Pliers, 1 pair/set	Functional Specifications: Used to bend tiny solid wire connectors
		Performance Specifications: Should be able to bend tiny solid wire connectors
		Design Specifications: Long Nose Pliers with side cutter, 6 inches minimum long, chrome vanadium material, 1 pair/set
		Brand name permanently marked on the item

No.	Item Name	Technical Specifications
11	Magnet Wire	Functional Specifications: Used to perform activities on electromagnet
		Performance Specifications: Should be able to perform activities on electromagnet
		Design Specifications: 1 spool magnet wire (insulation coated) #20, 1 lb spool, brand name permanently marked on spool
14	Pair of Bar Magnets	Functional Specifications: Used to demonstrate that some things can make objects move and describe forces exerted by magnets
		Performance Specifications: Should be able to demonstrate that some things can make objects move and describe forces exerted by magnets
		Design Specifications: Pair of Bar Magnets:
		1. Dimensions of each: 148-150 mm x 10-12 mm x 7-8 mm
		2. Magnet strength: can suspend loads at least 2 times its weight when suspended end-to-end at north-south pole of the magnet,
		3. Color Code: north pole of the magnet should be colored red and the south pole colored blue
16	Toy Car, non-friction, non-battery	Functional Specifications: Used to demonstrate that some things like people can make objects move
		Performance Specifications: Should be able to demonstrate that some things like people can make objects move
		Design Specifications:
		1. Dimensions: 49.5-60 cm x 29.5-30 cm x 24.5-34 cm (L x W xH)
		2. Material: plastic, any color or color combination
		3. 4-wheels free to turn
		4. not driven by any power source or winding mechanism except by pushing or pulling by people

FY 2026 Learning Tools and Equipment - Science and Mathematics Equipment (Direct Release)

Technical Specifications

General Specifications	Inspection and Documentary Proof
1.All items must be brand new.	All items including its parts, components and/or peripherals must not have signs of wear, scratches, dirt, and/or discoloration.
2.All item markings, user manuals, and electronic copies must be in English.	Must be comprehensible English and not directly word per word translated from a different language.
3.All item markings and labels especially intended for proper identification, operation, function, graduation and assembly must be permanently marked on the item.	The markings and labels must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
4.Items requiring assembly must include an assembly manual in English and all necessary peripherals.	Assembly manuals must show a picture/drawing illustration of the assembly with proper worded instruction, labeling of parts and sequence of assembly.
5.Items with power line electrical requirements must conform to and operate on the standard electric supply in the Philippines	Must be compatible to 220V AC, 50/60 Hz, type A power sockets or type B provided that an adaptor for conversion to type A is included.
6.Items requiring consumables must include an initial quantity sufficient to conduct testing.	Must provide the initial necessary consumables to fully make the item functional for testing.
7.All items must have a brand name permanently marked on the item and/or its appropriate packaging.	The brand name marking must not be removable by repeated finger rubbing, fingernail scratching, or exposure to water.
8.Brand Owner Certification	The bidder must submit a trademark registration proving its exclusive or non-exclusive brand ownership or an authorization from the brand owner that the bidder's manufacturer or the bidder itself will manufacture the items under the brand name for the Department of Education.

9.Manufacturer's Certification	Must submit a Certification from the item Manufacturer that it will manufacture the items for the Department of Education, indicating the following: •The Bidder's company name, company address, and authorized representative(s) •The project name •The list of items In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
10.Manufacturer's International Standards Compliance	Must submit the following valid and unexpired following Certifications: •ISO 9001:2015 – Quality Management System •ISO 14001:2015 – Environmental Management System •ISO 45001:2018 – Occupational Health and Safety Management System In case of multiple Manufacturers, the Bidder must submit Certifications from each of the Manufacturer.
11.Business Registration	Must submit a valid BIR Certificate of Registration (COR) under the Line of Business - Sub-Class 46900 (non-specialized wholesale trade).
12.Items requiring spare parts must have parts available to DepEd for a minimum of five (5) years, using the same supplied brand.	Must submit a Certificate of Spare Parts Availability indicating the item name(s) from the item Manufacturer that spare parts shall be made available to the Department of Education for a minimum of five (5) years, using the same supplied brand. In case of multiple Manufacturers, the Bidder must submit Certificates from each of the Manufacturer.

Documentary proof for Items 8, 9, 10, 11, 12, and 13 must be submitted as part of the bid submission. Meanwhile, Items 1, 2, 3, 4, 5, 6, 7, and all other item-specific certifications or documents outlined in the detailed technical specifications shall be submitted and verified during sample evaluation at the Post-Qualification stage.

The bidder shall also execute and submit, together with its bid, a notarized undertaking affirming compliance with all the foregoing requirements.

No.	Item Name	Technical Specifications
Biology - Laboratory Tools		
1	Dissecting Set with pan	Functional Specifications: Used to perform a wide variety of dissections.
		Performance Specifications: Must be able to aid in classifying different animal tissues during dissection.
		Design Specifications:
		1. 10 pc dissecting set that includes the following stainless steel instruments:
		• 1 piece surgical scissors, 110mm minimum length
		• 1 piece iris scissors,110mm minimum length
		• 1 piece fine point curved forcep, 110mm minimum length
		• 1 piece fine point straight tip forcep, 110mm minimum length
		• 1-piece mosquito forcep, curved tip
		• 1-piece scalpel minimum 4 cm blade length
		• 1-piece scalpel blade handle

No.	Item Name	Technical Specifications
		• 1-piece angular teasing needle with metal chuck
		• 1-piece straight teasing needle with metal chuck
		• 1-piece mall probe and seeker
		2. In a rectangular vinyl zippered case;
		3. With 1-piece stainless steel dissecting pan (minimum): 254 mm x 178 mm x 38 mm
		4. "Stainless steel" shall be embossed or engraved on the items whenever applicable.
		5. Must be branded and brand new. The brand shall be permanently printed on vinyl zippered case.
4	Gloves, Surgical	Functional Specifications: Used to protect hands from dirt and contamination.
		Performance Specifications: Must be able to protect hands against dirt, laceration and contamination.
		Design Specifications:
		1. Sterile, latex surgical gloves
		2. Smooth, powder-free and beaded cuff
		3. Color: White or beige
		4. Size range: Medium - Large
		5. Individually sealed pack pair of gloves with brand and type of material permanently printed on it.
		6. Must be brand new.
6	Lens Paper, 50's/pack	Functional Specifications: Used to clean the microscope lenses.
		Performance Specifications: Must be able to clean the microscope lenses.
		Design Specifications:
		1. Measures (minimum): 100 mm x 150 mm
		2. Material: Fine, soft, lint-free paper
		3. Quantity: 50 sheets/booklet
		4. Must be packed in a resealable plastic
		5. Must be branded and brand new. The brand shall be permanently printed on the cover of the booklet.
7	Pipette, Beral, 1 mL	Functional Specifications: Used to transfer/dispense liquid samples.
		Performance Specifications: Must be able to transfer/dispense liquid sample up to a volume of 1 mL.
		Design Specifications:
		1. One-piece pipette, made from flexible soft non-toxic plastic that has a protuberance on top that serves as liquid retention chamber (Certificate of non-toxicity is required)
		2. Capacity: 1 mL in 0.25 mL graduation interval
		3. No rubber head
		4. Total length (minimum): 140 mm
		5. With molded (embossed) graduations
		6. Must be brand new
8	Protein Synthesis Demonstration Set	Functional Specifications: Used to demonstrate the synthesis of protein.
		Performance Specifications: Must be able to illustrate the synthesis of protein using information from DNA.
		Design Specifications:

No.	Item Name	Technical Specifications
		1. Contains 33 pieces of reusable, non-toxic plastic (certificate of non-toxicity is required), magnetic, and colorful teacher manipulatives (large DNA, mRNA, ribosome, tRNA, and amino acid models)
		2. A 3' -5' DNA sense strand and a linear 5'-3' DNA anti-sense strand
		3. With 180 student manipulatives (smaller size models) where students can manipulate on their tables
		4. With teachers key for easy verification
		5. With instructional video on the use in USB
		6. Safely packed in a box
		7. With English User's manual that shall provide assessment questions in the identification of a resulting amino acid sequence from a unique DNA sequence.
		8. Manual details:
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)
		Cover: Paper board, 280 gsm (minimum 0.30 mm)
		b. Size (minimum): 165 mm x 215 mm Fold
		(minimum): 330 mm x 215 mm Spread
		c. Binding: Saddle Staple
		d. Font type: Arial and Font size (minimum): 10
		e. Pictures shall be in full color
		9. Packing dimensions (minimum):72 cm L x 34 cm W x 9 cm T
		10. Must be branded and brand new. The brand shall be permanently printed on the box.
9	Tong, Beaker	Functional Specifications: Used to hold heated beakers.
		Performance Specifications: Must be able to secure hot beakers.
		Design Specifications:
		1. Scissor-like tool with plastic-coated jaws
		2. Made of minimum 6.0 mm smooth finish chrome-plated steel
		3. With flat riveted joint
		4. Total length (minimum) : 254 mm
		5. Holds beakers from 50mL to 1000 mL
		6. Safely packed in a box
		7. Must be branded and brand new. The brand shall be permanently printed on the box.
10	Wash bottle, plastic, 250 mL	Functional Specifications: Used to store and dispense water for diluting solutions, washing precipitates and rinsing glass wares.
		Performance Specifications: Must be able to store and dispenses water in diluting, washing precipitates and rinsing activities.
		Design Specifications:
		1. Translucent and non-toxic plastic material (Certificate of non-toxicity is required)
		2. Cylindrical body shape
		3. Easy squeeze dispensing; no leaks
		4. Capacity: 250 mL.
		5. Screw type closure with its angled stem and draw tube molded in one piece
		6. Must be brand new.
Biology - Models of Human Anatomy		

No.	Item Name	Technical Specifications
1	Model, Human Circulatory System	Functional Specifications: Used to show details of blood flow.
		Performance Specifications: Must be able to illustrate how the respiratory and circulatory systems work together to transport nutrients, gases, and other molecules to and from the different parts of the body
		Design Specifications:
		1. Life-size, colored relief model.
		2. Frontal plane is cutaway so blood circulation can be traced to the major organs and extremities.
		3. Made of non-toxic plastic material (Certificate of non-toxicity is required)
		4. With arterial system: aorta artery, brachial artery, iliac artery, renal artery, mesenteric artery, pulmonary artery, carotid artery, tibial artery, femoral artery, palmar digital artery, ulnar artery, radial artery, popliteal artery, subclavian artery
		5. With venous system: basilic vein, renal vein, iliac vein, pulmonary vein, femoral vein, popliteal vein, brachial vein, subclavian vein, palmar digital vein, tibial vein, dorsal venous arch, superior vena cava and inferior vena cava
		6. With heart, lungs, liver, spleen, kidneys, partial skeleton
		7. The model is washable and must be free from any labels.
		8. Paint shall be permanent and not be removed when washed with soap and water.
		9. With name of the model: HUMAN CIRCULATORY SYSTEM MODEL (Font style: Arial, Font size: 32, UPPERCASE, BOLD) permanently printed on the baseboard.
		10. With no sharp parts and defects.
		11. Mounted on a stable baseboard.
		12. Dimensions (minimum): 80cm H x 30cm L x 5cm W
		13. Safely packed in a box
		14. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.
		15. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Portrait
		d. Lamination thickness: minimum 0.30mm
		e. Title: HUMAN CIRCULATORY SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 24, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized,)
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled

No.	Item Name	Technical Specifications
		16. Must be branded and brand new. The brand shall be permanently marked/printed on the baseboard.
2	Model, Human Digestive System	Functional Specifications: Used to illustrate how food travels through the digestive tract from the mouth, esophagus, stomach, small intestine, large intestine, and excrete wastes to the anus
		Performance Specifications: Provide useful visual representations, which can be used to assist understanding of the various changes and processes that take place in the digestive system.
		Design Specifications:
		1. Made of non-toxic plastic material (Certificate of non-toxicity is required).
		2. Life size, 3-parts, colored relief model that features longitudinal section of head, bisected stomach, with removable transverse colon, full liver with gall bladder, with cutaway caecum to show the junction of small and large intestine.
		3. Mounted on a stable baseboard and can be hung.
		4. The model is washable, free from any label, sharp parts and defects..
		5. Paint shall be permanent and not be removed when washed with soap and water.
		6. With name of the model: HUMAN DIGESTIVE SYSTEM MODEL (Font style: Arial, Font size: 36, UPPERCASE, BOLD) permanently marked on the base.
		8. Dimensions (minimum): 82 cm H x 31cm L x 9 cm W
		9. Safely packed in a box.
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name; labeled with the required parts (nose, mouth, tongue, pharynx, trachea, esophagus, liver, gall bladder, stomach, spleen, pancreas, appendix, duodenum, jejunum, ileum, appendix, cecum, ascending colon, transverse colon, descending colon, rectum, anus).
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Portrait
		d. Lamination thickness: minimum 0.30 mm
		e. Title: HUMAN DIGESTIVE SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 26, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		12.Must be branded and brand new. The brand shall be permanently marked/printed on the baseboard.
3	Model, Human Endocrine System	Functional Specifications: Used as a visual representation of the endocrine glands in a human body.

No.	Item Name	Technical Specifications
		Performance Specifications: Must be able to illustrate the hormones involved in the female and male reproductive systems; and other hormones present in the human body.
		Design Specifications:
		1. Exhibits frontal section of the human body showing all the glands in the endocrine system.
		2. Both male and female glands are present.
		3. Features: Pineal, hypothalamus, pituitary, thyroid, parathyroid, thymus, adrenal cortex, kidney, pancreas, testes, ovary, and uterus
		4. Colorful relief model made of non-toxic plastic material (Certificate of non-toxicity is required)
		5. With no sharp parts and defects.
		6. The model is washable and must be free from any labels.
		7. Paint shall be permanent and not be removed when washed with soap and water.
		8. With name of the model: HUMAN ENDOCRINE SYSTEM MODEL (Font style: Arial, Font size: 28, UPPERCASE, BOLD) permanently marked/printed on the baseboard.
		9. Mounted on a stable baseboard.
		10. Dimensions (minimum): 38cm L x 24cm W x 6cm H
		11. Safely packed in a box
		12. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.
		13. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d. Lamination thickness: minimum 0.30mm
		e. Title: HUMAN ENDOCRINE SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 26, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		14. Must be branded and brand new. The brand shall be permanently marked/printed on the baseboard.
4	Model, Human Nervous System	Functional Specifications: Used to illustrate the schematic representation of the central and peripheral nervous system.
		Performance Specifications: Must be able to show the complex network of nerve cells and the motor nerves pathways.
		Design Specifications:
		1. One-half life-size, colored, relief model made of non-toxic plastic material (Certificate of non-toxicity is required).

No.	Item Name	Technical Specifications
		2. The model shows the structure of the nervous system (brain, cerebrum, cerebellum, spinal cord, radial nerve, ulnar nerve, median nerve, lumbar plexus, femoral nerve, sacral plexus, sciatic nerve, brachial plexus, intercostal nerve, common peroneal nerve, tibial nerve, saphenous nerve, finger nerve and toe nerve).
		3. The pathway of the main nerves is well illustrated in relation to the skeleton.
		4. The model is washable, free from any label, sharp parts and defects.
		5. Paint shall be permanent and not be removed when washed with soap and water.
		6. With name of the model: HUMAN NERVOUS SYSTEM MODEL (Font style: Arial, Font size: 30, UPPERCASE, BOLD) permanently marked/printed on the base.
		7. Mounted on a stable baseboard.
		8. Dimensions (minimum): 80cm H x 30cm L x 5 cm W
		9. Safely packed in a box.
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name; labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Portrait
		d. Lamination thickness: minimum 0.30 mm
		e. Title: HUMAN NERVOUS SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 20, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		12.Must be branded and brand new. The brand shall be permanently marked/printed on the baseboard.
5	Model, Human Nose (Nasal-Throat Anatomy)	Functional Specifications: Used to illustrate the anatomy of the human nose.
		Performance Specifications: Must be able to show the parts of the sense organs of the human body, specifically the human nose.
		Design Specifications:
		1. Life-size, colorful model that features nasal throat anatomy.
		2. Shows frontal sinus, sphenoid sinus, conchae, nasal vestibule, hard palate, soft palate, oral cavity, tongue, hyoid bone, epiglottis, pharynx, larynx and vocal fold.
		3. Made of non-toxic plastic material (Certificate of non-toxicity is required)
		4. The model is washable, free from any label, sharp parts and defects.

No.	Item Name	Technical Specifications
		5. Paint shall be permanent and not be removed when washed with soap and water.
		6. With name of the model: HUMAN NOSE MODEL (Font style: Arial, Font size: 26, UPPERCASE, BOLD) permanently marked/printed on the base.
		7. Mounted on a stable base.
		8. Dimensions (minimum): 12 cm x 12 cm x 21 cm (width x length x full height)
		9. Safely packed in a box.
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Portrait
		d. Lamination thickness: minimum 0.30 mm
		e. Title: HUMAN NOSE MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 26, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		12. Must be branded and brand new. The brand shall be permanently marked/printed on the base.
6	Model, Human Skeleton	Functional Specifications: Used as a visual representation of the internal framework of the body.
		Performance Specifications: Must be able to show the different types of bones.
		Design Specifications:
		1. Life-size model made of non-toxic, hard plastic material in natural bone color (Certificate of non-toxicity is required).
		2. Mounted on stable metal stand, stainless steel rod Ø minimum of 12 mm., with 5 legged unbreakable plastic with roller casters as support to the skeleton.
		3. All joints properly articulated and wired; all metal materials that interconnect the bones shall be stainless steel.
		4. Features: frontal, parietal, temporal, occipital, maxilla, mandible, hyoid bone, vertebral column, clavicle, scapula, sternum, xiphoid process, ribs, humerus, radius, ulna, carpals, metacarpals, phalanges, ilium, sacrum, coccyx, pubis, ischium, femur, patella, tibia, fibula, calcaneus, tarsals, metatarsals and phalanges
		5. The model is washable, free from any label, sharp parts and defects.
		6. Minimum height of the human skeleton: 158 cm
		7. Minimum height after mounting on the stand: 168 cm
		8. Some bones are removable for study.

No.	Item Name	Technical Specifications
		9. Enclosed in a plastic (dust cover) and packed in a sturdy box.
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Portrait
		d. Lamination thickness: minimum 0.30mm
		e.Title: HUMAN SKELETAL SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 26, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled
		12. Must be branded and brand new. The brand must be permanently marked/printed on the item.
7	Model, Human Torso	Functional Specifications: Used to visualize the structures/organs found in the human body.
		Performance Specifications: Must be able to illustrate how the organs are connected in a system.
		Design Specifications:
		1. Life-size, smooth-finish, plastic material mounted on a stable base.
		2. Detachable head
		3. Open back, exposed spine with 2 to 4 removable vertebra and spinal cord
		4. With interchangeable male and female reproductive organs
		5. (Minimum) 32 dissectible parts that include:
		a.) removable head (parts of mouth and nasopharynx exposed) b.) with brain exposed (1 to 8 parts) with arteries c.) eye with optic nerve d.) female breast plate with plate rib; e.) right and left lung (2 to 4 parts) f.) heart (2-parts) g.) stomach (2-parts) h.) liver with gall bladder, i.) intestinal tract with appendix flap (3 to 4 parts) j.) kidney half k.) 3-part female genital organ with removable fetus l.) 4-part male genital organ
		6. Height (minimum): 84.5 cm.
		7. True to life color and free from toxic materials (Certificate of non-toxicity is required).
		8. Will be able to stand upright with removable parts intact and not falling.

No.	Item Name	Technical Specifications
		9. The model is washable, free from any labels and sharp parts.
		10. Paint shall be permanent and not be removed when washed with soap and water.
		11. With name of the model: HUMAN TORSO MODEL (Font style: Arial, Font size: 36, UPPERCASE, BOLD) permanently marked/printed on the base.
		12. Enclosed in a polystyrene foam and packed in a sturdy box
		13. With English User's manual that includes description of the model, diagram with labels, and guide on how to assemble/disassemble the model.
		14. Manual details:
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)
		Cover: Paper board, 280 gsm (minimum 0.30 mm)
		b. Size (minimum): 165 mm x 215 mm Fold;
		(minimum): 330 mm x 215 mm Spread
		c. Binding: Saddle Staple
		d. Font type: Arial and Font size (minimum): 10
		e. Pictures shall be in full color
		15. Must be branded and brand new. The brand shall be permanently marked/printed on the base.
8	Model, Lung Demonstration	Functional Specifications: Used to demonstrate how the lungs work and the concept of respiration.
		Performance Specifications: Must be able to demonstrate the process of respiration.
		Design Specifications:
		1. This interactive, model consists of the following:
		a. clear plastic enclosure
		b. two (2) rubber balloons
		c. elastic rubber membrane
		d. rubber stopper (with one hole) that snugly fits the mouth of the bell jar
		e. Y-tube whose diameter fits the hole on the rubber stopper
		2. Made of non-toxic materials (Certificate of non-toxicity is required)
		3. Minimum base diameter : 18 cm
		4. Minimum height (including stopper): 32 cm
		5. Safely packed in a box
		6. With English User's manual that shall provide description of the model, it's operation and maintenance guide.
		7. Manual details:
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)
		Cover: Paper board, 280 gsm (minimum 0.30 mm)
		b. Size (minimum): 165 mm x 215 mm Fold
		(minimum): 330 mm x 215 mm Spread
		c. Binding: Saddle Staple
		d. Font type: Arial and Font size (minimum): 10
		e. Pictures shall be in full color
		8. Must be branded and brand new. The brand shall be permanently marked/printed on the item.

No.	Item Name	Technical Specifications
9	Model, Pumping Heart	Functional Specifications: Used to simulate blood flow through the heart chambers.
		Performance Specifications: Must be able to demonstrate basic heart and pulmonary blood flow.
		Design Specifications:
		1. An interactive model that illustrates how the heart and lungs work together for oxygen exchange
		2. With heart chambers, main artery, veins and lungs labeled clearly
		3. Made of non-toxic plastic material; with a rubber pump (Certificate of non-toxicity is required)
		4. The liquid is sealed in the model
		5. Inclusion: Two (2) extra stopper screws and packs of dye
		6. Dimensions (minimum): 29 cm L x 27 cm W x 12 cm D
		7. Safely packed in a box
		8. With User's manual that shall provide guide on how it works; with heart study/activity instructions
		9. Manual details:
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)
		Cover: Paper board, 280 gsm (minimum 0.30 mm)
		b. Size (minimum): 165 mm x 215 mm Fold
		(minimum): 330 mm x 215 mm Spread
		c. Binding: Saddle Staple
		d. Font type: Arial and Font size (minimum): 10
		e. Pictures shall be in full color
		10. Must be branded and brand new. The brand shall be permanently marked/printed on the item.
10	Model, Reproductive System, Female (Pelvic Anatomy)	Functional Specifications: Used to visually represent the female reproductive system.
		Performance Specifications: Must be able to show the parts of the female reproductive and genitourinary system.
		Design Specifications:
		1. Shows a longitudinal section of one-piece, life-size female pelvis.
		2. Exhibits colored internal structures of the genitourinary system: urinary bladder, urethra, vagina, cervix, uterus, ovary, fallopian tube, fimbria, rectum, labium minus and labium majus.
		3. Made of non-toxic plastic material (Certificate of non-toxicity is required)
		4. The model is washable, free from any labels and sharp parts.
		5. Paint shall be permanent and not be removed when washed with soap and water.
		6. With name of the model: FEMALE REPRODUCTIVE SYSTEM (PELVIC ANATOMY) MODEL (Font style: Arial, Font size: 16, UPPERCASE, BOLD) permanently marked/printed on the base
		7. Dimensions (minimum): 25 cm L x 18 cm W x 28 cm H
		8. Mounted on a stable base.
		9. Safely packed in a box.

No.	Item Name	Technical Specifications
		10. Comes with a plastic laminated key card that shall contain the actual colored picture of the model including the name and labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d. Lamination thickness: minimum 0.30 mm
		e.Title: FEMALE REPRODUCTIVE SYSTEM (PELVIC ANATOMY) MODEL KEY CARD shall be placed at the top- center (Font style: Arial, Font Size: 22, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		12. Must be branded and brand new. The brand shall be permanently marked/printed on the base.
11	Model, Reproductive System, Male	Functional Specifications: Used to visually represent the male reproductive system.
		Performance Specifications: Must be able to show the parts of the male urology and reproductive system.
		Design Specifications:
		1. Shows a longitudinal section of one-piece, life-size male pelvis.
		2. Exhibits bladder, prostate, rectum, seminal vesicle, testicle, epididymis, penis, vas deferens and urethra
		3. Made of non-toxic plastic material (Certificate of non-toxicity is required)
		4. The model is washable, free from any label, sharp parts and defects.
		5. Paint shall be permanent and not be removed when washed with soap and water.
		6. With name of the model: MALE REPRODUCTIVE SYSTEM MODEL (Font style: Arial, Font size: 26, UPPERCASE, BOLD) permanently marked/printed on the base.
		7. Mounted on a stable base
		8. Dimensions (minimum): 25 cm L x 18 cm W x 28 cm H
		9. Safely packed in a box
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d. Lamination thickness: minimum 0.30mm

No.	Item Name	Technical Specifications
		e. Title: MALE REPRODUCTIVE SYSTEM MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 26, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized)
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled
		12. Must be branded and brand new. The brand shall be permanently marked/printed on the base.
Biology - Models of Other Biological Structures and Species		
1	Model, Animal Cell	Functional Specifications: Used as a visual representation of an animal cell.
		Performance Specifications: Must be able to illustrate structures in an animal cell.
		Design Specifications:
		1. Three-dimensional model with colorful cell structures and raised-relief organelles.
		2. Features: nucleus, nucleolus, nuclear pore, nucleoplasm, nuclear envelope, smooth endoplasmic reticulum, rough endoplasmic reticulum, mitochondrion, ribosome, Golgi apparatus, centriole, lysosome, peroxisome, cytoplasm, cell membrane and chromatin
		3. Dimensions (minimum): 30 cm L x 19 cm W x 42 cm H
		4. Made of non-toxic plastic material (Certificate of non-toxicity is required)
		5. Mounted on two post stand with stable base.
		6. The model is washable, free from any label, sharp parts and defects.
		7. Paint shall be permanent and not be removed when washed with soap and water.
		8. With name of the model: ANIMAL CELL MODEL (Font style: Arial, Font size: 40, UPPERCASE, BOLD) permanently marked on the base.
		9. Safely packed in a box
		10. Comes with a plastic laminated key card that shall contain the actual colored picture of the model including the name and labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout orientation: Landscape
		d. Lamination thickness: minimum 0.30 mm
		e. Title: ANIMAL CELL MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 32, UPPERCASE, BOLD).
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).

No.	Item Name	Technical Specifications
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		12. Must be branded and brand new. The brand shall be permanently marked/printed on the base.
2	Model, Animal Meiosis	Functional Specifications: Used to visualize the different phases of animal meiosis.
		Performance Specifications: Must be able to make a comparison between meiosis and mitosis phases and their role in the cell-division cycle.
		Design Specifications:
		1. Three-dimensional relief model made of non-toxic plastic material (Certificate of non-toxicity is required)
		2. A set depicting 10 phases of meiosis namely:
		a) Interphase (G1-phase),
		b) Prophase I (leptotene),
		c) Prophase I (Zygotene and pachytene),
		d) Prophase I (diplotene),
		e) Prophase I (diakinesis),
		f) Metaphase I
		g) Anaphase I,
		h) Telophase I, Cytokinesis I,
		Interkinesis, Prophase II, and
		Metaphase II,
		j) Anaphase II,
		i)Telophase II and Cytokinesis II
		3. Labels of the phases must bear the correct spelling as stated above
		4. Shows the nucleus, centrioles, centrosome, chromatin, chromosomes, spindle fiber and aster;
		5. The color of the cell models shall be in accordance with the coloring methods of microscopy;
		6. Individual cell model is magnetic and detachable;
		7. Each model rests in a magnetic board/frame;
		8. Magnets shall not separate from the cell model;
		9. Cell models must not fall when the frame is vertically mounted
		10. Product measures (minimum): 59.8 cm long x 5.8 cm thick x 39.8 cm wide
		11. With a stable metal rod that can support the item for free standing storage or hanging up
		12. With name of the model: ANIMAL MEIOSIS MODEL (Font style: Arial, Font size: 36, UPPERCASE, BOLD) permanently marked on the board/frame.
		13. Safely packed in a box
		14. With English User's manual that includes the description in each phase of meiosis and storage instructions.
		15. Manual details:
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)
		Cover: Paper board, 280 gsm (minimum 0.30 mm)
		b. Size (minimum): 165 mm x 215 mm Fold

No.	Item Name	Technical Specifications
		(minimum): 330 mm x 215 mm Spread
		c. Binding: Saddle Staple
		d. Font type: Arial and Font size (minimum): 10
		e. Pictures shall be in full color
		16. Must be branded and brand new. The brand shall be permanently marked/printed on the board/frame.
3	Model, Animal Mitosis	Functional Specifications: Used to visualize the different phases of animal mitosis.
		Performance Specifications: Must be able to make a comparison between meiosis and mitosis phases and their role in the cell-division cycle.
		Design Specifications:
		1. Three-dimensional relief model made of non-toxic plastic material (Certificate of non-toxicity is required)
		2. A set depicting 9 phases of mitosis namely:
		a) Interphase,
		b) Prophase,
		c) Early Prometaphase,
		d) Late Prometaphase,
		e) Metaphase,
		f) Early Anaphase
		g) Late Anaphase,
		h) Telophase
		i) Cytokinesis
		3. Labels of the phases must bear the correct spelling as stated above
		4. Shows the nucleus, centrioles, centrosome, chromatin, chromosomes, spindle fiber and aster;
		5. The color of the cell models shall be in accordance with the coloring methods of microscopy;
		6. Individual cell model magnetic and detachable;
		7. Each model rests in a magnetic board/frame;
		8. Magnets shall not separate from the cell model;
		9. Cell models must not fall when the frame is vertically mounted
		10. Product measures (minimum): 59.8 cm long x 5.8 cm thick x 39.8 cm wide
		11. With a stable metal rod that can support the item for free standing storage or hanging up
		12. With name of the model: ANIMAL MITOSIS MODEL (Font style: Arial, Font size: 36, UPPERCASE, BOLD) permanently marked on the board/frame.
		13. Safely packed in a box
		14. With English User's manual that includes the description in each phase of meiosis and storage instructions.
		15. Manual details:
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)
		Cover: Paper board, 280 gsm (minimum 0.30 mm)
		b. Size (minimum): 165 mm x 215 mm Fold
		(minimum): 330 mm x 215 mm Spread

No.	Item Name	Technical Specifications
		c. Binding: Saddle Staple
		d. Font type: Arial and Font size (minimum): 10
		e. Pictures shall be in full color
		16. Must be branded and brand new. The brand shall be permanently marked/printed on the board/frame.
4	Model, Chloroplast	Functional Specifications: Used to show the complex internal structure of a chloroplast.
		Performance Specifications: Must be able to illustrate parts and the organelles involved in photosynthesis.
		Design Specifications:
		1. Colored 3D model with cut-away section to reveal internal structure.
		2. Made of non-toxic plastic material (Certificate of non-toxicity is required)
		3. Features: ribosome, DNA, starch granule, outer membrane, inner membrane, stroma, thylakoid, granum, lamellae, and lumen.
		4. The model is washable, free from any label, sharp parts and defects.
		5. Paints shall be permanent and not be removed when washed with soap and water
		6. With name of the model: CHLOROPLAST MODEL (Font style: Arial, Font size: 36, UPPERCASE, BOLD) permanently marked on the base.
		7. Mounted on two posts stand with a stable base.
		8. Dimensions (minimum): 20 cm H x 25 cm L x 23 cm W
		9.Safely packed in a box.
		10. Comes with a plastic laminated key card that shall contain the actual colored picture of the model including the name and labeled with the required parts.
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d. Lamination thickness: minimum 0.30 mm
		e. Title: CHLOROPLAST MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 36, UPPERCASE, BOLD).
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		12. Must be branded and brand new. The brand shall be permanently marked/printed on the base.
5	Model, DNA	Functional Specifications: Used as a visual representation of the different components of a DNA structure.
		Performance Specifications: Must be able to illustrate accurately the phosphate, deoxyribose, and base pairs components of a DNA structure.

No.	Item Name	Technical Specifications
		Design Specifications:
		1. Depicts a minimum of 16 base pair section/layer DNA
		2. Pre-assembled DNA made of attractive, color-coded, non-toxic, abstract shaped plastic parts that represents each bases (Thymine, Adenine, Guanine & Cytosine), the sugar and phosphate components; (Certificate of non-toxicity is required)
		3. Stands upright with a support rod/central pillar that rotates in stable stand/base.
		4. Minimum model height : 60 cm
		5. The phosphate and deoxyribose can be disassembled along with individual base pairs
		6. Double helix structure
		7. The model can also be uncoiled and ""unzipped"" to produce two strands.
		8. Must be free from sharp parts and defects
		9. With name of the model: DNA MODEL (Font style: Arial, Font size: 24, UPPERCASE, BOLD) permanently marked on the base.
		10. Safely packed in a box
		11. With English User's manual that includes description of the product, its parts, assembly and storage instructions
		12. Manual details:
		a. Material: Inside pages: Book Paper, 80 gsm (minimum 0.08mm)
		Cover: Paper board, 280 gsm (minimum 0.30 mm)
		b. Size (minimum): 165 mm x 215 mm Fold
		(minimum): 330 mm x 215 mm Spread
		c. Binding: Saddle Staple
		d. Font type: Arial and Font size (minimum): 10
		e. Pictures shall be in full color
		13. Must be branded and brand new. The brand shall be permanently marked/printed on the base.
6	Model, Invertebrates	Functional Specifications: Used to provide information on the anatomy of invertebrate animals.
		Performance Specifications: Must be able to show the major parts of the invertebrate animals.
		Design Specifications:
		1. No sharp parts, non-toxic plastic/rubber, true-to-life color, 3D replicas of invertebrates (Certificate of non-toxicity is required)
		2. With life-like shapes
		3. The models are washable and must be free from any labels.
		4. Paint shall be permanent and not be removed when washed with soap and water.
		5. Each is packed in resealable plastic bag
		6. Invertebrate models:
		a. Soft rubber Centipede - Length (minimum): 15 cm
		b. Plastic Scorpion - Length (minimum): 15 cm
		c. Plastic Crayfish or Shrimp - Length (minimum): 12 cm
		7. Each invertebrate model comes with a plastic laminated key card that shall contain the actual-colored picture of the model labeled with the required parts

No.	Item Name	Technical Specifications
		8. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d. Lamination thickness: minimum 0.30mm
		e. Titles of the key card as stated below: Shall be placed at the top-center (Font style: Arial, Font Size: 28, UPPERCASE, BOLD)
		e.1 INVERTEBRATE: CENTIPEDE MODEL KEY CARD
		Features: Tail-like rear pair of legs, segmented trunk, many legs, head, eye, antennae and maxilliped with poison fang
		e.2 INVERTEBRATE: CRAYFISH or SHRIMP MODEL KEY CARD
		SHRIMP features: Eye, antennae, rostrum, carapace, abdomen, swimming legs, walking legs, telson, tail
		CRAYFISH features: Eye, antennae, rostrum, carapace, cheliped, abdomen, walking legs, telson, tail
		e.3 INVERTEBRATE: SCORPION MODEL KEY CARD
		Features: Pedipalp (pincer), eyes, legs, carapace, chelicerae, anus, telson, stinger
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized)
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled
		9. Must be brand new.
7	Model, Mitochondrion	Functional Specifications: Used as a visual representation of the working organelles that keep the cell in full energy.
		Performance Specifications: Must be able to visually represent the structure of mitochondrion as the main organelle involved in respiration.
		Design Specifications:
		1. One-piece 3D model made of non-toxic plastic material (Certificate of non-toxicity is required)
		2. Features: Inner membrane, outer membrane, cristae, matrix, intermembrane space, DNA, ribosome and granule
		3. Shall be in cross-section longitudinal structure
		4. The model is washable, free from any label, sharp parts and defects.
		5. Paint shall be permanent and not be removed when washed with soap and water.
		6. With name of the model: MITOCHONDRION MODEL (Font style: Arial, Font size: 40, UPPERCASE, BOLD) permanently marked on the base.
		7. Mounted on a stable base
		8. Dimensions (minimum): 40 cm L x 20 cm W x 12 cm H
		9. Safely packed in a box
		10. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including the name and labeled with the required parts.

No.	Item Name	Technical Specifications
		11. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d.Lamination thickness: minimum 0.30 mm
		e. Title: MITOCHONDRION MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 32, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		12. Must be branded and brand new. The brand shall be permanently marked/printed on the base
8	Model, Plant Cell	Functional Specifications: Used as a visual representation of a plant cell.
		Performance Specifications: Must be able to illustrate structures in a plant cell.
		Design Specifications:
		1. Two-piece plant cell 3D model
		2. Shape: Irregular
		3. With colorful cell structures and raised-relief organelles
		4. Features: cell wall, cytoplasm, ribosome, Golgi apparatus, mitochondrion, chloroplast, nucleus, nucleolus, nucelar envelope, nuclear pore, peroxisome, plasmodesma, smooth endoplasmic reticulum, rough endoplasmic reticulum and vacuole.
		5. Dimensions (minimum): 19.5 cm L x 11 cm W x 32.5 cm H
		6. Made of non-toxic plastic material (Certificate of non-toxicity is required)
		7. The model is free from any label, sharp parts and defects.
		8. Paint shall be permanent and not be removed when washed with soap and water.
		9. With name of the model: PLANT CELL MODEL (Font style: Arial, Font size: 20, UPPERCASE, BOLD) permanently marked on the model itself or onto the base if the model is supplied with a base.
		10. Safely packed in a box
		11. Comes with a plastic laminated key card that shall contain the actual-colored picture of the model including name and labeled with the required parts.
		12. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d. Lamination thickness: minimum 0.30mm
		e. Title: PLANT CELL MODEL KEY CARD shall be placed at the top-center (Font style: Arial, Font Size: 34, UPPERCASE, BOLD)
		f. The model picture in white background shall be big enough to occupy the center part of the card.

No.	Item Name	Technical Specifications
		g. Labels shall be without frame (Font style: Arial, Font size: 12, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled
		13. Must be branded and brand new. The brand shall be permanently marked/printed on the item or base whenever applicable.
9	Model, Vertebrates	Functional Specifications: Used to provide information on the anatomy of vertebrate animals.
		Performance Specifications: Must be able to show the major parts of the vertebrate animals.
		Design Specifications:
		1. No sharp parts, non-toxic plastic/rubber, true-to-life color, 3D replicas of vertebrates (Certificate of non-toxicity is required)
		2. With life-like shapes
		3. The models are washable and must be free from any labels.
		4. Paint shall be permanent and not be removed when washed with soap and water.
		5. Each is packed in a resealable plastic bag.
		6. Vertebrate models:
		a. Soft rubber SNAKE - Length (minimum): 60 cm.
		b. Plastic balancing eagle with transparent pyramid tower
		Eagle (minimum): 12.8 cm L x 9.8 cm W x 2.0 cm H
		Pyramid Stand (minimum): 3.8 cm L x 3.8 cm W x 4.8 cm H
		c. Plastic Shark - Length (minimum): 15 cm
		7. Each vertebrate model comes with a plastic laminated key card that shall contain the actual-colored picture of the model and labeled with the required parts.
		8. Key card details:
		a. A4 size copy paper
		b. Margin of 1/2 inch on all sides; with 2 pt width border line
		c. Layout Orientation: Landscape
		d.Lamination thickness: minimum 0.30mm
		e. Titles of key cards as stated below: Shall be placed at the top-center (Font style: Arial, Font Size: 28, UPPERCASE, BOLD)
		e.1 VERTEBRATE: SHARK MODEL KEY CARD
		Features: Snout, eye, mouth, nostril, gill slit, first dorsal fin, second dorsal fin, pectoral fin, pelvic fin, and caudal fin
		e.2 VERTEBRATE: BIRD MODEL KEY CARD
		Features: Head, feather, tail, body, beak, eye, and wing
		e.3 VERTEBRATE: SNAKE MODEL KEY CARD
		Features: Head, eye, mouth, tongue, body, scales, and tail
		f. The model picture in white background shall be big enough to occupy the center part of the card before inserting labels.
		g. Labels shall be without frame (Font style: Arial, Font size: 14, First letter of the label is capitalized).
		h. Line with arrowhead of 1.25 pt width shall point to the specific part being labeled.
		9. Must be brand new

No.	Item Name	Technical Specifications
Chemistry - Chemicals		
1	Benedict's Solution, 100 mL/bottle	Functional Specifications: Used to test for levels/ traces of simple reducing sugars
		Performance Specifications: Must be able to test for the presence (levels of traces) of reducing sugars such as glucose.
		A positive test with Benedict's reagent is shown by a color change from clear blue to:
		a) blue solution - 0 g % (no trace of simple reducing sugar)
		b) green precipitate- 0.5 to 1.0 g % (traces of simple reducing sugar)
		c) yellow precipitate- 1.0-1.5 g % (low simple reducing sugar)
		d) orange precipitate - 1.5 to 2.0 g % (moderate simple reducing sugar)
		e) brick-red precipitate - greater than 2.0 g % (high presence of simple reducing sugar)
		Design Specifications:
		1. Features an aqua blue liquid
		2. Chemical Formula: $CuSO_4.5H_2O + Na_2CO_3 + Na2C_6H_5O_7$
		3. Capacity: 100 mL
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. Comes with a brand printed permanently on the product label
		10. Must be brand new
2	Boric Acid, 100 grams/bottle	Functional Specifications: Used as a substrate in Flame test to visually identify boron or its specific unknown metalloid ion based on the characteristic color it emits on the Bunsen flame.
		Performance Specifications: Must be used as a substrate in Flame test to visually identify boron, or its ion based on the characteristic color it emits on the Bunsen flame. Boric acid emits a bright green color which indicates the presence of boron or its ion
		Design Specifications:
		1. Features a colorless or white, odorless and crystalline solid
		2. Chemical formula : H3BO3
		3. Mass/bottle : 100 g
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.

No.	Item Name	Technical Specifications
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS(Safety Data Sheet)
		9. Comes with a brand printed permanently on the product label
		10. Must be brand new
3	Bromothymol Blue	Functional Specifications: Used as an indicator of dissolved Carbon dioxide.
		Performance Specifications: Must be able to show the effect of changes in abiotic factors on the ecosystem.
		Design Specifications:
		1. Color: Dark Blue/blue-black
		2. Concentration: 0.04% aqueous solution (as indicated in the product label)
		3. Capacity: 100 mL
		4. With Safety Data Sheet
		5. The chemical must be in original plastic bottle with threaded chemical seal cover.
		6. Properly labeled with the chemical name, concentration, name of the manufacturer, manufacturing and expiry dates. Expiration shall be at least two years.
		7. Comes with a brand printed permanently on the product label.
		8. Must be brand new
4	Calcium Chloride, 100 grams / bottle	Functional Specifications: Used as a substrate in Flame test to visually identify calcium or its ion based on the characteristic color it emits on the Bunsen flame.
		Performance Specifications: Used as a substrate in Flame test to visually identify calcium element, or an unknown metalloid ion based on the characteristic color the chemical emits on the Bunsen flame. Calcium chloride emits an orange red/yellowish red color which indicates the presence of the calcium ion
		Design Specifications:
		1. Features a white powder, crystals or granules
		2. Chemical Formula : $CaCl_2$
		3. Mass per bottle : 100 grams
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning.
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years

No.	Item Name	Technical Specifications
		8. Accompanied with Certificate of Analysis and with SDS (Safety Data Sheet)
		9. With brand printed permanently on the product label
		10. Must be brand new
5	Copper Sulfate, $CuSO_4$, 100 grams/bottle	Functional Specifications: Used as : a) an oxidizing agent or oxidant and is reduced in a spontaneous [chemical (redox) reaction decreasing its oxidation state with metals above it, like zinc, in the Activity Series of Metals]
		b) a substrate in Flame test to visually identify copper or its ion based on the characteristic color it emits on the Bunsen flame .
		Performance Specifications: Must be able to
		a) oxidize the other reactant of a spontaneous redox reaction by gaining electrons reducing its oxidation state with metals above it, like zinc, in the Activity Series of Metals, resulting in copper in the free state and the salt of the metal being displaced.
		b) a substrate in Flame test to visually identify copper or its ion based on the characteristic color it emits on the Bunsen flame. Copper sulfate emits blue green color on the Bunsen flame.
		Design Specifications:
		1. Features a blue, odorless crystalline solid
		2. Chemical formula : $CuSO_4$
		3. Mass per bottle : 100 g
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning.
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. With brand printed permanently on the product label
		10. Must be brand new
6	Gentian Violet, 100 ml / bottle	Functional Specifications: Used in microscopy as biological stain.
		Performance Specifications: Must be able to enhance animal cell image as to presence or absence of some organelles.
		Design Specifications:
		1. Capacity : 100 mL per bottle
		2. Color: Blue-violet/dark purple
		3. With Safety Data Sheet
		4. The chemical must be in original plastic bottle with threaded chemical seal cover.

No.	Item Name	Technical Specifications
		5. Properly labeled with chemical name, name of the manufacturer, manufacturing and expiry dates. Expiration shall be at least two years.
		6. Comes with a brand printed permanently on the product label.
		7. Must be brand new
7	Iodine Solution, 100 ml / bottle	Functional Specifications: Used in microscopy as biological stain.
		Performance Specifications: Must be able to enhance plant cells as to presence or absence of some organelles.
		Design Specifications:
		1. Capacity: 100 mL per bottle
		2. Color: Light orange-brown
		3. With Safety Data Sheet
		4. The chemical must be in original amber or opaque plastic bottle with threaded chemical seal cover.
		5. Properly labeled with chemical name, name of the manufacturer, manufacturing and expiry dates. Expiration shall be at least two years.
		6. Comes with a brand printed permanently on the product label.
		7. Must be brand new
8	Magnesium Ribbon, 25 grams, 1 roll	Functional Specifications: Used as a reactant and is ignited over a flame to demonstrate a highly exothermic combustion reaction
		Performance Specifications: Must be able to produce a highly exothermic combustion reaction resulting in a blinding white light and intense heat when ignited over a flame. A white powdery solid, magnesium oxide is produced
		Design Specifications:
		1. Features a relatively soft, lightweight solid metal
		2. Color : Shiny silvery gray--white
		3. Chemical formula : Mg
		4. Form : Solid (ribbon)
		5. Mass per roll : 25-27 g
		6. Number of roll : 1 roll
		7. Comes in original plastic packing
		8. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning.
		9. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		10. Expiration dates should be at least two years
		11. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		12. Comes with a brand printed permanently on the product label
		13. Must be brand new
9	Manganese Dioxide, 50 grams / bottle	Functional Specifications: Used as a catalyst to demonstrate decomposition reaction of hydrogen peroxide and observe its effect on the rate of chemical reaction

No.	Item Name	Technical Specifications
		Performance Specifications: Must be used as a catalyst and to undergo a spontaneous chemical reaction in the decomposition of hydrogen peroxide to produce bubbles of oxygen gas and water and to demonstrate its effect on the rate of chemical reaction
		Design Specifications:
		1. Form: Solid powder
		2. Color : Brown-black solid/ blackish or brown solid
		3. Chemical formula : MnO_2
		4. Mass per bottle : 50 g
		5.Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		6. Properly labeled with full chemical name, chemical formula, the name and address of the manufacturer and with appropriate hazard warning.
		7. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		8. Expiration dates should be at least two years
		9. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		10. Comes with a brand printed permanently on the product label
		11. Must be brand new
10	Microscope's Immersion Oil, 100mL/bot	Functional Specifications: Used to increase the resolving power of the microscope's 100x objective.
		Performance Specifications: Must be able to give a clear and very distinct image of the specimen.
		Design Specifications:
		1. Capacity: 100 mL/bottle
		2. Non-drying, clear and transparent
		3. With Refractive index range: 1.515 - 1.518 (as indicated in SDS, product label or certificate)
		4. With Safety Data Sheet
		5. The chemical must be in original plastic bottle with threaded chemical seal cover.
		6. Properly labeled with chemical name, name of the manufacturer, manufacturing and expiry date. Expiration shall be at least two years.
		7. Comes with a brand printed permanently on the product label.
		8. Must be brand new.
11	Phenolphthalein, 100 grams/bottle	Functional Specifications: Used as an indicator to effect a color change to distinguish an acid from a base and in perforing acid base titration
		Performance Specifications: Must be used as an indicator to distinguish and acid from a base and in performing acidbase titration, as it indicates the change in pH by changing its color , the results vary:
		a) For a base, it gives a pink color
		b) For an acid, it is colorless

No.	Item Name	Technical Specifications
		Design Specifications:
		1. Features a white to cream, odorless solid powder
		2. Chemical formula : C20H14O4
		3. Mass per bottle : 100 g
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula,the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7.Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. Comes with a brand printed permanently on the product label
		10. Must be brand new
12	Potassium Chloride, 100 grams / bottle	Functional Specifications: Used as a substrate in Flame test to visually identify a specific element or an unknown metalloid ion based on the characteristic color it emits on the Bunsen flame.
		Performance Specifications: Must be used as :
		a) a substrate in Flame test to visually identify potassium element, or its ion based on the characteristic color it emits on the Bunsen flame.
		Potassium chloride emits a light lilac color which indicates the presence of the potassium ion
		b) as a catalyst and to undergo a spontaneous chemical reaction in the decomposition of hydrogen peroxide to produce bubbles of oxygen gas and water to demonstrate the effect of catalyst on the rate of chemical reaction
		Design Specifications:
		1. Features a white crystalline solid
		2. Chemical formula : KCl
		3. Mass per bottle: 100 g
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula,the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. Comes with a brand printed permanently on the product label
		10. Must be brand new

No.	Item Name	Technical Specifications
13	Potassium Iodide, 100 grams / bottle	Functional Specifications: Used as : a) a substrate in Flame test to visually identify potassium or its ion based on the characteristic color it emits on the Bunsen flame
		b) a catalyst to demonstrate decomposition reaction of hydrogen peroxide to form water and oxygen
		Performance Specifications: Must be : a) used as a substrate in Flame test to visually identify potassium , or its ion based on the characteristic color the chemical emits on the Bunsen flame. Potassium iodide emits a lilac color which indicates the presence of the potassium ion
		b) able to undergo a spontaneous decomposition of hydrogen peroxide into bubbles of oxygen gas and water
		Design Specifications:
		1. Features white granules and crystals solid
		2. Chemical formula: KI
		3. Mass per bottle: 100 g
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula,the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. Comes with a brand printed permanently on the product label
		10. Must be brand new
14	Sodium Hydroxide (Lye), 250 grams/bottle	Functional Specifications: Used :
		a) to differentiate an acid from a base
		b) as a titrant added from a base burette in acid base titration
		Performance Specifications: a) Must turn pink when added with drop/s of phenolphthalein and be able to neutralize an acid to form salt and water
		b) In acid-base titration, the sodium hydroxide is used as a titrant added from an base buret to a known quantity of the analyte (the unknown solution) until the reaction is complete. Knowing the volume of titrant added allows the determination of the concentration of the unknownusing the formula : Na=NbVb/Va
		c) pH value : pH 13-14
		Design Specifications:
		1. Features a white semi-transparent odorless hygroscopic solid
		2. Chemical formula : NaOH

No.	Item Name	Technical Specifications
		3. Mass per bottle : 250 grams
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula,the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. Comes with a brand printed permanently on the product label
		10. Must be brand new
15	Zinc Chloride, 100 grams / bottle	Functional Specifications: Used as a substrate in Flame test to visually identify zinc or its ion based on the characteristic color it emits on the Bunsen flame.
		Performance Specifications: Must be used as a substrate in Flame test to visually identify zinc element or its ion based on the characteristic color it emits on the Bunsen flame. Zinc chloride emits a blue green to pale green/colorless color which indicates the presence of the zinc ion
		Design Specifications:
		1. Features a white crystalline/granular solid powder
		2. Chemical Formula : $ZnCl_2$
		3. Mass per plastic bottle: 100 grams
		4. Comes in original screw type plastic packing with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula,the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. Comes with a brand marked permanently on the product label
		10. Must be brand new
16	Zinc metal, pellets/mossy, 100 grams / bottle	Functional Specifications: Used as a reducing agent to reduce the other reactant of a single displacement (redox reaction) with metals above it in the Activity Series of Metals
		Performance Specifications: Must be able to reduce the other reactant of a single displacement (redox) reaction with metals above it in the Activity Series of Metals, , like zinc, to produce salt and the displaced metal in its free state
		Design Specifications:
		1. Features a bluish white, or as a grey powder/pellets/mossy solid
		2. Chemical Formula : Zn

No.	Item Name	Technical Specifications
		3. Mass per plastic bottle : 100 grams
		4. Comes in original screw type plastic packing, with threaded chemical seal pack bottle.
		5. Properly labeled with full chemical name, chemical formula,the name and address of the manufacturer and with appropriate hazard warning
		6. With manufacturing and expiry date, chemical assay, and other useful information regarding the product.
		7. Expiration dates should be at least two years
		8. Accompanied with Certificate of Analysis and SDS (Safety Data Sheet)
		9. Comes with a brand printed permanently on the product label
		10. Must be brand new
Chemistry - Laboratory Glasswares, Tools and Accessories		
1	Beaker, borosilicate, 100 mL	Functional Specifications: Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to more than 150°C for normal, standard use service
		Performance Specifications: Must be able to contain/hold /prepare solids and liquids during chemical reaction up to 100 mL capacity and heats them over a Bunsen burner's flame up to more than 150°C for normal, standard use service
		Design Specifications:
		1. Type : Griffin, low form
		2. Shape : Cylindrical container with straight sides, a flat bottom, and with a small spout (or "beak") to aid in pouring
		3. Material: Borosilicate, clear and transparent bubble-free glass with the following dimensions:
		a) Outside diameter : 50 mm-52 mm
		b) Height: 70 mm-72 mm
		c) Thickness : 1.5 mm-2.0 mm
		4. Capacity : 100 mL ± 5% etched onto the glass;"
		5. Graduation starts at : 20 mL in 10 mL increments.
		6. Graduation range : 20 mL to 80 mL
		7. With permanent white enamel graduations of approximate volumes, inscriptions
		8. With large white marking spot
		9. Features an easy-pour spout
		10. With single graduated metric scale
		11. Can withstand heating up to 200-230°C for normal, standard use service
		12. Wrapped in paper, enclosed in bubble wrap, and packed in a compartmentalized box
		13. Must be free from breakage, cracks , chipped rims and other defects
		14. Comes with a brand, with five (5) years existence in the glass wares industry

No.	Item Name	Technical Specifications
2	Beaker, borosilicate, 1000 mL	Functional Specifications: Used to serve as container for mixing and for heating liquids.
		Performance Specifications: Must be able to serve as container for mixing and for heating liquids.
		Design Specifications:
		1.Griffin type, borosilicate, transparent, bubble-free glass
		2. Shape: a cylindrical container with flat bottom
		3.Thickness range: 1.5 mm to 2.0 mm
		4. Permanent white graduations, with white enamel marking spot
		5. Features an easy-pour spout
		6. Capacity: 1000 mL; ± 10% enameled onto the glass
		7. Single graduated metric scale
		8. Graduation starts at 200 mL in 100 mL increments
		9. Height range: 140 mm to 160 mm
		10. Outside diameter: 100 mm to 110 mm
		11. There must be no cracks and sharp parts
		12. Safely packed in a compartmentalized box
3	Beaker, borosilicate, 250 mL	Functional Specifications: Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to more than 100°C for normal, standard use service
		Performance Specifications: Must be able to contain/hold /prepare solids and liquids during chemical reaction and heats them over a Bunsen burner's flame up to more than 100°C for normal, standard use service
		Design Specifications:
		1. Features a cylindrical container with straight sides, a flat bottom, with a beaded rim and with a small spout (or "beak") to aid in pouring.
		2. Material: Borosilicate, clear, smooth, and transparent bubble-free glass with the following dimensions:
		Outside diameter: 68-70mm
		Height: 90-92 mm
		Thickness: 1.5 mm to 2.0 mm
		3. Type: Griffin, low form
		4. Features an easy-pour spout
		5. With permanent colored graduations of approximate volumes, large colored easy to read block letters, numbers and inscriptions/markings enamelled onto the glass, which includes the following:
		a) Capacity: 250 mL
		b) Manufacturer's name or trademark
		c) With large white marking spot
		d) With double graduated metric scale
		d1) With marking graduation to fill: starts at 25 mL in 25mL increments
		d2) With marking graduation to empty: starts at 0 mL in 200 mL increments

No.	Item Name	Technical Specifications
		d3) Graduation interval: 25 mL
		d4) Graduation range: 25 mL to 200 mL
		6. Must be able to stand solidly/is stable when placed on a level surface
		7. Must be free from breakage, cracks, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		8. Must be able to withstand heating of water up to 150 deg C
		9. Wrapped in paper, enclosed in bubble wrap and packed individually in a compartmentalized box
		10. Comes with a brand enamelled permanently onto the glass
		11. Must be brand new
4	Beaker, borosilicate, 50 mL	Functional Specifications: Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to more than 100 °C
		Performance Specifications: Must be able to contain/hold /prepare solids and liquids during chemical reaction and heats them over a Bunsen burner's flame up to more than 100 °C
		Design Specifications:
		1. Features a cylindrical container with straight sides, a flat bottom with a beaded rim and a small spout (or "beak") to aid in pouring
		2. Material: Borosilicate, clear, smooth, and transparent bubble-free glass with the following dimensions:
		Outer diameter: 40-42 mm
		Height: 55-57 mm
		Thickness: 1.5 to 2.0 mm
		3. Type: Griffin, low form
		4. Features an easy-pour spout
		5. With permanent colored graduations of approximate volumes, large colored easy to read block letters, numbers and inscriptions/ markings enamelled onto the glass, which includes the following:
		a) Capacity: 50 mL
		b) Manufacturer's name or trademark
		c) With large white marking spot
		d) With single graduated metric scale
		d1)With marking graduation to fill: starts at 10 mL in 10 mL increments
		d2) Graduation interval: 10 mL
		d3) Graduation range: 10 mL to 40 mL
		6. Must be able to stand solidly/is stable when placed on a level surface
		7. Must be free from breakage, cracks, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		8. Wrapped in paper, enclosed in bubble wrap and packed individually in compartmentalized box.
		9. Comes with a brand enamelled permanently onto the glass

No.	Item Name	Technical Specifications
		10. Must be brand new
5	Beaker, borosilicate, 500 mL	Functional Specifications: a)Used to contain/hold/prepare solids and liquids during chemical reaction and to heat them over a Bunsen burner's flame up to 150°C for normal, standard use service and b)to serve as a water bath when heating flammable chemicals instead of an open flame to prevent ignition.
		Performance Specifications: a) Must be able to contain/hold /prepare solids and liquids during chemical reaction and heats them over a Bunsen burner's flame up to 150°C for normal, standard use service and to serve as a water bath b) to serve as a water bath when heating flammable chemicals instead of an open flame to prevent ignition.
		Design Specifications: 1. Type: Berzellius, tall form
		2. Shape: Cylindrical container with straight sides, a flat bottom, with a small spout (or "beak") to aid pouring
		3. Material : Borosilicate, clear, bubble free glass , Berzellius. tall form with the following dimensions:
		a) Outside Diameter Range :75 mm- 80 mm
		b) Height range: 136 mm -140 mm
		c) Thickness :1.5 mm to 2.0 mm
		4. Capacity :500 mL ; ± 5% etched/embossed onto the glass
		5. With permanent white enamel graduations of approximate volumes, inscriptions and
		6. With large white marking spot
		7. With easy pour spout
		8. Double graduated metric scale
		9. Marked to fill: Graduation starts at 50 mL in 50 mL increments
		10. Marked to empty: Graduation starts at 0 mL in 50 mL increments
		11. Can withstand heating up to 200-230°C for normal, standard use service
		12. Wrapped in paper, enclosed in bubble wrap and packed individually in a compartmentalized box
		13. Must be free from breakage, cracks , chipped rims and other defects
		14. Comes with a brand, with five (5) years existence in the glass wares industry
6	Burette, 10 mL capacity (acid)	Functional Specifications: Used to hold/contain the acid up to 10 mL capacity as a titrant to be delivered/ dispensed to titrate the base in acid-base titration to determine unknown concentration of base
		Performance Specifications: Must hold/contain the acid up to 10 mL capacity as a titrant to be delivered/ dispensed to titrate the base (with color change from pink to colorless when end point is reached) in acid-base titration to determine unknown concentration of base
		Design Specifications:

No.	Item Name	Technical Specifications
		1. Features a long,vertical cylindrical glass tube with a volumetric graduation on its full length,with a leak-free plastic stopcock at its lower end and a tapered capillary tube at the stopcock's outlet.
		2. Material : Clear, transparent, smooth, bubble-free high quality borosilicate glass, with the following dimensions:
		Length of burette: 510-620 mm
		3. Fitted with grease-free interchangeable with 1.5 to 2 mm bore plastic leak-free stopcock plug. Material of of stopcock :PTFE key
		a) Manufacturer's name or trademark
		4. With permanent, durable colored markings in fine, clear, continuous, sharp, of uniform width, distinct colored graduation lines of approximate volumes, clearly legible and indelible block letters, inscriptions/ markings under normal conditions of use of the burettes, and large, easy-to-read numbers every 0.5 mL enamelled permanently onto the glass before the first graduation line which includes the following:
		b) Capacity: 10 mL
		c) Sub. Div. : 0.05 ml
		d)Tolerance: ± 0.02-±0.03 mL
		e) Class: A
		f) Unit of volume: mL
		g) Ex
		h) Reference Temp: 20°C-27°C
		5. With Statement of Accuracy /Certificate of Accuracy) latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin
		6. Marked with an individual serial number (Serially Numbered)
		7. Individually placed in bubble wrap, enclosed in a polystyrene and packed in a padded sturdy box.
		8. Must be free from breakage, leaks, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein.
		9. Includes Operations Manual in English
		10. With Activity Sheets/Teacher's Manual in English
		11. Comes with a brand enamelled permanently onto the glass
		12. Must be brand new
7	Burette, 10 mL capacity (base)	Functional Specifications: Used to hold/contain the base as a titrant to be delivered/ dispensed to tirate an acid up to 10 mL capacity in acid-base titration to determine unknown concentration of acid
		Performance Specifications: Must hold/contain the base as a titrant to be delivered/ dispensed to titrate an acid up to 10 mL capacity (with color change from colorless to very faint pink when end point is reached) in acid-base titration to determine unknown concentration of acid
		Design Specifications:

No.	Item Name	Technical Specifications
		1. Features a long, graduated glass tube, with a leakage-free stopcock at its lower end and a tapered capillary tube at the screw type stopcock's outlet.
		2. Material : Clear, transparent, bubble-free, smooth borosilicate glass, with the following dimensions:
		a) Length of burette: 444.5-520 mm
		3. With PTFE (screw-thread type/needle valve-Rotaflow leak-proof plastic) stopcock
		4. With permanent, durable colored markings in fine, clear, continuous, sharp, of uniform width, distinct colored graduation lines of approximate volumes, clearly legible and indelible block letters and inscriptions with large, easy-to-read numbers every 0.5-1.0 mL subdivisions enamelled permanently onto the glass, before the first graduation line, which includes the following:
		a) Manufacturer's name or trademark
		b) Capacity: 10 mL
		c) Sub. Div. : 0.05 ml
		d) Tolerance: 0.05 mL
		d) Class: B
		e) Unit of volume: mL
		f) Ex
		g) Reference Temp: 20°C-27°C
		5. With machine Jet flow control which is made from thick walled capillary tubing which forms an integral part of the burette shall have no cavity at the join likely to trap air bubbles.
		6. With Statement of Accuracy /Certificate of Accuracy) latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin
		7. Marked with an individual serial number (Serially Numbered).
		8. Individually placed in bubble wrap, enclosed in polystyrene and packed in a padded sturdy box
		10. Must be free from breakage, leaks, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein.
		11. Includes Operations Manual in English
		12. With Activity Sheets/Teacher's Manual in English
		13. Comes with a brand enamelled permanently onto the glass
		14. Must be brand new
8	Burner, Alcohol, glass, 150 mL Capacity	Functional Specifications: Used to produce hot, consistent open flame for slow/gentle heating of glasswares and substances
		Performance Specifications: Must be able to produce hot, consistent open flame a)for slow/gentle heating of glasswares and substances
		b)can withstand prolonged heating without breaking
		c) visually determine the identity of an unknown metal or metalloid ion based on the characteristic color the chemical/salt emits on the Bunsen flame to investigate reactions of ions and apply these in qualitative analysis through an activity, on Flame Test
		d) bend a glass tubing

No.	Item Name	Technical Specifications
		e) heat,to sterilize, to accelerate, and to trigger chemical reactions,
		f) for combustion purposes and techniques
		Design Specifications:
		1. Features a globe-shaped body and flat base (bottom) with threaded mouth
		2. Materia l : Sturdy, heavy walled, clear, transparent, smooth, bubble-free glass
		3. Capacity : 150 mL
		4. With rust/corrosive-free wick holder permanently attached to a threaded base
		a) Material of wick holder and cover/caps : Nickel- plated brass
		b) Type of wick holder : Threaded
		5. With one (1) pc cotton fiber/strand braided wick perfectly fitted to the wick tube
		a) Material of wick : Cotton fiber/strand
		b)Type of wick: Well-braided
		c)Length of wick : 178-1809 mm
		d)Diameter : 5-6 mm
		6. With shiny, smooth, and corrosion-free metal snuff/snap-on cover/cap
		7 With ten (10) pc replacement well-braided cotton fiber/strand wicks
		8. Wrapped in paper, enclosed in bubble wrap and packed in a compartmentalized box
		9. Must be free from rust, breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein.
		10. Comes with a brand printed permanently onto the box
		11. Must be brand new
9	Burner, Bunsen	Functional Specifications: Used to :
		a) produce single, hot, continuous, consistent open blue flame
		b) for slow/gentle heating of glasswares and substances,
		c) rapidly heat high-boiling liquids with low flammability like water
		d) heat, sterilize/accelerate/ trigger chemical reactions,
		e) for combustion purposes
		Performance Specifications: Must be able to produce a single, hot, continuous, consistent open blue flame to:
		a) visually determine the hottest part of the Bunsen flame
		b) visually determine the identity of an unknown metal or metalloid ion based on the characteristic color the chemical/salt emits on the Bunsen flame to investigate reactions of ions and apply these in qualitative analysis through an activity, on Flame Test
		c) bend a glass tubing

No.	Item Name	Technical Specifications
		d) used as a heating medium to demonstrate distillation, as one of the simple separation techniques
		e) slow/gentle heating of glasswares and substances
		f) rapidly heat high-boiling liquids with low flammability like water
		g) heat,to sterilize, to accelerate, and to trigger chemical reactions,
		h) for combustion purposes and techniques
		Design Specifications:
		1.Type : Gas type with accessories
		2. Features a long, hollow burner tube with stabilizer top and serrated inlet tube
		3. Material for burner tube : Aluminum, with the following dimensions:
		. a) Diameter of burner tube: 11-12 mm diameter
		b) Over-all height: 152-155 mm
		4. With flame stabilizer
		5.With threaded gas needle valve (located opposite to serrated inlet tube)
		6. Material of base: Nickel-plated zinc-alloy
		7. Must be able to stand solidly/is stable when placed on a level surface
		8. Individually packed in a sturdy box
		9. With User's Manual and Operations Guide in English
		10. Comes with Activity Sheets with Teacher's Manual in English
		11. For numbers #9 to 10; the technical specifications (a-e) must be followed:
		a) For Contents List of materials, In Table form
		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) In 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Margins on all sides with 2 point width border line
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		12. Must be free from rust, cracks, chipped rims and sharp edges, surface irregularities and all other defects not stated herein.
		13. Comes with a brand printed permanently on the box
		14. Must be brand new

No.	Item Name	Technical Specifications
10	Cork borer	Functional Specifications: Used to bore or to cut a round hole of six different diameters in a cork/rubber stopper with a steel ramrod/eject rod pushing the removed cork out of the borer
		Performance Specifications: Must be able to bore or to cut a round hole of six different diameters in a cork or rubber stopper and remove cork out of the borer by pushing it with a steel ramrod/eject rod
		Design Specifications:
		1. Shape of cork borer : Long, hollow round rod/tube with sharpened ends
		2. Material of tube/rod : Nickel-plated steel borer
		3. A set of six (6) different diameter sizes:(4 mm, 4.5 mm, 6 mm, 8 mm, 9.5 mm, 11 mm)
		4. Comes with a handles whch are individually and permanently numbered (1-6) for easy identificationhandle
		a) Shape of handle: T-shaped
		b) Material of handle : Hard plastic
		c) Finish: Smooth
		d)Color of handle: Red
		5. Includes a ramrod/eject rod pushing the removed cork out of the borer Material of ramrod/eject rod: Steel
		6. Packaging: Resealable plastic pouch
		7.Comes with a brand
11	Cork Stopper # 5 (for Ø 16mm test tube)	Functional Specifications: Used to seal the openings of 16 mm diameter test tubes and other laboratory glassware to prevent leaks, hazards and contamination to yield positive results during chemical reactions
		Performance Specifications: Must be able to seal the openings of 16 x 150 mm test tubesand other laboratory glassware and to prevent leaks, hazards and contaminationto yield positive results during chemical reactions
		Design Specifications:
		1. Features an extra Select Grade cylindrical with a tapered bottom end with fewer lenticels (crevices)
		2. Material of cork : Elastic and near impermeable with the following dimensions:
		a) Height : 22-22.5 mm
		b) Top Ø : 15-15.5 mm
		c) Bottom Ø: 13-13.5 mm
		3. Number of cork stopper: #5
		4. Must perfectly fit the 16 x 150 mm test tube
		5. Must be free from defect of discontinuities in the cork tissue such as "lung", exfoliation, and insect,ant/worm galleries and all other defects not stated herein.
		6. Packed in a resealable plastic bag
		7. With brand printed permanently on the resealable plastic bag
		8. Must be brand new

No.	Item Name	Technical Specifications
12	Crucible with lid/cover	Functional Specifications: Used as a container to heat metals or other substances may be melted or subjected to very high temperatures
		Performance Specifications: Must be able to contain elements, compounds, metals, organic compounds or other substances to be melted or subjected to very high temperatures to determine mass relationship in a chemical reaction
		Design Specifications:
		1. Features a high/tall form cylindrical crucible
		2. Capacity : 30 mL
		3. Material : Porcelain, with the following dimensions:
		a) Height : 43-50 mm
		b) Base diameter: 24-26 mm
		c) Top diameter: 33-40 mm
		4. Glazed inside and out, except outside bottom and rim.
		5. With crucible cover completely glazed except for rim.
		6.Must be able to stand solidly flat/is stable when placed on a level surface
		7.Must be free from breakage, cracks, chipped rims and and sharp edges, surface irregularities and all other defects not stated herein
		8. Comes with a brand printed permanently in the comparmentalized sturdy box
		9. Must be brand new
13	Dish, Evaporating, 75 mL	Functional Specifications: Used to contain/hold substances and to heat chemical solutions gradually, driving off the water to leave residual chemical solute
		Performance Specifications: Must be able to contain/hold substances and to demonstrate evaporation, as one of the techniques in separating mixtures, by heating chemical solutions gradually, driving off the water to leave residual chemical solute
		Design Specifications:
		1. Features a deep form, broad, and wider at the top, with round bottom
		2. Material : Porcelain, with the following dimensions:
		a) Diameter : 80-84 mm
		b) Height/depth : 30-35 mm high
		3. Capacity: 75 mL
		4. With pouring lip/spout
		5. Must be free from breakage, cracks, chipped rims and sharp edges, other surfaceirregularities and other defects not stated herein.
		6.Must be able to contain the salt solution for an experiment on evaporation
		7. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, surface irregularities including all other defects not stated herein.

No.	Item Name	Technical Specifications
		8. Each dish is individually packed,wrapped in paper, and packed in a sturdy box
		9. Comes with a brand printed permanently in the sturdy box
		10. Must be brand new
14	Double burette clamp/holder	Functional Specifications: Used to hold and secure two burettes on a stand, so that each burette is fixed and more convenient for the experiment.
		Performance Specifications: Must be used to hold and secure two burettes simultaneously on a stand, so that the burettes are fixed and more convenient to perform acid-base titration experiment to determine concentration of solutions.
		Design Specifications:
		1. Features a double Y-shaped or butterfly-shaped items which have spring action clamps.
		2. Material of body: Die cast aluminum with chemical resistant white enamel finish,with the following dimensions:
		Length range : 245-262 mm
		Width range : 120-127 mm
		Mounting hole diameter (Φ): 15-36 mm
		3. Color of body : White enamel
		4. Material of sleeves/jaws/grips : Vinyl or rubber for excellent grip
		5. Color of sleeves/jaws/grips : Colored
		Distance between sleeves/jaws/grips : 85 -120 mm
		6. With 4 spring action clamps, 2 on each opening
		7. With two separate adjusting knobs or squeeze clamping mechanism
		8. Color of adjusting knobs : Colored
		9. Mounts directly to standard support rod with built in hook connector.
		10. The dual metal burette clamp supports burettes from 10-100 mL (10-100 cc).
		11. They can be attached to support stand rods from16 mm to 17 mm diameter
		12. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein.
		13. Comes with a brand marked permanently onto the body/box
		14. Must be brand new
15	Filter Paper, crepe, 580mm x 580 mm sheet, Grade 0905	Functional Specifications: Used to filter/separate mixtures solids from liquids
		Performance Specifications: Must be able to filter solids from liquids to demonstrate filtration, as one of the techniques in separating mixtures (solids from liquids)
		Design Specifications:
		1. Type: Technical use

No.	Item Name	Technical Specifications
		2. Shape of filter paper : Square
		3. Material: Cellulose with the following dimensions:
		a) Length: 580-580.5 mm
		b) Width : 580-580.5 mm
		4. Color: White to cream
		5. Surface: Creped, very coarse textured surface
		6. Grade 0905
		7. Initial Filtration Speed: 5 sec/10 mL
		8. Flow rate : High
		9. Packed in a brown filter paper tube
		10.Must be free from dirt and all other surface imperfections including all other defects not stated herein
		11. Comes with a brand marked permanently printed in the filter paper tube
		12. Must be brand new
16	Flask, Erlenmeyer, borosilicate, narrow-mouth, 250 mL	Functional Specifications: Used to :
		a) contain/hold a small chemical reaction,
		b) mix solids and liquids,
		c)heat substances over a Bunsen/alcohol burner's flame up to over 100 °C or
		d)collect them in a titration/distillation experiment
		Performance Specifications: Must be able to:
		a) contain/hold a small chemical reaction ,
		b) mixes solids and liquids during chemical reaction,
		c) heats substances up to 100°C over a Bunsen burner's flame up to 250 mL, or
		d) serves as a reaction vessel in a titration experiment, and to collect distillate during distillation
		Design Specifications:
		1. Features a conical body, a cylindrical short neck , narrow mouth, with sloping sides, beaded rim, and with a flat bottom
		2. Material : Clear, and transparent bubble-free, smooth, borosilicate, glass with the following dimensions:
		a)Outside diameter: 80-82 mm
		b)Height: 130-132 mm
		c) Thickness: 1.5 to 2.0mm
		b) Neck inside diameter range : 28 to 30 mm
		3. With uniform wall thickness
		4. With narrow mouth, heavy duty beaded rim, graduated
		5. With permanent durable white enamel graduations of approximate volumes, large white block letters,numbers and easy to read inscriptions enamelled onto the glass, which includes the following:
		a) Manufacturer's name or trademark
		b) Capacity: 250 mL
		c) With large white marking spot

No.	Item Name	Technical Specifications
		d) With single graduated metric scale
		d1) Graduation range : 50 -200 mL
		d2) Graduation interval: 25 mL
		d3) Graduation starts at: 50 mL in 25 mL increments e) Tolerance: ±6% and other inscriptions enamelled onto the glass
		6. Wrapped in paper and individually packed in a compartmentalized box
		7. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		8. Must be able to withstand heating of water up to 100 deg C
		9. Placed in bubble wrap and packed in a sturdy box to help prevent glass breakage.
		10. Comes with a brand enamelled permanently onto the glass
		11. Must have a brand printed permanently on the glass
		12. Must be brand new
17	Funnel, borosilicate, fluted	Functional Specifications: Used to direct the smooth flow of the liquid or fine-grained substances into another container tp prevent spills
		Performance Specifications: Must be able to direct the smooth flow of the liquid or fine-grained substances into another container to prevent spills
		Design Specifications:
		1.Type : 60 ° angle, Fluted short stem funnel
		2. Shape: A wide, inverted conical top with narrow short circular tube at the bottom, with depressed inside flutings
		3. Material: Borosilicate, clear, transparent,bubble-free glass,with the following dimensions:
		a) Top outside diameter: 75-86 mm
		b) Stem outer diameter : 8-9.5 mm
		c) Stem length : 72-76 mm
		d) Total Height : 139-140 mm
		4. With heavy beaded rim/edge and heavy uniform wall for strength.
		5. With slanted fire polished tip, filter angle (angled 60°) and depressed inside fluting help reduce filtering time
		6. Wrapped in paper, enclosed in bubble wrap, and individually packed in a sturdy box
		7. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		8. Comes with a brand embossed onto the glass
		9. Must be brand new
18	Glass Tubing	Functional Specifications: Used to contain/hold/mix liquids or gases during chemical reactions and to connect other pieces of equipment/glasswares to a gas or liquid assembly
		Performance Specifications: Must be able to:

No.	Item Name	Technical Specifications
		a) be bent to onnect other pieces of equipment/glasswares to a gas or liquid assembly like in the activity " Flowing Up" and connect Florence flask to the Liebig condenser as a substitute for distilling flask for Distillation set up
		b) contain/hold/mix liquids or gases during chemical reactions, to relate the rate of gas effusion with molar mass and demonstrate Graham's law of effusion in an experiment where a white ring mass is observed
		Design Specifications:
		1. Shape : Long slender hollow glass
		2. Material : Soda lime, clear, transparent, bubble-free glass tubing, with the following dimensions:
		a) Outside diameter : 6.0-6.5 mm
		b) Wall thickness : 1.0-1.2 mm
		c)Length: 1219-1500 mm
		3. With fire polished ends
		4. Individually wrapped in used newspaper, enclosed in a bubble wrap, and packed in a sturdy box
		5. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		6. Comes with a brand printed permanently on its packaging (sturdy paper tube with cover)
		7. Must be brand new
19	Gloves, Hand, super nitrile	Functional Specifications: Used to protect hands against mechanical risks, microorganisms, chemical burns and splashes
		Performance Specifications: Must be able to protect hands against mechanical risks, microrganisms, chemical burns and splashes
		Design Specifications:
		1. Features a slightly curved fingers and forward-facing thumb correspond to the natural position of the hand (hand-shaped)
		2. Material : Nitrile, reusable, with the following dimensions:
		a) Length of gloves : 330-360 mm
		b)Thickness : 15 mil/0.38 mm minimum
		The thickness must be measured from the cuff, palm and fingers
		c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the hand gloves, is super nitrile, to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier. d) With Certification from the manufacturer that the hand gloves is reusable and not disposable
		3. Color : Green
		4. Size : 8/Medium
		5. Interior finish (liner material) : Flocklined acid/solvent resistant)

No.	Item Name	Technical Specifications
		6. Exterior finish : Embossed texture
		7. Cuff style: Straight
		8. Latex free to suit those with latex allergies
		9. Non-slip wear resistant high elasticity , waterproof
		10. Puncture resistant
		11.With detailed imprints on each glove, on the following:
		a) the glove size/s
		b) the name of manufacturer
		c) nitrile, flocklined
		d) individual manufacturing lot
		e) with pictograms for certification category requirements CE 0334 (EN 420, EN 388, EN 374) designed for protection against mechanical risks, chemical risks, and micro-organisms)
		12. Individually packed in pairs in a resealable plastic bag
		13 With a statement of conformity from the manufacturer that the gloves complies with the specifications currently published and has been subject to the strict quality conditions imposed by internal management systems.
		14.Comes with a brand printed permanently onto the gloves
		15. Must be brand new
20	Graduated Cylinder, borosilicate, 10 mL	Functional Specifications: Used to measure and to deliver the volume of liquids
		Performance Specifications: Must be able to measure and to deliver the volume of liquids up to 10 mL capacity
		Design Specifications:
		1. Features a narrow cylindrical container with a small turned-out lip
		2. Materia l: Borosilicate, clear, smooth,transparent and bubble-free glass
		a)Thickness range : 1.3-1.4 mm
		b) Outside diameter: 13-14 mm
		c) Height: 177-178 mm
		3. Features an easy-pour spout
		4. With permanent white enamel graduations of approximate volumes, large white block letters,numbers and inscriptions/markings easy to read etched/engraved onto the glass, before the first graduation, which includes the following:
		a) Manufacturer's name or trademark
		b) Capacity: 10 mL
		c) Graduations: 0.10
		d) Class: A
		e)) Tolerance : ± 0.10 - ±0.20
		f) EX/TD g) ISO/ASTM/Certification/s latest issued by the concerned institution which must conform to the standards appropriate to the goods' country of origin. institution appropriate to the goods' country of origin.
		h) 20°C-27°C
		5. Single metric scale
		a) Graduation Range : 1 to 10 mL

No.	Item Name	Technical Specifications
		b) Graduation interval : 0.1 mL
		6.With a hexagonal non-detachable glass base
		7. With a bumper guard
		8. With Statement of Accuracy (Certificate of Traceability) indicating accuracy traceable to standards of the country of origin
		9. Placed in bubble wrap,and packed individually in a compartmentalized box
		10. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		11. Comes with a brand marked permanently onto the glass
		12. Must be brand new
21	Graduated Cylinder, borosilicate, 100 mL	Functional Specifications: Used to measure and to deliver the volume of liquids
		Performance Specifications: a) Must be able to measure and to deliver the volume of liquids up to 100 mL capacity b) Used as a container to determine the volume of irregularly shaped solids by water displacement
		Design Specifications:
		1. Features a narrow cylindrical container with a small turned-out lip
		2. Material : Borosilicate, clear and transparent bubble-free glass with the following dimensions:
		a)Thickness range : 1.3-1.4 mm
		b)Outside diameter: 29-31 mm
		c) Height: 254-256 mm
		3. Features an easy-pour spout
		4. With permanent white enamel graduations of approximate volumes, large white block letters,numbers and inscriptions/markings easy to read etched/engraved onto the glass, before the first graduation, which includes the following:
		a) Manufacturer's name or trademark
		b) Capacity: 100 mL
		c) Graduations: 1 mL
		d) Class A
		e) Tolerance : ± 0.60 mL
		f) EX/TD
		g) ISO/ASTM/Certification/s latest issued by the concerned institution which must conform to the standards appropriate to the goods' country of origin.
		h) 20°C
		5. With single graduated metric scale
		a)Graduation range : 5 to 100 mL
		b) Graduation Interval : 1 mL
		6. With plastic bumper guard
		7. With a hexagonal non-detachable glass base

No.	Item Name	Technical Specifications
		8. With Statement of Accuracy (Certificate of Traceability) or Certification of Accuracy atest issued by the concerned institution which must conform to the authoritative standards lappropriate to the goods's country of origin
		9. Placed in bubble wrap,and packed individually in a compartmentalized box
		10. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		11. Comes with a brand marked permanently onto the item
		12. Must be brand new
22	Graduated pipette with rubber pipettor, borosilicate, 10 mL	Functional Specifications: Used to measure the amount of liquid being dispensed/delivered/transferred to another containeraccurate up to 10 mL capacity
		Performance Specifications: Must be able to measure the amount of liquid being dispensed/ delivered/transferred to another container accurate up to 10 mL capacity
		Design Specifications:
		1. Features a serological, transfer type straight tube with one constricted end
		2. Material : Borosilicate, reusable, clear, transparent bubble-free glass
		a) With Certification from the manufacturer that the graduated pipette is reusable and not disposable
		3. With permanent colored enamel graduations of approximate volumes, large white block letters, numbers and inscriptions/markings easy to read etched/engraved onto the glass, before the first graduation, which includes the following:
		a) Manufacturer's name or trademark
		b) Capacity : 10 mL
		c) Color band code for 10 mL cap :Orange
		d) Graduation interval: 0.1 mL
		e) Class A
		f) Marked "TD" /Ex
		g) Tolerance : ± 0.06
		h) ISO/ASTM/Certification/s latest issued by the concerned institution which must conforms to the authoritative standards appropriate to the goods' country of origin.
		i) 20°C
		4. Graduated to tip, zero at top
		5. Color code for 10 mL cap :Orange
		6. Top end is constricted
		7. Capacity: 10 mL
		8. Graduation interval: 0.1 mL
		9. Class A permanently marked on the glass
		Tolerance ±0.06 mL
		10. Graduations , approximate volumes, capacity, and other markings are in permanent amber stain which resists aggressive washing solutions

No.	Item Name	Technical Specifications
		11. With Statement of Accuracy/ Certification of Accuracy latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin
		12. With a statement of conformity from the manufacturer that the product complies with the specifications currently published and has been subject to the strict quality conditions imposed by internal management systems.
		13.Accessory :
		With Rubber pipettor
		a) Typ : Three (3) -way Safety Bulb-type Pipet Filler with S, E and A letters embossed on the rubber
		b) Material : Non-toxic natural rubber
		c) Color : Red/orange
		d) With pinch release valves that control air evacuation, liquid uptake, and liquid dispensing
		e) Fits standard size pipettes
		14. Packaging : Wrap glassware in newspaper and secure with a piece of masking tape and place in a bubble pouch, enclosed in polystyrene and packed in a sturdy box
		15. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		16.Comes with a brand printed permanently on the glass
		17. Must be brand new
23	Hydrometer for heavy liquids	Functional Specifications: Used to measure relative density of heavy liquids based on the concept of buoyancy
		Performance Specifications: Must be able to measure relative density of heavy liquids based on the concept of buoyancy, like glycerine
		Design Specifications:
		1. Type : Long Plain Form
		2. Features a long cylindrical hollow glass tube with a bulb weighted at the pointed bottom with a steel ballast with graduations on the arrow stem for measuring.
		3. Material : Clear , transparent bubble-free Glass, with the following dimensions:
		a) Length : 300 - 330 mm
		4. Specific Gravity Range: 1.00 - 2.00
		5. Subdivision : 0.01
		6. Comes with a ballast
		a) Material of ballast : Glass
		b) Heavy metals (lead, mercury)- free metal ballast
		c) Material inside the ballast : Steel pellets and
		d) With a binder
		7. With Statement of Accuracy/ Certification of Accuracy latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin
		8. Individually serialized
		9. Individually packed in a protective hard plastic case

No.	Item Name	Technical Specifications
		10. With User's Manual in English
		11. With Activity Sheets/Teacher's Manual in English
		12.For numbers #10-11, the technical specifications (a-e) must be followed:
		a) For Contents List of materials, In Table form
		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) in 0.3 minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size: 12
		iv) Margins on all sides with 2 point width border line
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		13. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein.
		14. Must have a brand etched/engraved onto the glass
		15. Must be brand new
24	Hydrometer for light liquids	Functional Specifications: Used to measure relative density of light liquids based on the concept of buoyancy like water
		Performance Specifications: Must be able to measure the relative density of liquids lighter than water based on the concept of buoyancy
		Design Specifications:
		1. Type : Long Plain Form
		2. Shape : Long cylindrical hollow glass tube with a bulb weighted at the bottom with a steel ballast with graduations on the narrow stem for measuring
		3. Material : Clear , transparent bubble-free Glass , with the following dimensions:
		a)Total Length: 300 - 330 mm
		b)Subdivision : 0.005
		4. Specific Gravity Range : 0.70 to 1.0
		5. Accuracy : ±1 subdivision
		6. Comes with a ballast
		a) With heavy metals (lead, mercury)- free metal ballast and glass
		b) Material inside the ballast: Steel pellets and
		c) With a binder

No.	Item Name	Technical Specifications
		7. With Statement of Accuracy/ Certification of Accuracy latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin
		8. Individually serialized
		9. Individually packed in a protective hard plastic case
		10. With User's Manual in English
		11. With Activity Sheets/Teacher's Manual in ENglish
		12.For numbers #10-11; the technical specifications (a-e) must be strictly followed:
		a) For Contents List of materials, In Table form
		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) in 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Margins on all sides with 2 point width border line
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		13. Must be free from breakage, cracks, scratches, chipped rims, sharp edges, striae, surface irregularities including all other defects not stated herein
		14. With a brand etched/printed onto the item
		15. Must be brand new
25	Manometer, Open U-tube	Functional Specifications: Used to indicate the difference in the heights of the manometric liquid to measure pressure
		Performance Specifications: Must be able to indicate the difference in the heights of the manometric liquid to measure pressure by getting the pressure difference
		Performance Specifications: Must be able to indicate the difference in the heights of the manometric liquid to measure pressure by getting the pressure difference
		Design Specifications:
		1. Type : Differential pressure manometer
		2. Shape : U-shaped glass tube partially filled with liquid, with no moving parts and requires no calibration
		3. Material : Glass
		4. With a 50-52 cm arm with funnel top on one arm and 4.5-5.5 cm bent (90°) with 15-16 mm rifted tip on another arm for easy connection

No.	Item Name	Technical Specifications
		5. U-tube is mounted on a board, fixed on a wooden stand for vertical mounting using metal clips
		a) Material of stand : Wood/en
		b) Dimensions of back plate
		i) Length : 540-542 mm
		ii) Width : 90-102 mm
		6. A millimeter scale is fitted between the arms of the tube.
		a) Scale having graduation range: 0-50 cm
		b) Graduation increment: 1 mm, with 0 at the bottom
		7. Accessories:
		a) With latex tubing, glass wall 2 mm thickness, 7.5-8.0 mm inner diameter.
		i) Material of rubber tubing: Non-toxic non-tacky latex rubber tubing for the laboratory activity.
		ii)Length of rubber tube: 3000-3005 mm
		8. Stand with glass tube placed in bubble wrap, enclosed in bubble wrap and packed individually in a sturdy box
		9. Accessories enclosed in resealable plastic bag
		10. With User's Manual in English
		11. With Assembly Guides and Activity Sheets
		12. For numbers #10 and 11; they must be:
		a) In Table form for List of materials, in A4 size, glossy paper,laminated
		b) In sentences format for instruction sheets/assembly guides
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c)Printed in original copy, not photocopied
		d) In colored drawings/illustrations
		e) in 0.3 minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Margins on all sides with 2 point width border line
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		13. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein.
		14. Individually packed in a sturdy box
		15. Comes with a brand printed permanently onto the wooden stand
		16. Must be brand new
26	Mortar and Pestle, porcelain, 150 mL.	Functional Specifications: Used to pulverize/mash/grind and to mix materials in a mortar using a pestle

No.	Item Name	Technical Specifications
		Performance Specifications: Must be able to pulverize/mash/grind and mixes materials in a mortar using a pestle to demonstrate how particle size affects solubility and the rate of chemical reaction.
		Decreasing the size of the particles increases the rate of dissolving and speeds up the rate of reaction because the surface area of the reactant has been increased.
		Design Specifications:
		A. Mortar
		1. Shape of mortar : Deep form, bowl shape, with wide mouth , and with deeply molded, smooth rounded bottom
		2. Material for mortar and pestle: Porcelain, with the following dimensions:
		a) Outside diameter : 130-132 mm
		b) Height/Depth : 65-85 mm
		3. Capacity: 150 mL
		4. With pouring lip
		5. With unglazed grinding surface (interior) and uniformly glazed exterior
		B. Pestle:
		6. Shape of pestle: Cylindrical with bulbous bottom, with the following dimensions:
		a) Length range : 133-160 mm and
		b) Diameter range: 28-40 mm diameter at its widest point.
		7. Material of pestle: A heavy bat-shaped porcelain
		8. Uniformly glazed on its handle and rough on opposite end
		9. The set is individually wrapped, enclosed in a bubble wrap and packed in a sturdy box
		10. Must be free from breakage, cracks , chipped rims, sharpedges, all surface irregularities and all other defects not stated herein
		11. Comes with a brand marked permanently on the body/box
		12. Must be brand new
27	Nichrome wire. 0.4, 100 ft	Functional Specifications: Used as a wire loop and heating element on which a metal salt or solid ionic compound is made to adhere into it and is heated to emit a characteristic color on the Bunsen flame to identify the particular metal present in the compound
		Performance Specifications: Must be used as a wire loop on which a metal salt or solid ionic compound is made to adhere to, and is heated to emit a characteristic color on the Bunsen flame to identify the particular metal present in the compound in a laboratory activity, the Flame test
		Design Specifications:
		1. Shape: Round wire
		2. Material of wire: Nichrome-Alloy of nickel and chromium, Ni80 Cr20 with the following dimensions:
		a) AWG size: 26
		b) Diameter: 0.4 mm
		c) Length : 100 ft
		3. Form: Soft, rust-free wire

No.	Item Name	Technical Specifications
		4. Color: Silvery grey
		5. Resistance : 2.57 ohms/foot
		6. Annealed soft
		7. Perfectly tensioned. Zero elongation, scratches, or other flaws.
		8. Comes in a spool
		9. Packed in a resealable plastic pouch
		10. Comes with a brand
28	Reagent Bottle, narrow-mouth, amber, borosilicate, 250 mL	Functional Specifications: Used to contain/store and to provide UV protection of prepared light sensitive solutions/substances to prevent change/alteration in the composition of their contents
		Performance Specifications: Must be able to contains/store and to provide UV protection for the prepared light sensitive solutions/substances to prevent change/alteration in the composition of their contents.
		Design Specifications:
		1. Shape : Cylindrical narrow-mouth bottle
		2. Material : Borosilicate, smooth, bubble-free glass with the following dimensions:
		a) Bottle diameter range: 66-72 mm
		b) Neck I.D. range : 23-28 mm
		c) Over-all height: 130 to 150 mm
		3. Color: Amber
		4. With approximate volumes, capacity, and other markings are in permanent white enamel which resists aggressive washing solutions
		a) Manufacturer's name or trademark
		b) 250 mL
		c) white marking field/spot in permanent white enamel
		5. With octagonal plastic stopper Socket size: 19/26 that fits the mouth well
		6. With a white marking field/spot in permanent white enamel
		a) logo/brand name
		b) 250 mL
		7.Wrapped in paper, enclosed in bubble wrap and packed individually in a padded sturdy box
		8. Must be free from breakage, cracks , chipped rims, sharp edges, striae, all surface irregularities including all other defects not stated herein
		9. Comes with a brand enamelled permanently onto the glass
		10. Must be brand new
29	Reagent Bottle, wide-mouth, transparent, borosilicate, 250 mL	Functional Specifications: Used to hold/ contain/store prepared solutions/ substances
		Performance Specifications: Must be able to hold/contain/store prepared solutions/substances
		Design Specifications:
		1. Shape: Cylindrical wide-mouth bottle
		2. Material: Borosilicate, clear, smooth, transparent and bubble-free glass, with the following dimensions:
		a) Bottle diameter : 69 mm to 73 mm

No.	Item Name	Technical Specifications
		b) Mouth diameter: 34 mm to 44 mm
		c) Height : 129 mm to 142 mm
		3. With ground-in glass stopper
		4. With air tight seal
		5. With approximate volumes, capacity, and other markings are in permanent white enamel/stain which resists aggressive washing solutions
		a) Manufacturer's name or trademark
		b) 250 mL
		c) white marking field/spot in permanent white enamel
		6. Wrapped in paper, enclosed in bubble wrap and packed individually in a sturdy box
		7. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein
		8. Comes with a brand enamelled onto the glass
		9. Must be brand new
30	Rubber Stopper # 0 (for Ø 16mm test tube)	Functional Specifications: Used to seal the openings of 16 mm diameter test tubes and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance.to prevent leaks, hazards and contamination
		Performance Specifications: Must be able to seal the openings of 16 x 150 mm test tubes and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance.to prevent leaks, hazards and contamination
		Design Specifications:
		1. Shape: Cylindrical with a tapered bottom end
		2. Material : Rubber compound with the following dimensions:
		a) Height : 25-25.5 mm
		b) Top Ø : 17-17.50 mm
		c) Bottom Ø : 13-13.5 mm
		3. Hardness : 40-45 Duro
		4. Packed in resealable plastic bag
		5. With no. 0 embossed onto the rubber stopper
		6. Must be free from cracks, sharp edges, and all other surface imperfections including all other defects not stated herein
		7. Comes with a brand marked permanently in the bag
		8. Must be brand new
31	Rubber Stopper # 6 for Erlenmeyer Flask (narrow-mouth) 250 mL , 1 hole	Functional Specifications: Used to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance with one 1) hole opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction .to prevent leaks, hazards and contamination.
		Performance Specifications: Must be able to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance .with one (1) hole opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction to prevent leaks, hazards and contamination.

No.	Item Name	Technical Specifications
		Design Specifications:
		1. Shape: Cylindrical with a tapered bottom end
		2. Material : Premium grade SBR black rubber compound with the following dimensions:
		a) Height: 25 mm
		b) Top Ø: 32 mm
		c)Bottom Ø : 26 mm
		d) Hole Ø: 5 mm
		3. Number of holes :With one (1) hole
		4. Dimension tolerance on height, top and bottom diameter : ± 0.5 mm
		5. Hardness : 40 ± 5 Duro
		6. Packed in resealable plastic bag
		7. Comes with a brand
32	Rubber Stopper # 6 for Erlenmeyer Flask (narrow-mouth) 250 mL , 2 holes	Functional Specifications: Used to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance with two (2) holes opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction to prevent leaks, hazards and contamination.
		Performance Specifications: Must be able to seal the openings of narrow mouth 250 mL Erlenmeyer flasks and other laboratory glassware that require a tighter seal or a greater degree of chemical resistance with two (2) holes opening for insertion of a thermometer, glass tubing or stirrer for use during chemical reaction to prevent leaks, hazards and contamination.
		Design Specifications:
		1. Shape: Cylindrical with a tapered bottom end
		2. Material : Premium grade SBR black rubber compound with the following dimensions:
		a) Height: 25 mm
		b) Top Ø: 32 mm
		c) Bottom Ø : 26 mm

No.	Item Name	Technical Specifications
		d) Hole Ø: 5 mm
		3. Number of holes : Two (2) holes
		4. Dimension tolerance on height, top and bottom diameter : ± 0.5 mm
		5. Hardness : 40 ± 5 Duro
		6. Packed in resealable plastic bag
		7. Comes with a brand
33	Safety Goggles, polycarbonate	Functional Specifications: Used to protect eyes and face against chemical burns and splashes
		Performance Specifications: Must be able to protect eyes and face against chemical burns and splashes
		Design Specifications:
		1 Features an angled vented portion that does not allow direct straight line from the exterior to the interior of the eyewear which encloses wide area surrounding the eyes
		2. Material of lens : Polycarbonate lens
		a) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the lens of the safety goggles, is polycarbonate, to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier. b) With Certification from the manufacturer that the pair of hand gloves is reusable and not disposable
		3. Color of the lens: Clear
		4. Lens type : Anti-splash, anti-fog treated/anti-scratch coating
		5. With indirect ventilation channels (preventing penetration of splashes) one through each side of the frame to keep out large particles, dust, and liquids and splash hazards, improves air circulation and reduces fogging in hot/humid conditions
		6. With wrap around elasticized adjustable headband integrated with goggle frame to prevent slippage and holds the goggle more securely
		7. With pivoting headband clips to adjust strap around hard hats or hearing protection
		8. Peel-off goggle covers available to extend the life of the lens
		9. Can be worn over most prescription eyewear (OTG compatible)
		10. With firm comfortable seal around forehead, cheeks, nose and temples protects against chemicals, dust and grindings

No.	Item Name	Technical Specifications
		11. Shall bear mark ANZI Z87.1-2010 Standard for Chemical Splash and Dust Protection, Z87+D3 to indicate an impact protector type (ANSI Z87.1, CE EN 166 or CSA Z94.3 certification compliance) on the frame and the lens
		12. The manufacturer or supplier certification mark must be present on all approved safety lenses, frames (front and temple), removable side shields, and other parts of the glasses, or goggles.
		13. Individually packed in a transparent plastic bag
		14. Labeling of the primary packaging displays, product name, product reference, manufacturer name, size, type, performance testing information for particular storage conditions (temperature, pressure, light, humidity, as appropriate or harmonized symbol as applicable.
		15. With issuance of certification statement from the manufacturer as to the:
		a) Non-toxicity of the materials used
		b) Material of the lens : polycarbonate
		c) It is fog coated/scratch and impact resistant
		16. Individually packed in a sturdy box/plastic bag
		17. Must be free from cracks, sharp edges, and all other surface imperfections including all other defects not stated herein
		18. Comes with a brand marked permanently on the box
		19. Must be brand new
34	Spatula, spoon, porcelain and glazed	Functional Specifications: Used to hold/contain and transfer solids and liquids from one container to the other
		Performance Specifications: Must be able to hold/contain and transfers solids and liquids from one container to the other
		Design Specifications:
		1. Features a white, broad, flat, blade (spatula) on one end and a spoon on the other end.
		2. Material : Uniformly glazed smooth finish porcelain
		a) Capacity: 0.3 mL
		b) Over all Length : 121-142 mm
		3. Must be free from breakage, cracks,chipped edges and all other defects not stated herein
		4. Wrapped in paper, enclosed in bubble wrap and packed in a sturdy box.
		5. Must be free from cracks, sharp edges, and all other surface imperfections including all other defects not stated herein.
		6. Comes with a brand marked permanently in the box
		7. Must be brand new
35	Stirring Rod, Ǿ 6 mm x 250 mm long	Functional Specifications: Used to mix liquids and solids
		Performance Specifications: Must be able to mix liquids and solids well to speed up the dissolving process and increases the rate of reaction
		Design Specifications:

No.	Item Name	Technical Specifications
		1. Features a long, slender cylindrical solid glass, with the same thickness and slightly longer than a drinking straw and with rounded fire polished ends.
		2. Materia l: Clear, transparent bubble-free stir stick solid borosilicate glass with the following dimensions:
		a) Diameter(Ø) : 6-6.3 mm
		b) Length: 250-254 mm long
		3. With rounded and fire polished ends
		4. Wrapped in paper, enclosed in bubble wrap and packed in a sturdy box
		5. Must be free from breakage, cracks, chipped unpolished ends, all other surface imperfections icluding all other defects not stated herein
		6. Comes with a brand marked permanently in the box
		7. Must be brand new
36	Test tube brush	Functional Specifications: Used to clean test tubes and other small sized glasswares
		Performance Specifications: Must be able to clean test tubes and other small-sized glasswares with densely filled radial tip and head brush to make complete contact with walls, corners and bottom.
		Design Specifications:
		1. Features a radial tufted tip white nylon bristles and brush head lined against a rather sturdy wire handle with a looped end to make complete contact with walls, corners and bottom to clean test tubes and other small sized glasswares .
		2. Material of bristles : Medium stiff nylon with the following dimensions:
		a) Diameter of bristle section: 18-19 mm
		b) Length of bristle section : 82-102 mm
		c) Over-all length: 228 -229 mm
		3. Material of handle: Galvanized steel wire
		4. Type of wire handle : Common loop twisted wire
		5. With circular wire loop for hanging
		6. Packed in a resealable plastic bag
		7. Must be free from rust, sharp edges, all other surface irregularities including all other defects not stated herein
		8. Comes with a brand marked permanently in the box
		9. Must be brand new
37	Test Tube, borosilicate, Ø 16 mm x 150 mm long	Functional Specifications: Used to contain/hold a small chemical reaction , to mix small quantities of solids and liquids, and to heat small quantities of substances
		Performance Specifications: Must be able to contain/hold a small chemical reaction and , mixes solids and liquids, heats small quantitiy of substances up to more than 100°C over a Bunsen burner's flame
		Design Specifications:

No.	Item Name	Technical Specifications
		1. Features a finger-like length of glass tubing, open at the top, usually with a rounded lip at the top, and a rounded 'U' shaped bottom
		2. Material of test tube: Borosilicate , clear, transparent and bubble-free, reusable glass, with rim, with the following dimensions:
		a) Outside Diameter: 15.8-16.0 mm
		b) Thickness: 1.3 -1.4 mm
		c) Length: 150-152 mm
		d) Comes with a certification from the manufacturer that the test tube is reusable and not disposable
		3. Capacity: 20 mL
		4. With heavy uniform wall thickness, excellent heat resistance
		5. With large, white enamel marking spot
		6. Test tubes must be reusable (not disposable)
		7. Wrapped individually in tissue paper, enclosed in bubble wrap and packed in compartmentalized box
		8. Must be free from breakage, cracks, chipped rims, surface irregularities and all other defects not stated herein
		9. Comes with a brand enamelled permanently in the glass
		10. Must be brand new
38	Thermometer, Laboratory type, Alcohol, -20^{0}C to 110^{0}C	Functional Specifications: Used to measure the temperature
		Performance Specifications: Must measure the temperature , -20° to 110°C
		Design Specifications:
		1. Type : Alcohol filled, partial immersion thermometer
		2. Features a small sealed tube made of glass that has a small hollow bulb filled partly with ethanol and partly with nitrogen and ethanol vapors on one end and a thin capillary opening running through the length of its center
		3. Material : Glass
		4. Color : White/yellow
		5. Non-toxic red-filled thermometer
		6. Partial immersion type with immersion line indicator and ring top
		7. With precision red alcohol-filled, reinforced bulbs, and with expansion chamber
		8. With white back with non-roll sleeve
		9. With clear and permanent markings; scale never washes out
		10. Provided with non-roll plastic case
		11. With continuous alcohol column with no separations
		12. All graduation lines, figures, and letters should be clear-cut, distinct, and filled with a permanent pigment of suitable color with the following dimensions:
		a) Length : 200 mm (min)
		b). Accuracy: ± 1° C
		c) Range : -20°C to 110°C
		d) Division: 1°C

No.	Item Name	Technical Specifications
		e) Diameter: 5.8 to 6.2 mm f) Immersion line: 76 mm
		13. With Statement of Accuracy/ Certification of Accuracy latest issued by the concerned institution which must conform to the authoritative standards appropriate to the goods' country of origin
		14. Must be free from breakage , cracks, chipped and sharp edges and surface irregularities including all other defects not stated herein.
		15. Comes with a brand printed premanently onto the glass
		16. Must be brand new
39	Tong, Crucible	Functional Specifications: Used to lift and hold crucibles,remove the lids from crucibles, transfer evaporating dishes or picking small objects out of a reaction container
		Performance Specifications: Must be able to lift and hold crucibles, remove the lids from crucibles, transfer evaporating dishes or picking small objects out of a reaction container.
		Design Specifications:
		1. Features a scissor-like and a long bent neck tongs, with two anti-skid pincers or pieces of metals that concave together, which allow the users to grasp a hot crucible, flasks, evaporating dishes, or even small beakers
		2. Material : Stainless steel,durable, stable, rust and heat resistant
		a) Color: Silver
		b) Finish: Smooth
		c) Overall Length: 228 -229 mm
		3. With riveted joints
		4. With serrated tips.
		5. Enclosed in resealable bag and packed in a sturdy box
		6. Must be free from rust, dirt, cracks, chipped and sharp edges and surface irregularities including all other defects not stated herein
		7. Comes with a brand marked permanently in a box
		8. Must be brand new
40	Universal pH indicator	Functional Specifications: Used as an indicator to determine/measure the pH of substances, whether it is an acid, neutral or a base
		Performance Specifications: Must be used as an indicator to effect a color change when it is dipped into the different substances to determine/measure the pH of each, through comparison with the pH color chart provided, which corresponds to:
		a) For an acid : pH 0-pH 6;
		b) For a base : pH 8-pH 14.
		c) For distilled water : pH 7
		Design Specifications:
		1. Type: Test strips
		2. Shape: Rectangle
		3. Material: Cellulose/Paper based
		4. Dimension of pH strip :
		a) Length : 69 mm x 6 mm

No.	Item Name	Technical Specifications
		5. Number of colors in indicator test strip: In four colors to test pH values
		6. Number of test strips : 100 pc strips
		7. Packaging: Clear, transparent box
		8. Shape of box: Square
		9. With complete color chart for comparison with the color change to get the pH reading of the sample being tested
		10. No sharp edges on box
		11. Measures pH 0-pH 14
		12. Comes with a brand
41	Vial, screw-neck, 25 ml. (with screw-type plastic cap)	Functional Specifications: Used to hold/contain/store/mix small quantities of samples/ solutions/substances up to 25 mL
		Performance Specifications: Must be able to hold/contain/store/mix small quantities of samples up to 25 mL
		Design Specifications:
		1. Type : Bottle with threaded Screw cap
		2. Shape : Bottle-like shape with a threaded neck, solid plastic closure and with a flat bottom.
		3. Material : Borosilicate clear, transparent, and bubble-free glass, with the following dimensions:
		a) Outside Diameter : 25-50 mm
		b) Length: 60-80 mm
		4. With screw- type solid plastic cap
		5. Shape of neck : Cylindrical, round
		6. Neck finish : Continuous thread
		7. Cap Color: Colored
		8. Cap Attached: No
		9. Cap Material : Plastic
		10. Closure style : Solid top, screw thread cap
		11. Capacity: 25 mL
		12. Packed individually in a compartmentalized/partitioned box
		13. Must be free from breakage , cracks, chipped and sharp edges and surface irregularities including all other defects not stated herein
		14. Comes with a brand marked permanently on the box
		15. Must be brand new
42	Vial, screw-neck, 50 mL. (with screw-type plastic cap)	Functional Specifications: Used to hold/contain/store/mix small quantities of samples/ solutions/substances up to 50 mL
		Performance Specifications: Held/contained/stored/mixed samples/solutions/substances up to 50 mL
		Design Specifications:
		1. Type : Bottle with threaded Screw cap
		2. Features a bottle-like shape with a threaded neck, screw cap plastic closure and with a flat bottom
		3. Material : Borosilicate,clear, transparent, and bubble-free glass with the following dimensions:
		a) Outside Diameter : 25-50 mm

No.	Item Name	Technical Specifications
		b) Length : 100-108 mm
		4. Capacity: 50 mL
		5. Shape of neck : Cylindrical, round
		6. Neck finish : Continuous thread
		7. Cap Color :Colored
		8. Cap Attached: No
		9. Cap Material : Plastic
		10. Closure style : Solid top, screw thread cap
		11. Packed individually in a compartmentalized box
		12. Must be free from breakage , cracks, chipped and sharp edges and surface irregularities including all other defects not stated herein
		13. Comes with a brand marked permanently on the box
43	Volumetric Flask, borosilicate 250 mL	Functional Specifications: Used to measure/prepare/contain a precise volume of standard solutions at a certain temperature and precise dilution of solutions up to 250 mL
		Performance Specifications: Must be able to measure/prepare/contain a precise volume of standard solutions at a certain temperature and precise dilution of solutions up to 250 mL
		Design Specifications:
		1. Type: Class A
		2. Shape : A round or pear-shaped bulb, a long thin neck topped by a snap cap and with flat bottom
		3. Material of body: Borosilicate , clear, transparent and bubble-free, glass with the following dimensions:
		a) Height: 225 mm
		b) Outside diameter : 78 mm (approx.)
		c) Size: 250 mL
		d) Tolerance: ± 0.12 mL
		4. With heavy duty rim
		5. Comes with snap cap
		a) Material of snap cap :High density plastic (polyethylene)
		b) With octagonal grip
		c) Snap-cap : No. 250
		d) Color of snap cap: Blue
		6. Must meet ASTM E- 694 for volumetric ware, ASTM E-542 for calibration of volumetric ware and ASTM E-288 for volumetric flasks.
		7. Calibrated "to contain" (marked "TC" or "IN")
		8. Manufacturer should be accredited by NIST standards or its equivalent to the country of origin to certify that their items are calibrated.
		9. Must be free from breakage, cracks, sharp rims and other defects
		10. Packaging : Roll up glassware in newspaper and secure with a piece of masking tape and place in a bubble pouch and individually packed in a sturdy box
		11. Comes with a brand, with five (5) years existence in the glasswares industry
		14. Must be brand new
44	Watch Glass, Ø 90 mm	Functional Specifications: Used to:

No.	Item Name	Technical Specifications
		a) cover glasswares like beakers
		b) evaporates solvents in a sample and
		c) holds/contains liquids and solids prior to heating.
		Performance Specifications: Must be able to:
		a) cover glasswares like beakers
		b) evaporate solvents in a sample and
		c) hold/contain liquids and solids prior to heating.
		Design Specifications:
		1.Shape : Circular concave
		2. Material : Borosilicate, clear, transparent, and bubble-free glass with the following dimensions:
		a) Diameter : 90-91 mm
		b) Thickness range : 1.5 mm to 2.0 mm
		3. Fire-polished rims/edges
		4. Individually wrapped in used newspaper, enclosed in a bubble wrap, and packed in a sturdy box
		5. Must have fire polished edges/rims, be free from breakage, cracks, chipped and sharp edges, surface irregularities including all other defects not stated herein
		6. Comes with a brand marked permanently in the box
		7. Must be brand new
Chemistry - Molecular Geometry Models		
1	Model, Atomic Orbital, 82-pc	Functional Specifications: Used as a model/visual three dimensional (3D) representation of the shapes of the 14 different atomic orbitals
		Performance Specifications: A) Must be able to
		a) represent visually the 14 different atomic orbitals
		b) assemble/build the 14 atomic orbitals (basic s, p and d atomic orbitals)
		i) one (1) pc 1s-orbital, unhybridized
		ii) one (1) pc 2s-orbital, unhybridized
		iii) three (3) pc 2p-orbital unhybridized
		iv) five (5) 3d-orbital- unhybridized
		v) one unit with one 2s plus three 2p- orbitals as well vi) as one sp hybrid orbital
		vii) one (1) pc sp unhybridized change to one pc sp hybridized
		viii) one (1) pc sp2 unhybridized change to one pc sp2 hybridized
		ix) one (1) pc sp3 unhybridized change to one pc sp3 hybridized.
		Design Specifications:
		1. The pink & purple pear-shaped lobes to represent the 2-wave (positive and negative) phases of the s, p & d atomic orbitals.The pink and purple, pear-shaped lobes represent the phase Material : Plastic
		2. Opaque white spheres represent atomic nuclei. Material : Plastic

No.	Item Name	Technical Specifications
		3. With 14 easy-to-assemble atomic orbitals ((basic s, p and d atomic orbitals) a) 1 pc - 1s, Unhybridized b) 1 pc - 2s, Unhybridized c) 3 pc - 2p, Unhybridized d) 5 pc - 3d, Unhybridized e) 1 pc with one 2s plus three 2p orbitals, Unhybridized f) 1 pc sp, hybrid orbital, Hybridized g) 1 pc sp2 hybrid orbital, Hybridized h) 1 pc sp3 hybrid orbital, Hybridized
		4. Approximate model heights including clear, colorless base range from 50–90 mm. a) 50 mm (s orbital), b) 90 mm (p orbital), and c) 80 mm (d orbital).
		5. The set is composed of the following:
		a) 9 pc Grey atomic orbital parts
		b) 17 pc Purple atomic orbital parts
		c) 19 pc Pink atomic orbital parts
		d) 2 pc White octahedral atom parts
		e) 1 pc Black octahedral 23-24 mm carbon atom part
		f) 1 pc Pink monovalent 17-18 mm atom part
		g) 1 pc Pink monovalent 23-24 mm atom part
		h) 1 pc Purple d atomic disc-shaped orbital part
		i) 1 pc Black tetrahedral 23-24 mm carbon atom part
		j) 1 pc Black trigonal bipyramidal 23-24 mm carbon atom part
		k) 1 pc Pink octahedral 23-24 mm atom part
		l) (1) Hydrogen H- Bond 17-18 mm atom part
		m) 2 pc White 3-hole 17-18 mm atom parts
		n) 2 pc White 7-hole atom parts
		o) 8 pc Grey rigid 27-28 mm bonds
		p) 14 pc clear transparent Pedestal Stand/ bases
		6. With durable storage case with four compartments for segregation of parts a) Material of storage box: ABS plastic b) Color: Grey c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the compartmentalized storage box, is Acrylonitrile butadiene styrene (ABS), to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier.

No.	Item Name	Technical Specifications
		7.) For Contents/ List of materials, In Table form a) For atoms: quantity, name of element(symbol), color code, (number of holes, type of bond angles), diameter of the sphere
		b) For links; bond types and use
		8. With assembly guides, individual worksheets and instructional sheets/leaflets in English
		9. With User's Manual/Teacher's manual in English with full background information
		10. For numbers #8-9, the technical specifications (a- e) must be followed:
		a) For Contents/ List of materials, In Table form
		b) for User's Manual, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences, grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) in 0.3 mm minimum thickness plastic laminated User's Manual/Teacher's Manual/Assembly Guides/ instructional leaflets that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Margins on all sides with 2 point width border line
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		11. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein.
		12. Comes with a brand marked permanently in the box
		13. Must be brand new
2	Model, Biochemistry Molecular, (262 atom parts)	Functional Specifications: Used as a model/visual 3D representation of some biomolecules: proteins, nucleic acids, lipids, and carbohydrates, their structures
		Performance Specifications: A) Must be able to visually
		a) represent some biomolecules proteins, nucleic acids, lipids, and
		carbohydrates, their structures, and relate them to their function.
		b) observe the chemical bonding
		c) determine whether the biomolecule is polar or non polar given its structure
		B) Assemble all the different biomolecules and study them
		Design Specifications:
		1. Type : Compact/Semi-space filling models
		2. Shape of atom parts : Solid spheres
		3. Material of spheres : Plastic
		4. Diameter of sphere/atom
		a) Hydrogen atom : 16-17mm

No.	Item Name	Technical Specifications
		b) Carbon, nitrogen and oxygen atom: 22-23.5 mm
		5. For compact models, bonds are represented by
		a) short links
		b) v-bonds links
		6. Material of links : Plastic
		7. Length of links
		a) short link : 2 mm-11 mm
		b)v-bonds links : 13-14 mm
		8. Color of links:
		a) short link : white/translucent
		b) v-bonds link : white links
		9. With 262 color-coded plastic atoms and 260 links
		10. The Biochemistry Molecular Model set includes the following:
		A. 262 color-coded plastic atom parts
		Quantity(pc) Element Color Number of holes Shape
		i) 68 Black Carbon atoms
		42 pc Carbon Black Four holes Tetrahedral
		. 24 pc Carbon Black Three holes Trigonal.
		2 pc Carbon Black Two holes Linear
		ii) 34 Blue nitrogen atoms
		12 pc Nitrogen Blue Four holes Tetrahedral
		12 pc Nitrogen Blue Three holes Trigonal
		10 pc Nitrogen Blue Two hole Angular
		iii) 40 red oxygen atoms
		20 pc Oxygen Red Two hole Angular
		10 pc Oxygen Red Two hole Linear
		10 pc Oxygen Red Single hole
		iv) 110 White Hydrogen atom parts
		100 pc White molydome links
		10 pc Hydrogen White Two hole Linear
		v) Two (2) Yellow two hole angular sulfur atoms
		2 pc Sulfur Yellow Two hole Angular
		vi) Six (6) purple tetrahedral atoms
		6 pc Phosphorus Purple Four hole Tetrahedral
		vii) 2 grey metal atoms
		One (1) pc Metal Grey Four hole Tetrahedral

No.	Item Name	Technical Specifications
		One (1) pc Metal Grey Six hole Octahedral
		viii) 150 NV-links, colorless
		ix) 100 Short white links
		x) 10 V-links, grey
		C. With two pc link remover tool
		Color : cream
		11. WIth two durable large storage boxes a) Material of storage boxes: ABS plastic b) Color: Grey c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the two large storage boxes, is Acrylonitrile butadiene styrene (ABS), to validate the conformity of the material the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier, with the following dimensions:
		Length : 238-239 mm
		Width : 167-169 mm
		Thickness : 6.0-9.0 mm
		12. With contents/ list of materials in table form, as to:
		a) For atoms: quantity, name of element(symbol), color code, (number of holes, type of bond angles), diameter of the sphere
		b) For links; bond types and use
		13. With Assembly Guides, individual worksheets and instructional leaflets in English
		14. With User's Manual/Teacher's instruction manual in English with full background information
		15. For numbers #13 to 14; technical specifications(a-e) must be followed:
		a) For Contents List of materials, In Table form
		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) in 0.3 mm minimum thickness plastic laminated Assembly guides/instructional leaflets that shall containthe actual colored picture of the model including the name labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Margins on all sides with 2 point width border line

No.	Item Name	Technical Specifications
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		16. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein
		17. Must be have a brand printed permanently on the box
		18. Must be brand new
3	Model, Crystal Structures Set (Graphite, diamond, sodium chloride, carbon dioxide)	Functional Specifications: Used as a model/ visual 3D represention of five crystal compounds
		Performance Specifications: A) Must be able to visually:
		a) represent the four different types of crystals and their properties: ionic, covalent, molecular, and metallic
		b) describe the difference in structure of crystalline (diamond) and amorphous (graphite) solids and
		d) observe the difference of the ionic, covalent and metallic bonds and
		e) determine whether a crystal molecule is polar or non polar given its structure
		B) Assemble the four crystal structures
		Design Specifications:
		1. Type : Open/Ball and stick
		2 Shape of atom parts :Solid spheres
		3 Material of spheres : Plastic with the following dimensions:
		a)Sodium, carbon: 22-23.5 mm
		b) Copper : 25-25.5 mm
		c) Chlorine : 32-32.5 mm
		4. Types of links/bonds
		a) Medium (Single, rigid) links
		b) Long (double/triple, flexible) links
		5. Material of links: Flexible plastic low density plastic
		6. Length of solid links/rods
		a)Medium: 19-27 mm

No.	Item Name	Technical Specifications
		b) Long : 43-44 mm
		7. Color of links/bonds
		Medium links: grey white/purple
		Long links : gray
		8. The Crystal structure set is composed of the following:
		a) Diamond- covalent crystal model (30 atoms) + links = 70 pc
		I. Element Number of holes Angle Shape Color Quantity(pc)
		i) Carbon (4 hole) 109.5° Tetrahedral Black 30
		ii) Placed in resealable plastic bag
		II. Links/Bonds Color Quantity (pc)
		i) Medium links/ Bonds Grey white 40
		ii) Placed in resealable plastic bag
		b) Sodium chloride (NaCl)-i/onic crystal model (27 atoms)+links= 81 pc
		I. Element Number of holes Shape Color Quantity(pc)
		i) Chlorine 6 hole Octahedral Green 13
		ii) Sodium 6 hole Octahedral Silver gray/grey 14
		iii) Placed in two (2) separate resealable plastic bags
		II. Links/Bonds Color Quantity (pc)
		i) Medium Grey white 54
		ii) Placed in resealable plastic bag
		c) Graphite - covalent crystal model (45 atoms) + links = 100 pc
		This kit is designed to make a three layer model of graphite having 15 carbon atoms in each layer.
		I. Element Number of holes Color Quantity (pc)
		i) Carbon 5 hole Black 39

No.	Item Name	Technical Specifications
		ii) Placed in resealable plastic bag
		II. Links/Bonds Color Quantity (pc)
		i) Long connectors Grey/ white 15
		ii) Medium connectors(single, rigid) Grey/ white 46
		iii) Placed in two (2) separate resealable plastic bag
		d) Copper - metallic crystal model/ 14 atoms + links = 50 pc
		Crystal structure : face center cubic
		I. Element Number of holes Color Quantity (pc)
		i) Copper 8 hole Red 8
		ii)Copper 6 hole Red 6
		iii) Placed in two (2) separate Ziploc plastic bag
		II. Links/Bonds - 36 pc
		Links/Bonds Color Length Quantity (pc)
		i) Medium Grey white 65 mm 24
		ii) Long Grey white 100 mm 12
		iii) Placed in two (2) separate resealable plastic bag
		9. With Link remover tool/Assembly tool
		10. With 1 pc durable plastic storage box a) Material: ABS plastic b) Color: Grey c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the compartmentalized storage box, is Acrylonitrile butadiene styrene (ABS), to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier, with the following dimensions:
		11. Package Dimensions

No.	Item Name	Technical Specifications
		a) Length : 235-239 mm
		b) Width : 167-171 mm
		c) Thickness : 68-71 mm
		12. With contents/ list in table form, as to:
		a) For atoms: quantity, name of element(symbol), color code, (number of holes,type of bond angles), diameter of the sphere
		b) For links; bond types and use
		13. With Assembly Guides, individual worksheets and instructional leaflets in English
		14. With User's Manual/Teacher's instruction manual in English with full background information
		15. For numbers #12 to 14; they must follow technical specifications a-e:
		a) For Contents List of materials, In Table form
		b) for User's Manual, Instruction Sheets/Assembly Guides, In sentences
		format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) in 0.3 minimum thicness plastic laminated keycard that shall containthe actual colored picture of the model including the name: labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Margins on all sides with 2 point width border line
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled.
		16. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein
		17. Comes with a brand marked permanently in the box

No.	Item Name	Technical Specifications
		18. Must be brand new
4	Model, Molecular, Inorganic/Organic (307-pc)	Functional Specifications: Used as a model/visual three dimensional (3D) representation of the different inorganic/organic compounds
		Performance Specifications: Must be able to :
		a) visually represent the molecular structures of many inorganic/organic molecules and
		b) assemble inorganic/organic compounds to show covalent and ionic bonding and c) determine whether a molecule is polar or non polar given its structure
		Design Specifications:
		1. Type : Ball and stick
		2. Shape of atom parts : Solid spheres
		3. Material of spheres : Plastic
		4. Diameter of sphere/atom
		a) Hydrogen and chlorine atoms : 17-17.5 mm
		b) Other atoms : 23-23.5 mm
		5. Material of links: Flexible plastic low density polyethylene (LDPE) solid links
		6. Length, color and quantity of solid links/rods
		a) Short links
		i) Type : For space filling
		ii) Length : 11-12 mm
		ii) Color : Translucent/white
		iii)Quantity: 60 pc
		b) Medium links
		i) Type : Single, rigid
		ii) Length : 27-28 mm
		iii) Color : Grey
		iv)Quantity: 60 pc
		c) Long links
		i) Type : Double/triple/flexible
		ii) Length : 43-44 mm
		iii) Color : Grey
		iv) Quantity : 30 pc
		7. With 126 atoms, 30 orbitals, 150 links and 1 short link remover tool
		8. The inorganic/organic molecular model set is composed of the following:
		I. Shape No. of holes Angles Element/atom Color Qty(pc)
		a) Tetrahedral 4 holes 109°28' Carbon Black 30
		b) Trigonal 5 holes 90°/120° Carbon Black 8
		bipyramidal
		c)Linear 2 holes 180° Carbon Black 2

No.	Item Name	Technical Specifications
		d) Trigonal 3 holes 120° Carbon Black 6
		e) Divalent 2 holes 105° Oxygen Red 14
		f) Monovalent 1 hole Hydrogen White 45
		g)Tetrahedral 4 holes 109°28' Nitrogen Blue 4
		h)Divalent 2 holes 105° Sulfur Yellow 1
		i) Tetrahedral 4 holes 109°28' Sulfur Yellow 1
		j) Tetrahedral 4 holes 109°28' Phosphorus Purple 4
		k) Monovalent 1 hole 180° Chlorine Green 8
		l) Octahedral 6 holes 90° Metal Silver/grey 2
		m) Divalent atom Grey 1
		II. Orbitals: 30 pc
		Orbitals Lengths Color Quantity (pc)
		a) Pi orbitals 38 mm purple 6
		b) Pi orbitals 38 mm pink 6
		c) P orbitals 38 mm purple 6
		d) P orbitals 38 mm pink 6
		e) P orbitals 38 mm beige 6
		III. Links (represented the bonds): 150 links
		Material of bonds/links : Rigid, non-toxic Flexible plastic (LDPE)
		Links Type/Kind of bonds Length Color Quantity(pc)
		a) Medium links (single, rigid) 27 mm Grey 60
		b) Long links double/triple/flexible 43 mm Grey 30
		c) Short links 11 mm Translucent/ 60
		(for space filling) White
		9. One (1) pc Link remover tool/Assembly tool

No.	Item Name	Technical Specifications
		10. With durable storage box a) Material of storage box: ABS plastic b) Color: Grey c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the compartmentalized storage box, is Acrylonitrile butadiene styrene (ABS), to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier, with the following dimensions :
		a) Length : 238-239 mm
		b) Width : 167-168 mm
		c) Thickness : 68-70 mm
		11. With contents/ list of materials, in table form, as :
		a) For atoms: quantity, name of element(symbol), color code, (number of holes, type of bond angles), diameter of the sphere
		. b) For links; bond types and
		12. With Assembly guides, Individual Worksheets and Instructional leaflets
		13. With User's Manual/Teacher'sManual in English with full background information
		14. For numbers #12 to 13; technical specifications (a-e) must be strictly followed:
		a) For Contents/ List of materials, In Table form
		b) For User's Manual, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) With colored pictures, drawings/illustrations
		e) in 0.3 mm minimum thickness plastic laminated that shall contain the actual colored picture of the model including the name labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Margins on all sides with 2 point width border line

No.	Item Name	Technical Specifications
		v) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		15. Comes with a brand marked permanently on the box
		16. Must be brand new
5	Model, Sublevel Orbitals of the Atom (Quantum)	Functional Specifications: Used as a visual representation of the spatial three-dimensional (3D) model of the shapes of the orbitals (azimuthal quantum number) of the sublevels of the major energy levels of the first ten elements of the Periodic Table
		Performance Specifications: Must be able to :
		A)visually represent the spatial three-dimensional (3D) model of the shapes of the orbitals to describe the quantum mechanical model (azimuthal quantum model) of the first ten elements in the Periodic Table
		a) two (2) pc s orbitals
		i)1s-orbital and
		ii)2s-orbital,
		b) the three (3) p orbitals
		i) $2p_x$-orbital
		ii) $2p_y$-orbital, and
		iii) $2p_z$-orbital
		c) the position and number of electrons along the x, y and z axis
		d) the orbitals of the sublevels of the major energy levels
		B) Assemble the sublevel orbital of the first ten elements of the Periodic Table based on the electronic configuration of each, to review on the four (4) quantum numbers and rules in filling up the orbitals (the Aufbau Principle, Pauli's exclusion principle, and Hund's rule) , to study and learn the correct position and number of electrons along the x, y and z axis,as well as the orbitals of the sublevels of the major energy levels
		Design Specifications:
		1.With 12 Models of the Sublevel orbitals of the atom
		2. With color-coded components which include the following:
		3. ORBITALS
		a) 1s-orbitals (K shell)
		Shape of 1s orbital: Small sphere
		Material : Plastic
		Color : Blue
		Quantity : 12 pc
		b) 2s-orbitals (L shell)
		Shape of 2s orbital : Large sphere
		Material : Plastic
		Color : Orange
		Quantity : 12 pc
		c) p-orbitals (M shell)
		i)p_x -orbitals
		Shape of orbital : Pear shaped lobes
		Material : Plastic

No.	Item Name	Technical Specifications
		Color : Red
		Quantity : 24 pc
		ii) p_y-orbitals
		Shape of orbital: Pear shaped lobes
		Material : Plastic
		Color : Yellow
		Quantity : 24 pc
		iii) p_z -orbital
		Shape of orbital : Pear shaped lobes
		Material : Plastic
		Color : Green
		Quantity : 24 pc
		d) Bases
		Shape : Spherical
		Material : Plastic
		Color : White
		Quantity : 12 pc
		e) Crossbars (x and z axes)
		Shape : Cross-shaped
		Material : Durable non-toxic plastic
		Color : White
		Quantity : 12 pc
		f) Electrons
		Shape : Small circular cutouts in a plastic sheet
		Material : Plastic
		Color : Black
		Quantity : 1 whole plastic sheet with cut out 128 pc electrons
		g) Uprights (y axes)
		Shape : Long, cylindrical sticks
		Material : Plastic
		Color : Cream
		Quantity: 12 pc
		4. Individually packed per item as segregated above in separate resealable plastic bags
		5. With durable plastic storage box a) Material: ABS plastic b) Color: Grey c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the storage box, is Acrylonitrile butadiene styrene (ABS), to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier.
		6. With List of Contents in the set
		7 With Teacher's Guide

No.	Item Name	Technical Specifications
		8. With 30 Student Worksheets and Guides, Part I and Part II
		9. With quantum numbers chart provided on each student worksheet to help students assemble the models starting with the 1s orbitals.
		10. Detailed instructions provided.
		11. For numbers 6-10, the following technical specifications from (a-e) must be followed:
		a) For Contents/ List of materials, In Table form
		b) For User's Manual, Teacher's Guide, StudentWorksheets, Instruction Sheets/Assembly Guides, In sentences format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) in 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Orientation:Portrait
		v) Margins on all sides with 2 point width border line
		vi) Line with arrow head of 1.25 point with width shall point to the specific part being labeled
		12. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein
		13. Comes with a brand marked permanently on the box
		14. Must be brand new
6	Model, VSEPR, 14 shapes (50-pc)	Functional Specifications: a) Used as a visual 3D representation of the 14 different shapes of simple molecules with corresponding angles to perform exercises on VSEPR theory using models
		b) describe the geometry of simple compounds
		Performance Specifications: A) Must be able to visually:
		a) represent all the 14 different shapes of simple molecules with corresponding angles to perform exercises on VSEPR theory
		b) describe the geometry of simple compounds
		B) Assemble the 14 different shapes of VSEPR Models and study them
		Design Specifications:
		1. Type : Ball and stick
		2. Shape of atom parts : Solid spheres
		3. Material of spheres : Plastic
		4. Diameter of sphere/atom
		a) Hydrogen, halogen, and metal sphere/atom:-16-17.5 mm
		b) Other atoms : 22-23.5 mm
		5. The VSEPR Theory model set is composed of the following:

No.	Item Name	Technical Specifications
		I. With central atoms to construct 14 VSEPR shapes;
		Color Number of holes Shape Example
		metallic grey 2 hole linear (e.g.,beryllium in $BeCl_2$
		yellow 3 hole trigonal planar (e.g., sulfur in SO_3)
		yellow 3 hole trigonal (e.g., sulfur in SO_2)
		black 4 hole tetrahedral (e.g., carbon in CH_4)
		yellow 4 hole tetrahedral (e.g., sulfur in SO_3^{2-})
		red 4 hole tetrahedral (e.g., oxygen in H_2O)
		light green 4 hole tetrahedral (e.g., flourine in HF)
		light brown 5 hole trigonal bipyramidal (e.g., phosphorus in PCl_5)
		yellow 5 hole trigonal bipyramidal (e.g., sulfur in SF_4)
		green 5 hole trigonal bipyramidal (e.g., chlorine in ClF_3)
		purple 5 hole trigonal bipyramidal (e.g., xenon in XeF_2)
		grey 6 hole octahedral (e.g., metal complexes)
		brown 6 hole octahedral (e.g., bromine in BrF_5)
		copper 6 hole octahedral (e.g., copper complexes)
		b. With the following links/bonds:
		Quantity(pc) Color Links Bonds
		50 grey medium links single bonds
		15 purple medium links lone pairs
		6 white short links cyanide group
		6. Comes with short link remover tool

No.	Item Name	Technical Specifications
		7. With durable plastic storage box a) Material: ABS plastic b) Color: Grey c) Submission of the original copy of the Test certificate/s issued by the testing unit, like DOST material testing facilities or at any DOST-accredited testing institution attesting that the material of the four compartmentalized storage box, is Acrylonitrile butadiene styrene (ABS), to validate the conformity of the material to the technical specifications. A representative of the Procuring Entity should be present during preparation and submission of the material test specimens to testing facility. All expenses for the said test shall be shouldered by the Supplier
		8. With contents/ list of materials in table form
		9. With detailed assembly guides and instructional leaflets s provided.
		10. With assembly guides, individual worksheets and instructional leaflets
		11. With User's Manual/Teacher's instruction manual in English with full background information.
		12. For numbers #8 to 10 technical specifications (a-e) must be strictly followed:
		a) For Contents List of materials, In Table form
		b) for User's Manual, Instruction Sheets/Assembly Guides, In sentences
		format
		i) With sentences grammatically correct and
		ii) With correct spelling and terminologies, punctuations and others
		c) In original print, not photocopied
		d) In colored pictures, drawings/illustrations
		e) in 0.3 mm minimum thickness plastic laminated keycard that shall contain the actual colored picture of the model including the name: labeled with the required parts with details as follows:
		i) Paper Size : A4 size , 80 gsm
		ii) Font : Times New Roman
		iii) Font size : 12
		iv) Orientation: Portrait
		v) Margins on all sides with 2 point width border line
		vi) Line with arrow head of 1.25 point with width shall point to the specific part being labeled.
		13. Must be free from breakage, cracks , chipped rims, sharp edges, all surface irregularities and all other defects not stated herein
		14.Comes with a brand printed permanently onto the box
		15. Must be brand new
Earth and Space - Models, Tools and Instruments		

No.	Item Name	Technical Specifications
1	Anemometer with Wind Vane, Cup type	Functional Specifications: Used to measure wind speed in real time and indicate the direction where the wind is coming from and where it is heading
		Performance Specifications: Should be able to measure wind speed in real time and indicate the direction where the wind is coming from and where it is heading
		Design Specifications:
		1. Anemometer and wind vane combined in 1 unit
		2. Dimension of unit : 340-350 mm x 75-80 mm x 75-80 mm (H x W x D)
		3. Powered by AA dry cells
		4. Direct digital reading of wind speed, can display wind speed in m/s and km/hr, can measure average wind speed and instantaneous wind speed by means of selector switch
		5. Wind vane should be free moving to indicate wind direction, wind vane should have arrow head on one end and arrow tail on the other end
		6. Made of corrosion resistant material
		7. All labels, inscriptions, and instructions should be in English
		8. The item should be free from toxic materials
		9. The item should be branded and permanently marked on the item
2	Barometer-Thermometer-Humidity (3-in-1 Analog Instrument)	Functional Specifications: Used to measure simultaneously the prevailing local: atmospheric pressure, air temperature, relative humidity
		Design Specifications:
		1. Main scale: Barometer scale analog:
		Dial Diameter: 98 mm - 135 mm; Depth: 20 - 30 mm
		Should have millibar (mbar) or hecto pascal (hpPa) with range of 960 to 1060 mbar or hPa, at 1 mbar or 1 hPa graduations
		Materials: Plastic or metal body casing, clear transparent cover
		With adjustment screw/knob
		2. Secondary and tertiary analog scales for temperature and humidity
		Dial diameter for temperature and humidity: 20-25 mm
		3. Temperature scale range: -30 to 60 0C, 10C graduations, analog
		4. Humidity scale range 0-100%, 1% or 2% graduations analog
3	Compass, Magnetic	Functional Specifications: Used to find direction on the earth's surface by the alignment of the compass needle with the earth's magnetic field
		Performance Specifications: Should be able to find direction on the earth's surface by the alignment of the compass needle with the earth's magnetic field
		Design Specifications:
		1. Outside Diameter: 48-50 mm
		2. Needle mounted in an Aluminum case with clear, scratch-free plastic or glass face
		3. Graduated dial marked in cardinal points (North, South, West, East, Northwest, Northeast, Southwest, and Southeast).
		4. Must be branded and permanently marked on the item

No.	Item Name	Technical Specifications
4	Hand Lens, 10x magnification	Functional Specifications: Used for enlarging the appearance of objects 10 times its actual size
		Performance Specifications: Should be able to enlarge the appearance of objects 10 times its actual size
		Design Specifications:
		1. Magnification: x 10
		2. Diameter (viewable area) 18-20 mm
		3. Body: Stainless steel;
5	Model, Seismograph	Functional Specifications: Used to demonstrate how a seismograph records earthquakes and their comparative strengths
		Performance Specifications: Should be able to demonstrate how a seismograph records earthquakes and their comparative strengths, specifically: 1. The recording pen is attached to a weight suspended from a support that is connected to a metal base stand. 2. The support moves with the vibrations & the pen records on a recording paper as the paper is manually pulled through a metal frame 3. Earthquakes are simulated by vibrating the table on which the model is mounted.
		Design Specifications:
		1. Consist of a roll of recording paper (63-65 mm wide) with mounting, recording pens, suspended weight, support with a painted metal base stand, recording frame, and table clamp (opening-63-65 mm). The metal stand rod (320-325 mm long) and metal support are chrome-plated. The metal frame is of galvanized iron sheet.
		2. Base dimensions : 293-298mm x 152-157mm x 23-28mm
		3. With English User's manual that includes the operation and guide on how to assemble the model.
		4. Brand must be permanently marked in the item.
6	Model, Solar System	Functional Specifications: Used to show the sun and the eight (8) major planets of the solar system in three dimensions, in correct order from the nearest to the farthest from the sun
		Performance Specifications: Should be able to show the sun and the eight (8) major planets of the solar system in three dimensions, in correct order from the nearest to the farthest from the sun
		Design Specifications:
		1. shows the eight (8) major planets of the solar system namely: a) Mercury, b) Venus, c) Earth, d) Mars, e) Jupiter, f) Saturn, g) Uranus, and h) Neptune with each planet color code and shaded correctly
		2. each planet can be manually operated to revolve around sun
		3. Dimensions: Sun: 5.75-6.5" diameter, Total dimension: height 13.5-14.5 inches; length 20.5-21.5 inches, plated steel arm
		4. Sun made of plastic material, support base made of metal
		5. Must be branded and permanently marked on the item

No.	Item Name	Technical Specifications
7	Model, Sun-Earth-Moon	Functional Specifications: Used to show the relative locations of the sun, the earth and the moon three dimensions, and the synchrous revolutions of the moon around the earth and the earth's revolution around the sun
		Performance Specifications: Should be able to show the relative locations of the sun, the earth and the moon three dimensions, and the synchrous revolutions of the moon around the earth and the earth's revolution around the sun
		Design Specifications:
		1. Hand-operated gear drive that moves the Earth and moon in relation to the Sun. Shows the Earth's rotation, revolution, day and night, tilt of its axis, phases and eclipses of the Moon. Supported by a sturdy base and chrome-plated steel parts
		2. Sun's sphere is illuminated with hole to focus a beam of light always to the globe; also indicates the month and phase of the moon in relation to the sun.
		3. All spheres (Sun, Earth, Moon) made of plastic; sizes must reflect relative differences of sizes between Sun, Moon, and Earth. Sun's diameter 5.5-6.5 inches.
		4. The Nine Dash Line should not appear.
		5. With English User's Manual that includes operation guide and guide on how to replace the bulb in the model
8	Rain Gauge	Functional Specifications: Used to measure the amount of rainfall at a certain period
		Performance Specifications: Should be able to measure the amount of rainfall at a certain period
		1. Made of clear and transparent plastic; thickness: 2-3 mm
		2. Permanently marked accurate scale at 1 mm or 2 mm graduations
		3. Maximum measuring graduation at least 150 mm
		4. Straight or tapered type design
		5. Comes with mounting bracket for mounting onto post
		6. Must have packaging
9	Reaction Plates with 6 Wells	Functional Specifications: Used to contain small amount of samples of specimens under study
		Performance Specifications: Should be able to contain small amount of samples of specimens under study
		Design Specifications:
		1. Made of clear, non-toxic plastic material that is free from sharp edges.
		2. Plate Shape: Rectangular
		3. Plate Length: 110-120mm
		4. Plate Width: 85-100mm
		5. Six Well per Plate
		6. Well Shape: Circular/ Round
		7. Well diameter: 30-35 mm
		8. Well deep: 6-8mm
		9. Well capacity: 1.6 mL -2.0mL
		10. Used for soil and water testing
		11. Must be branded and permanently marked on the item

No.	Item Name	Technical Specifications
10	Sedimentator Tube	Functional Specifications: Used to demonstrate how soil sediments settle in water
		Performance Specifications: Should be able to demonstrate how soil sediments settle in water
		Design Specifications:
		1. 10 1/2 inches - 12 inches height with a diameter of 1 - 1 1/2 inches
		2. Sealed and leak free
		3. The body made of clear, transparent plastic tube.
		4. With different sediment and crystal clear water.
		5. Functions:
		a. Use for observing movement, deposition, and layering of sediments and organic materials.
		b. Observations apply to sedimentary rock formation and fossil formation
		6. With English User's Manual that includes
		a. operation guide.
		b. Guide on how to use
		c. Student Activity Sheets
		7. Brand must be permanently marked on the item.
11	Soil pH, Moisture, Sunlight Meter	Functional Specifications: Used to measure pH, moisture content of soil and measure sunlight available to the soil sample in real time
		Performance Specifications: Should be able to measure pH, moisture content of soil and measure sunlight available to the soil sample in real time
		Design Specifications:
		1. Compose of two electrodes, 7 inches -10 inches long
		2. pH/ Moisture/ Sunlight Switch
		3. pH Range: 3.5 - 8 pH (3.5-6.5 Acidic, 7-8 Alkaline)
		4. Moisture Range: 1-10 (1-3 Dry; 4-6 Normal; and 7-10 Wet)
		5. Light Range: 0 - 2000 lux (0-200 Low, 200-500 Low+, 500-1000 Normal, and 1000-2000 High)
		6. With English User's Manual that includes:
		a. Operation Guide
		b. Procedure on the proper use, handling and storage.
		c. Student Activity in using the item.
		7. Comes with a training video that shows the actual equipment submitted and approved during the sample evaluation and shall contain the following:
		I. Training Video Contents:
		a. Name of the equipmentb. Parts of the equipmentc. Instruction on how to use the equipmentd. Sample Experiment/Activity using the equipmente. Maintenance of the equipmentf. Troubleshootingg. Storage and safekeeping (include cleaning) of the equipment
		II. Training Video details:

No.	Item Name	Technical Specifications
		a. Shall be in MP4 format.b. Shall be saved in a USB 3.0 Flash Drive.c. Shall have a High-Definition resolution of at least 1080p.d. Shall have a readable subtitle (font style & size: Arial, 22 Bold) in English that is grammatically error-free and with correct spelling and punctuation marks and in sync with a voiceover/narration. There is an ON/OFF option for subtitle.e. Shall comply an aspect ratio of 4:3.f. Shall have a cover video pane containing the equipment name and a video pane for each video content.g. The video, voiceover (audio), and subtitle shall be in sync.h. The training video shall cover all the above requirement (video contents).
		8. Brand must be permanently marked on the item.
12	Soil/Test Sieve	Functional Specifications: Used to separate and segragate different size soil particles
		Performance Specifications: Should be able to separate and segragate different size soil particles
		Design Specifications:
		1. Diameter range: 8 inches - 10 inches
		2. Mesh sizes: 5 Mesh, 10 mesh, 35 Mesh, 60 mesh, 120 mesh, and 230 mesh
		3. Made of stainless steel metal
		4. Set of Six Sieves
		5. Includes lid and catch pan
		6. Must be branded and permanently marked on the item
Mathematics - Manipulatives		
1	Algebra Tile Set, plastic	Functional Specifications: Used to demonstrate algebraic concept up to second degree polynomial.
		Performance Specifications: Must be able to represent mathematical expressions and equations to introduce and foster algebraic concepts, including adding and subtracting polynomials, factoring trinomials, and the Zero Principle.
		Design Specifications:
		1). Algebra Tiles should come in a set of 30 that includes the following:
		a. 4 pcs of Square Tile (Squared Variable Tile) about 50mm x 50mm x 1mm (minimum) in size and color blue
		b. 8 pcs of Long Tile (Variable Tile) about 10mm x 50mm x 1mm (minimum) in size and color green
		c. 20 pcs of Ones Tile (Constant Tile) about 10mm x 10mm x 1mm (minimum) in size and color yellow
		Note: Each kind of tile should have RED back color to denote the Negative side of the tiles.
		2). Made of plastic and has no sharp edges.
		3). Must be stored in a plastic box that safely accomodates 30setd of atleast 960 pcs of Algebra Tiles.
		4). Shall be free from toxic materials.(Certificate of Non-Toxicity).
		5). Brand must be permanently marked on the plastic storage.
2	Balance, Double-pan	Functional Specifications: Used to compare object masses.

No.	Item Name	Technical Specifications
3	Base Ten Blocks	Functional Specifications: Used to demonstrate abstract mathematical concept of the number system such as one-to-one correspondence, place value, and basic addition and subtraction
		Performance Specifications: Must be able to demonstrate a number's value and place value and vice versa.
		Design Specifications:
		1). Made of plastic, smooth surface and edges, and free from toxic materials
		2). The set includes 100 units (1 cm x 1 cm x 1 cm [minimum]), 10 rods (1 cm x 1 cm x 10 cm [minimum]), 10 flats (1 cm x 10 cm x 10 cm [minimum]), and 1 cube (10 cm x 10 cm x 10 cm [minimum]).
		Note: Each block should have distinct color from each other (e.g.: Unit - Red, Rod - Yellow, Flat - Green, Cube - Blue).
		3). Comes with a plastic container with cover to accommodate all the items.
		4). Shall be free from toxic materials. (Certificate of Non-Toxicity)
		5). Brand must be permanently marked on the plastic container.
4	Beads	Functional Specifications: Used to reinforce counting, sorting, patterning and sequencing.
		Performance Specifications: Must be able to scaffold learners in counting and grouping of numbers, colors, patterns, etc.
		Design Specifications:
		1) Comprises 5 sets of beads. A set is composed of 100 beads of 10 different colors, pre-inserted in color group array in a cord that can be easy to be moved within. Cord knotted on ends to prevent loose but can be untied for easy change of grouping and patterns.
		2) Beads hole passes through the center.
		3) Bead diameter: 9.5 mm to 16 mm
		4) Cord length: at least 25% longer than the total length of the 100 beads.
		5) Comes with a plastic transparent storage container with cover.
		6). The items shall be free from toxic materials. (Certificate of Non-Toxicity)
		7). Comes with nylon string of 5-6 meters long that fit loosely to beads hole
5	Circle Area Demonstrator	Functional Specifications: Used to demonstrate area of a circle.
		Performance Specifications: Performance: Must be able to show/demonstrate derivation of circle's area and how dimensions of a parallelogram is related to it.
		Design Specifications:
		1). Material: Plastic
		2). Circle Diameter: 196 mm (minimum) - Each half comes in different colors or all sectors come in one color to cater item availability.
		3). Thickness: 5 mm (minimum)
		4). Dissectible into at least 16 sectors
		5). Comes with base for mounting the circle and the sectors.
		6). Shall be free from toxic materials. (Certificate of Non-Toxicity)

No.	Item Name	Technical Specifications
6	Compass, Drawing, student type	Functional Specifications: Used to draw/construct arcs, semi-circles and circles.
		Performance Specifications: Must be able to draw/construct arcs, semi-circles and circles.
		Design Specifications:
		1). Compass, two legs, solid metal,rigid (not bending); corrosion resistant and smooth
		2). Length: 150mm - 200mm;
		3). With pencil adaptor attached at or integrated on one end of one of the legs. The said adaptor must be able to adapt, also, to any kind of pencil available in the local market;
		4). Solid metal, rigid (not bending);
		5). Comes with transparent plastic case or box; and
		6). Brand must be permanently printed on the item/case.
7	Cuisenaire Rods, set of 5	Functional Specifications: Used to provide an interactive, hands-on way to explore mathematics and learn mathematical concepts, such as the four basic arithmetical operations, working with fractions and finding divisors.
		Performance Specifications: Must be able to demonstrate four fundamental operations, part-to-whole concept, decimals and other concepts related to number sense and measurement.
		Design Specifications:
		1). Made of hard, smooth finish plastic materials.
		2). One (1) set is composed of 74 cuisenaire rods of different colors.
		3). Each color represents a specific rod length.
		4). Rod Lengths are: 1cm -white, 2cm - red, 3cm - yellow green, 4cm - purple, 5cm - yellow, 6cm - green, 7cm - black, 8cm - brown, 9cm - blue, and 10cm - orange.
		5). Comes in a plastic storage container with cover that accomodates 5 sets of cuisenaire rods.
		6). The item shall be free from toxic materials. (Certificate of Non-Toxicity)
		7). Brand must be permanently printed on the case.
8	Elapsed Time (Clock) Set	Functional Specifications: Used to demonstrate time and other related concepts.
		Performance Specifications: Must be able to represent and demonstrate time using hour hand and minute hand.
		Design Specifications:
		1). A set includes:
		a. Two Twelve (12) hour demonstration clock, magnetic
		b. Segmented timeline, 24-hour timeline (AM and PM) which makes up of 4 segments
		c. Removable guide numbers
		d. Start and End arrows
		2). Dial diameter measures 24-26 cm
		3). The hour number must be printed in Hindu Arabic numeral and with corresponding minute(s) number in the same numeral format.
		4). The item shall be free from toxic materials. (Certificate of Non-Toxicity)

No.	Item Name	Technical Specifications
		5). Brand must be permanently printed on the case.
9	Geoboard, 11 x 11	Functional Specifications: Used to explore basic concepts in plane geometry such as perimeter, area and the characteristics of triangles and other polygons.
		Performance Specifications: Must be able to demonstrate or visually represent different kinds of polygons and circles and how to compute their respective area, perimeter, and circumference.
		Design Specifications:
		1). Double sided geoboard - square pattern on one side (11 x 11), circle on the other;
		2). Made of plastic material and comes in any color;
		3). The surfaces and edges must be smooth, no warps, must sits flat when laid on the table;
		4). Board Dimensions (W x L): 229 mm x 229 mm (minimum);
		5). Edging Height (all sides): 6 mm from the board (minimum);
		6). Board and Edging Thickness: 3 mm (minimum);
		7). Array Pin Diameter: 3 mm (Minimum);
		8). Array Pin Height: 5 mm (Minimum);
		9). Comes with a transparent plastic case;
		10). Comes with Instruction Manual in English with illustrations;
		11). Comes with assorted size and color rubber bands (25 pcs); and
		12). Brand must be permanently printed on the case
		13). Shall be free from toxic materials. (Certificate of Non-Toxicity)
10	Geoboard, 5 x 5	Functional Specifications: Used to explore basic concepts in plane geometry such as perimeter, area and the characteristics of triangles and other polygons
		Performance Specifications: Must be able to demonstrate or visually represent different kinds of polygons and circles and how to compute their respective area, perimeter, and circumference.
		Design Specifications:
		1). Enables the students to perform different kinds of shapes (like square, triangle, circle, etc.) using rubber bands.
		2). On the top surface is the Square Geoboard with 25 guiding posts arranged 5 x 5 (forming a square) at 40mm distance apart between centers.
		3). On the bottom surface is the Circle Geoboard with 13 guiding posts. Twelve (12) of these guiding posts are arranged at 30˚ apart on a circle of 150mm diameter while the remaining one (1) guiding post is on the center of the said circle.
		4). Made of plastic, color blue.
		5). Board Dimensions (W x L): 200mm x 200mm (minimum)
		6). Guiding post approximate Diameter: 6mm (minimum)
		7). Guiding post approximate Height: 20mm (minimum)
		8). Approximate Height of the Base (Edging Height): 25mm (minimum)
		9). Board Thickness: 3-5mm
		10). Comes with a plastic case with content description on its cover.
		11). The surfaces and edges of the Geoboard and its Case must be smooth.
		12). Comes with Instruction Manual in English.

No.	Item Name	Technical Specifications
		13). Brand must be permanently printed on the case.
		14). Shall be free from toxic materials. (Certificate of Non-Toxicity)
		Note: There must be no warping of the board and base. The Geoboard must be flat when laid on a table.
11	Geostrips	Functional Specifications: Used to make and represent different shapes.
		Performance Specifications: Must be able to show/demonstrate different kinds of angles and shapes.
		Design Specifications:
		1). The strips are made of plastic minimum of 1.8 mm thickness and minimum of 18 mm wide in assorted colors with rounded ends;
		2). Comes in various lengths ranging from 50 mm to 350 mm. Example: Red: Blue: a) Shortest: 93-94mm a) Shortest: 124-125mm b) Shorter: 169-170mm b) Longest: 233-234mm c) Longest: 323-324mm Yellow: White: a) Shortest: 150-151mm a) Shortest: 175-176mm b) Longest: 283-284mm b) Longest: 233-234mm
		3). They are designed to be fastened together with a plastic coated brads or plastic coated round head fasteners to form plane geometric figures.
		4). One (1) set consists of 68 strips, a minimum of 100 pieces plastic coated brads and a protractor.
		5). The set comes in a transparent plastic case for proper storage.
		6). The items shall be free from toxic materials.
		7). Brand must be permanently marked on the plastic case.
		8). Shall be free from toxic materials. (Certificate of Non-Toxicity)
12	Ghost Grid Whiteboard, Mobile Magnetic	Functional Specifications: Used to aid classroom instructions especially in graphical representations such as linear, quadratic, polynomial, histogram, normal curve, etc.
		Performance Specifications: Must be able to move from one place to another and to clearly show illustrations that do not exceed from 1 meter vertically and 1.2m horizontally guided with lines with 20mm spacing (horizontally and vertically).
		Design Specifications:
		1). Mobile Magnetic Ghost Grid Whiteboard; plain white on the other side
		2). Material: Painted Steel
		3). Frame: Aluminum, 1" edging;
		4). Surface Material: Magnetic Painted Steel;
		5). Grid Pattern: 2" x 2", ghots grid;
		6). Full Dimensions: 74-75"W x 23-24"D x 69-70"H;
		7). Board Dimensions: 72-73"W x 40-41"H;
		8). Base Dimensions: 74-75"W x 23-24"D;
		9). Tray Style: Full length
		10). Casters: 4 pieces, 2-inch casters, two with locking brakes;

No.	Item Name	Technical Specifications
		11). Must be properly packed using shipping carton.
13	Linking Cubes	Functional Specifications: Used to assist with the understanding of mathematical concepts
		Performance Specifications: Must be able to interlock together to build various shapes and structures
		Design Specifications:
		1). Linking Plastic Cubes: 100pcs in 10 different colors (10 pcs per color).
		a. Dimension: 1 cm x 1 cm x 1 cm (minimum)
		c. With interlocking feature for connecting the cubes.
		2). Comes with plastic transparent storage bucket with cover.
		3). Fitting is push fit which can be assembled or disassembled without extra effort.
		4). Shall be free from toxic materials. (Certificate of Non-Toxicity)
		5). Brand must be permanently marked on the storage.
		Functional: Used to demonstrate relational geometric concepts between polygons and polyhedrons; aid derivation of formula (surface area and volume) of polyhedrons.
		Performance: Must be able to demonstrate geometrical relationships between polygons (2D) and polyhedrons (3D) in terms of deriving formula on surface area and volume.
		Design Specifications:
		1). Set includes 12 solids made of clear plastic with rounded corners and edges, and 12 folding nets in 5 or 6 colors made from soft plastic to fit inside the corresponding solids:
		2). Base size of solids: 7.8 to 10.5cm
		Height of solids: 9.5 to 10.5 cm
		3). Pairs of solid prism and pyramid shall of the same base and height the following:
		a,b) Cube and Square pyramid
		c,d) Cylinder and Cone
		e,f) Triangular prism and Triangular pyramid
		g,h) Rectangular prism and Rectangular pyramid
		i.j) Pentagonal prism and Pentagonal pyramid
		k.l) Hexagonal prism and Hexagonal pyramid
		4). With activity guide.
		5). Comes with a plastic transparent storage container with cover that can accomodate all the solids and the activity guide.
		6). Shall be free from toxic materials. (Certificate of Non-Toxicity)
	Model, Basic 3D Geometrical Collapsible	Functional: Used to demonstrate relational geometric concepts between polygons and polyhedrons; aid derivation of formula (surface area and volume) of polyhedrons.
		Performance: Must be able to demonstrate geometrical relationships between polygons (2D) and polyhedrons (3D) in terms of deriving formula on surface area and volume.
		Design Specifications:
		1). Set includes 12 solids made of clear plastic with rounded corners and edges, and 12 folding nets in 5 or 6 colors made from soft plastic to fit inside the corresponding solids:

No.	Item Name	Technical Specifications
		2). Base size of solids: 7.8 to 10.5cm
		Height of solids: 9.5 to 10.5 cm
		3). Pairs of solid prism and pyramid shall of the same base and height the following:
		a,b) Cube and Square pyramid
		c,d) Cylinder and Cone
		e,f) Triangular prism and Triangular pyramid
		g,h) Rectangular prism and Rectangular pyramid
		i.j) Pentagonal prism and Pentagonal pyramid
		k.l) Hexagonal prism and Hexagonal pyramid
		4). With activity guide.
		5). Comes with a plastic transparent storage container with cover that can accomodate all the solids and the activity guide.
		6). Shall be free from toxic materials. (Certificate of Non-Toxicity)
15	Model, Basic 3D Geometrical Solids	Functional Specifications: Used to represent basic three-dimensional figures.
		Performance Specifications: Must be able to demonstrate geometrical concepts related to properties of geometrical solids.
		Design Specifications:
		1). At least 17 types of Hollow Geometrical 3D Solids Shapes that includes:
		a) Cube: 9.5-10.5cm x 9.5-10.5cm x 9.5-10.5cm
		b) Cone: Height = 9.5-10.5cm; Base diameter = 9.5-10.5cm
		c) Cylinder: Height = 9.5-10.5cm; Base diameter = 9.5-10.5cm
		d) Hexagonal prism: Height = 9.5-10.5cm; Length of sides (Base) = 5-6cm
		e) Hexagonal pyramid: Height = 9.5-10.5cm; Length of sides (Base) = 5-6cm
		f) Pentagonal prism: Height = 9.5-10.5cm; Length of sides (Base) = 6-7cm
		g) Pentagonal pyramid: Height = 9.5-10.5cm; Length of sides (Base) = 6-7cm
		h) Rectangular prism: 9.5-10.5cm x 5-6cm x 9.5-10.5cm
		i) Square pyramid: Height = 9.5-10.5cm; Base diameter = 9.5-10.5cm
		j) Triangular prism: Height = 9.5-10.5cm; Length of sides (Base) = 9.5-10.5cm;and
		h) Triangular pyramid: Height = 9.5-10.5cm; Length of sides (Base) = 9.5-10.5cm
		i) Sphere: Diameter of Great Circle = 9.5-10.5cm
		j) Semisphere: Diameter of Great Circle = 9.5-10.5cm
		k) Square prism: 9.5-10.5cm x 5-5.5cm x 5-5.5cm
		l) Small cube: 5-5.5cm x 5-5.5cm x 5-5.5cm
		m) Small Triangular Prism: Height = 9.5-10.5cm; Length of sides (Base) = 5-6cm
		n) Small Cylinder: Height = 9.5-10.5cm; Base diameter = 5-6cm
		2). Made of hard plastic
		3). Comes in a transparent plastic container with cover to accommodate the 17 or more types of geometric solids.
		4). Surface finish is smooth on all items.