MATHEMATICS ANNUAL SCHEME OF LEARNING – JHS 1

WEEKS	TERM ONE	TERM TWO	TERM THREE
1	Numeration Systems	Ratios and Proportion	Shape and Space
2	Numeration Systems	Ratios and Proportion	Shape and Space Measurement
3	Numeration Systems Number Operations	Ratios and Proportion Patterns and Relations	Measurement
4	Number Operations	Patterns and Relations	Measurement
5	Number Operations	Patterns and Relations Algebraic Expressions	Measurement
6	Number Operations	Algebraic Expressions	Measurement
7	Number Operations	Variables and Equations	Position and Transformation
8	Number Operations	Variables and Equations	Position and Transformation
9	Fractions	Shape and Space	Data
10	Fractions	Shape and Space	Data
11	Fractions	Shape and Space	Data Chance or Probability
12	Fractions	Shape and Space	Chance or Probability

SCHEME OF LEARNING – TERM 1

WEEKS	STRAND	SUB STRAND	INDICATORS	RESOURCES
1	Number	Numeration Systems	B7.1.1.1.1-2	Counters, bundle and loose straws base ten cut square, Bundle of sticks
2	Number	Numeration Systems	B7.1.1.1.3-4	
3	Number	Numeration Systems Number Operations	B7.1.1.1.5 B7.1.2.1.1	
4	Number	Number Operations	B7.1.2.1.2-3	Counters, bundle and loose straws base ten cut square, Bundle of sticks
5	Number	Number Operations	B7.1.2.2.1-2	
6	Number	Number Operations	B7.1.2.2.3 B7.1.2.3.1	Abacus, Color coded materials, place value chart, Number facts flash cards; Flashcards
7	Number	Number Operations	B7.1.2.3.2-3	
8	Number	Number Operations	B7.1.2.3.4-5	
9	Number	Fractions	B7.1.3.1.1-2	Square grid sheet; Geodot paper for shading fractions
10	Number	Fractions	B7.1.3.2.1-2	Paper strips, cut out cards; Benchmark fractions chart;
11	Number	Fractions	B7.1.3.3.1-2	
12	Number	Fractions	B7.1.3.3.3-4	

TERM 2 SCHEME OF LEARNING

WEEKS	STRAND	SUB STRAND	INDICATORS	RESOURCES
1	Number	Ratios and Proportion	B7.1.4.1.1-2	Counters, bundle and loose straws base ten cut square, Bundle of sticks
2	Number	Ratios and Proportion	B7.1.4.1.3-4	
3	Algebra	Ratios and Proportion Patterns and Relations	B7.1.4.1.5 B7.2.1.1.1	Abacus, Color coded materials, place value chart, Number facts flash cards; Flashcards
4	Algebra	Patterns and Relations	B7.2.1.1.2-3	
5	Geometry & Measurement	Patterns and Relations Algebraic Expressions	B7.2.1.1.4 B7.2.2.1.1	Abacus, Color coded materials, place value chart, Number facts flash cards; Flashcards
6	Algebra	Algebraic Expressions	B7.2.2.1.2-3	
7	Algebra	Algebraic Expressions	B7.2.2.1.4-5	Counters, bundle and loose straws base ten cut square, Bundle of sticks
8	Algebra	Variables and Equations	B7.2.3.1.1-2	
9	Algebra	Variables and Equations	B7.2.3.1.3-4	
10	Geometry & Measurement	Shape and Space	B7.3.1.1.1-3	Empty chalk boxes, tins, cut out shapes from cards.
11	Geometry & Measurement	Shape and Space	B7.3.1.2.1-2	
12	Geometry & Measurement	Shape and Space	B7.3.1.2.3-4	

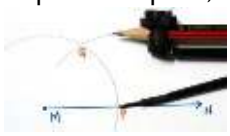
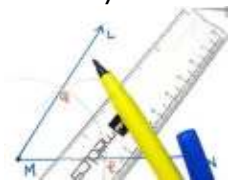
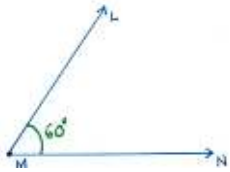
TERM 3 SCHEME OF LEARNING

WEEKS	STRAND	SUB STRAND	INDICATORS	RESOURCES
1	Geometry & Measurement	Shape and Space	B7.3.1.2.5-6	Empty chalk boxes, tins, cut out shapes from cards.
2	Geometry & Measurement	Shape and Space Measurement	B7.3.1.2.7 B.7.3.2.1.1	
3	Geometry & Measurement	Measurement	B7.3.2.1.2-3	Compass, rule, pencil, Ruler, rope, meter rule
4	Geometry & Measurement	Measurement	B.7.3.2.2.1-2	
5	Geometry & Measurement	Measurement	B.7.3.2.3.1-2	
6	Geometry & Measurement	Measurement	B.7.3.2.3.3-5	Compass, rule, pencil, Ruler, rope, meter rule
7	Geometry & Measurement	Position and Transformation	B7.3.3.1.1-2	
8	Geometry & Measurement	Position and Transformation	B7.3.3.1.3-4	Compass, rule, pencil, Ruler, rope, meter rule
9	Handling Data	Data	B7.4.1.1.1-2	Class Registers, School Based Assessment, Graph books, flash cards Graph books, flash cards
10	Handling Data	Data	B7.4.1.1.3 B7.4.1.2.1	
11	Handling Data	Data Chance or Probability	B7.4.1.2.2 B7.4.2.1.1	
12	Handling Data	Chance or Probability	B7.4.2.1.2-3	

TERM THREE
WEEKLY LESSON NOTES – B7
WEEK 1

Date: 16th SEPT, 2022	**DAY:**	**Subject:** Mathematics
Duration: 60mins		**Strand:** Geometry & Measurement
Class: B7	**Class Size:**	**Sub Strand:** Shape and Space
Content Standard: B7.3.1.2 Demonstrate how to construct a perpendicular to a line from a given point	**Indicator:** B7.3.1.2.5 Construct angles of 60^{O} and 30^{O}	**Lesson:** 1 of 2
Performance Indicator: Learners can construct angles of 60^{O} and 30^{O}		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)
References: Mathematics Curriculum Pg. 51-52		

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Call volunteer learners to the board to solve sample questions. Show learners the pair of compasses and ask, what can we do with a pair of compasses? Allow learners to brainstorm. Introduce the lesson by sharing performance indicators.	
PHASE 2: **NEW LEARNING**	Guide learners to use a pair of compasses and a ruler to: a) *Construct an angle of 60° at a point on a given line and verify with the protractor.* Steps. 1. mark the vertex of your angle anywhere on the paper. Let us name this point as M.  2. draw a ray MN, extending in any direction and of any length. This will be one of the arms of our angle.  3. place the tip of the compass on point M and set its width to any measure less than the length of the ray MN.  4. with the tip of the compass still on M, draw an arc so as to cut the ray MN at some point, say P.	Rule, pencil , a pair of compass, a pair of divider and protractor.

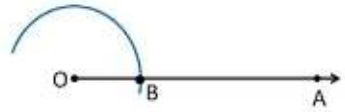
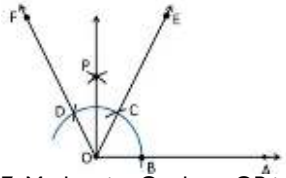
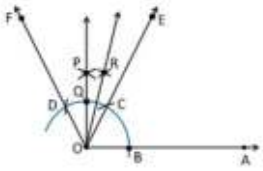
	 5. keeping the width unchanged, place the tip of the compass on the point P and draw another arc cutting the arc drawn in the previous step at some point, say Q.  6. connect the points M and Q with straight line and extend it to form a ray ML.   How do we know that the angle we have drawn is accurate? Guide learners to verify the accurateness of the angle with a protractor. <u>Assessment</u> Construct an angle of 30˚ by bisecting an angle whose measure is 60˚	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson. <u>Homework</u> Construct an angle of 15˚, 30o and 60˚	

Date: 16th SEPT, 2022	**DAY:**	**Subject:** Mathematics
Duration: 60mins		**Strand:** Geometry & Measurement
Class: B7	**Class Size:**	**Sub Strand:** Shape and Space

Content Standard: B7.3.1.2 Demonstrate how to construct a perpendicular to a line from a given point, bisect a line, bisect angles, and construct angles of the following sizes: 30˚, 45˚, 60˚, 75˚ and 90˚	**Indicator:** B7.3.1.2.6 Construct angles of 15^{O} and 75^{O}	**Lesson:** 2 of 2

Performance Indicator: Learners can Construct angles of 15^{O} and 75^{O}	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

References: Mathematics Curriculum Pg. 51-52

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Call volunteer learners to the board to solve sample questions. Introduce the lesson by sharing performance indicators.	
PHASE 2: **NEW LEARNING**	Guide learners to use a pair of compasses and a ruler to construct an angle of 75˚ at a point on a given line segment. <u>Steps</u> 1. draw a ray OA. Taking O as center and any radius, draw and arc cutting OA at B. 2. Now, with B as center and same radius as before, draw an arc intersecting the previously drawn arc at point C.  3. Now, with C as center, and same radius, draw another arc intersecting the previously drawn arc at point D. 4. draw ray OE passing through C and ray OF passing through D. 5. taking C and D as center, with radius more than half of CD, draw arcs intersecting at P. 6. Join OP and mark point Q where OP intersects the arc.  7. Mark point Q where OP intersects the arc. Taking Q and C as center, with radius more than half of QC, draw arcs intersecting at R. 8. Join OR  Thus, ∠ AOR = 75° How do we know that the angle we have drawn is accurate? Guide learners to verify the accurateness of the angle with a protractor.	Rule, pencil , a pair of compass, a pair of divider and protractor.

	<u>Assessment</u> Guide learners to construct an angle of 45˚, 60˚, 75˚ .	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson. <u>Assessment</u> Have learners to construct an angle of 45˚, 60˚, 75˚ .	

TERM THREE
WEEKLY LESSON NOTES
WEEK 2

Date: 23RD SEPT, 2022	**DAY:**	**Subject:** Mathematics	
Duration: 50mins		**Strand:** Geometry & Measurement	
Class: B7	**Class Size:**	**Sub Strand:** Shape and Space	
Content Standard: B7.3.1.2 Demonstrate how to construct a perpendicular to a line from a given point	**Indicator:** B7.3.1.2.7: Describe examples of perpendicular line segments, perpendicular bisectors and angle bisectors in the environment		**Lesson:** 1 of 2
Performance Indicator: Learners can describe examples of perpendicular line segments, perpendicular bisectors and angle bisectors in the environment		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 58			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Call volunteer learners to the board to solve sample questions. Introduce the lesson by sharing performance indicators.	
PHASE 2: **NEW LEARNING**	Revise with learners to construct angle bisectors and perpendicular bisectors. Take learners outside to have a look at angle bisectors and perpendicular bisectors in structures in the community. Guide learners to identify angle bisectors and perpendicular bisectors in structures and artefacts such as buildings, water tanks, boxes, etc. in the environment Guide learners to estimate and measure the size of angles in artefacts, tools, and structures.	Rule, pencil , a pair of compass, a pair of divider and protractor.
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Date: 23RD SEPT, 2022	**DAY:**	**Subject:** Mathematics	
Duration: 50mins		**Strand:** Geometry & Measurement	
Class: B7	**Class Size:**	**Sub Strand:** Perimeter	
Content Standard: B.7.3.2.1 Demonstrate the ability to find the perimeter of plane shapes including circles using the concept of pi (π) to find the circumference of a circle	**Indicator:** B.7.3.2.1.1 Calculate the perimeter of given shapes whose dimensions are in two units (i.e. cm and mm, m and cm, or km and m)		**Lesson:** 2 of 2
Performance Indicator: Learners can calculate the perimeter of given shapes		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 59-60			

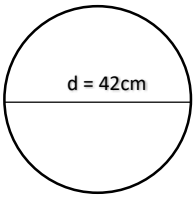
Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the meaning of perimeter. • What is meant by perimeter? • How do you measure the perimeter of an object? • How do you apply perimeter in real life situations?	
PHASE 2: **NEW LEARNING**	Have learners display their shapes on their desks. Demonstrate with learners how to measure the perimeter of a given shape. Guide learners to measure the perimeter of their shapes created. Allow each group a chance to walk around the classroom to find the perimeter of other groups' shapes. • What are your observations? • Does the shapes have equal perimeters? Guide learners to estimate the perimeter of objects in the classroom using referents for centimeter (hand span and thumb width). e.g. *exercise book, floor tiles, math set, teacher's table, classroom floor, etc.* Create different 2D shapes and bring them to class. Using the pick and say technique, call learners to pick and identify the names of the shapes they pick. Give learners 2D shapes with given dimensions to find the perimeter by adding the distance around the shapes. • How do you find the perimeter of objects? <u>Assessment</u> Give learners compound 2D shapes that can be spilt to many rectangles with given dimensions to find the surface area by adding areas of the various rectangles.	Empty chalk boxes, tins, cut out shapes from cards.

PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

TERM THREE
WEEKLY LESSON NOTES
WEEK 3

Week Ending: 30th SEPT, 2022	**DAY:**	**Subject:** Mathematics	
Duration: 50mins		**Strand:** Geometry & Measurement	
Class: B7	**Class Size:**	**Sub Strand:** Measurement	
Content Standard: B.7.3.2.1 Demonstrate the ability to find the perimeter of plane shapes including circles using the concept of pi (π) to find the circumference of a circle	**Indicator:** B7.3.2.1.2 Use the relationships between the diameter and the circumference to deduce the formula for finding the circumference of a circle and use it to solve problems.		**Lesson:** 1 of 2
Performance Indicator: Learners can explain the relationships between the diameter and the circumference.		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 60-63			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Ask pupils to name some round objects they know of (e.g. wheels, clock face, surface of milk cup, drum, ball, cylinder mouth). Ask a learner to come to the board and draw a circle and conclude that all round objects are called circular objects. Share performance indicators and introduce the lesson	
PHASE 2: **NEW LEARNING**	Paste a picture of a well labelled circle on the board. Call out the names of the parts and ask learners to repeat them several times. Explain each part to the learners: *a. Centre is the point in the middle of the circle.* *b. Circumference is the distance around the circle.* *c. Radius is the distance from the centre to the circumference.* *d. Diameter is the distance across the circle, passing through the centre.* Draw another circle on the board and label the diameter and two radii, as in the diagram. • What relationship can you observe between the radius and diameter of a circle? Allow learners to share their ideas e.g. diameter is longer than radius; radius touches the circumference at one point only, but diameter touches the circumference at two points. Discus with learners that the radius is half of the diameter, and the diameter is twice the radius.	Empty cans, tyres, bowls ball, cylinder mouth

	In groups, learners measure the radius, diameter and circumference of circular objects like base or cross section of cylindrical objects like cans, tyres, bowls, etc., roundabouts, etc. and describe the measuring tools used. Learners demonstrate to explain the relationship between the diameter and circumference of a circle by: i. Recording the measured diameter and circumference of various circles; ii. Completing the table for the measured values; and iii. Observing the results of c ÷ d. Conclude that the result of c ÷ d or the ratio of the circumference of a circle to its diameter is named π (and pronounced pi). <u>Assessment</u> Draw a circle and label its parts. Find the radius and diameter for the two circles 	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson. <u>Homework</u> Learners to read more on the internet about the pi – who discovered it, and its value.	

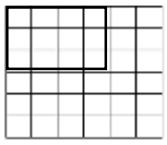
Circle	Circumference(c)	Diameter(d)	c ÷ d
A	13	4	13/4
B	38	12	38/12

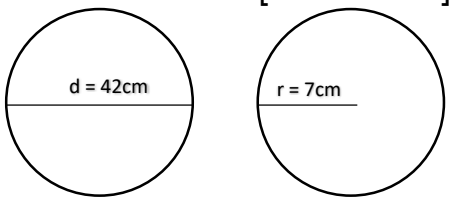
Week Ending: 30th SEPT, 2022	**DAY:**	**Subject:** Mathematics
Duration: 50mins		**Strand:** Geometry & Measurement
Class: B7	**Class Size:**	**Sub Strand:** Measurement

Content Standard: B.7.3.2.1 Demonstrate the ability to find the perimeter of plane shapes including circles using the concept of pi (π) to find the circumference of a circle	**Indicator:** B7.3.2.1.3 Draw in a square grid rectangles and triangles with given dimensions	**Lesson:** 2 of 2

Performance Indicator: Learners can draw in a square grid rectangles and triangles with given dimensions	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

References: Mathematics Curriculum Pg. 60-63

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Draw a circle on the board. Ask learners to come up to identify the following: circumference, centre, diameter, and radius. Share performance indicators and introduce the lesson	
PHASE 2: **NEW LEARNING**	Use the relationship between the diameter and circumference of a circle to solve problems. Example: i. The radius of a circle is 7 cm. What is the (a) diameter (b) circumference? [Take π = 22/7] (a) d = 2r = (2 x 7cm) = 14cm (b) C = πd = (22/7 x 14cm) = 44cm Draw a square grid on the board and draw a rectangle in the grid as shown in the diagram below.  Task learners to draw another rectangle whose area is twice as large as the one drawn on the grid. Go round and help those with difficulties. Let learners draw another rectangle which is twice as wide as and one and a half times as long as the one in the grid. Make a dot grid on the board and draw a triangle in the grid as shown below. 	Empty chalk boxes, tins, cut out shapes from cards.

	Task learners to draw in the dot square grid another triangle whose area is 3 square units. • What is the area of the triangle in the square grid? • How many different triangles of the same area as the one in the grid can you draw? <u>Assessment</u> Find the circumference of the circles below and round your answer to the nearest tenth [take π = 3.142]: 	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

TERM THREE

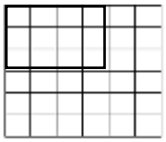
WEEKLY LESSON NOTES

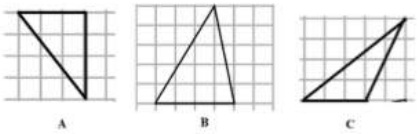
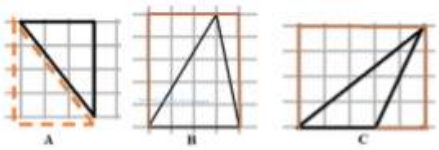
WEEK 4

Week Ending: 7th OCT, 2022	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Geometry & Measurement
Class: B7	**Class Size:**	**Sub Strand:** Area Of A Triangle

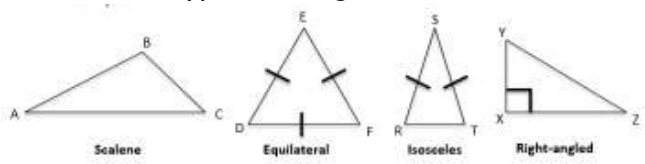
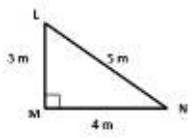
Content Standard: B.7.3.2.2 Derive the formula for determining the area of a triangle and use it to solve problems	**Indicator:** B7.3.2.2.1 Use the relationships between a triangle and a rectangle (or parallelogram) to deduce the formula for determining the area of a triangle.	**Lesson:** 1 of 2

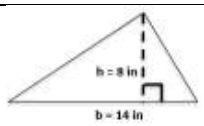
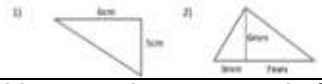
Performance Indicator: Learners can use the relationships between a triangle and a rectangle to deduce the formula for determining the area of a triangle.	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)
References: Mathematics Curriculum Pg. 58	

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Draw a square grid on the board and draw a rectangle in the grid as shown in the diagram below.  Task learners to draw another rectangle whose area is twice as large as the one drawn on the grid. Go round and help those with difficulties. Let learners draw another rectangle which is twice as wide as and one and a half times as long as the one in the grid. Make a dot grid on the board and draw a triangle in the grid as shown below.  Task learners to draw in the dot square grid another triangle whose area is 3 square units. • What is the area of the triangle in the square grid? How many different triangles of the same area as the one in the grid can you draw?	Square grid paper, Ruler, grid paper or geodot paper

	Let learners determine the number of unit squares enclosed by the triangles below.  i. What is the perpendicular height of each triangle? ii. What is the area of each of the triangles? iii. How does the perpendicular heights of each triangle help you in calculating its area? Guide learners to spot the RECTANGLE enclosing the triangles to find the unit squares in each triangle.  Area of a triangle = $\frac{1}{2}$ (Area of the rectangle = $\frac{1}{2}$ base × perpendicular height.	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

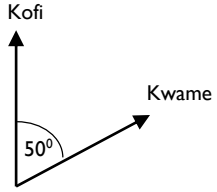
Week Ending: 7th OCT, 2022	**DAY:**	**Subject:** Mathematics	
Duration: 60MINS		**Strand:** Geometry & Measurement	
Class: B7	**Class Size:**	**Sub Strand:** Area Of A Triangle.	
Content Standard: B.7.3.2.2 Derive the formula for determining the area of a triangle and use it to solve problems.	**Indicator:** B7.3.2.2.2 Determine the area of a triangle.	**Lesson:** 2 of 2	
Performance Indicator: Learners can calculate the area of a triangle.		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 59-60			

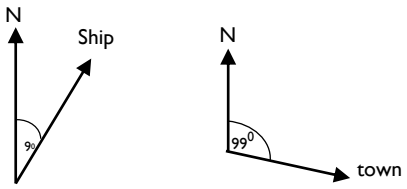
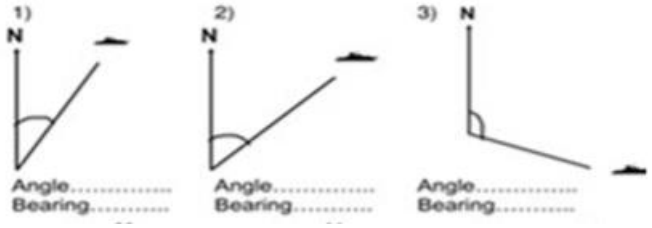
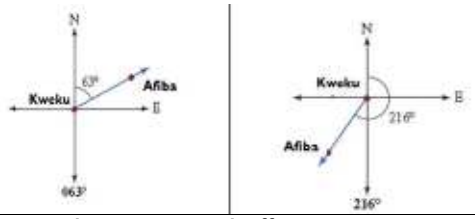
Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Ask 4 learners to come to the board at once to sketch the 4 different types of triangles.  Ask different pupils to each state 1 feature of a triangle on the board. (Example: the equilateral triangle has 3 equal sides).	
PHASE 2: **NEW LEARNING**	Draw triangle LMN on the board  Write the formula for area of a triangle on the board. Area of triangle = $\frac{1}{2}$ x base x height What is the base of this triangle? Allow pupils to share their answers. Tell them that the base is side MN, which is 4 m in length. Ask: What is the height of the triangle? Tell them that the height is side LM, which is 3 m in length. These are the two numbers we need to find the area of the triangle. We will substitute them in the formula. Let learners understand that the Base and Height are always perpendicular to each other. You can take any side of the triangle as its base. Then you find the height of the triangle from that base. The height is a perpendicular line drawn from the base to the opposite angle of the triangle. Write on the board A= $\frac{1}{2}$ bh = $\frac{1}{2}$ x 4m x 3m = $\frac{12m}{2}$ = 6m Draw another triangle on the board.	Square grid paper, Ruler, grid paper or Geodot paper

	have learners determine the base and height as 14in and 8in respectively.  In pairs, task learners to find the area of the triangle. Go round the class to monitor learners progress. Learners practice in pairs with several examples. <u>Assessment</u> Calculate the area of the triangles: 	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

TERM THREE
WEEKLY LESSON NOTES
WEEK 5

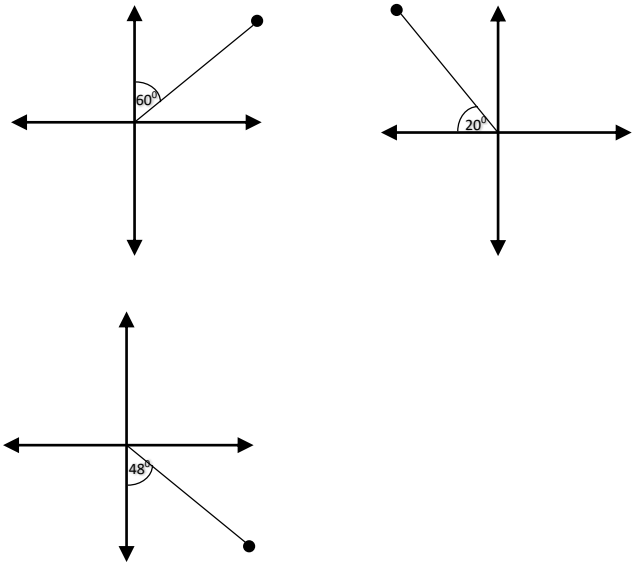
Week Ending: 14th OCT, 2022	**DAY:**	**Subject:** Mathematics	
Duration: 60MINS		**Strand:** Geometry & Measurement	
Class: B7	**Class Size:**	**Sub Strand:** Bearing	
Content Standard: B7.3.2.3 Demonstrate understanding of bearings, vector and its components using real life cases	**Indicator:** B7.3.2.3.1 Describe the bearing of a point from another point		**Lesson:** 1 of 2
Performance Indicator: Learners can describe the bearing of a point from another point		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 58			

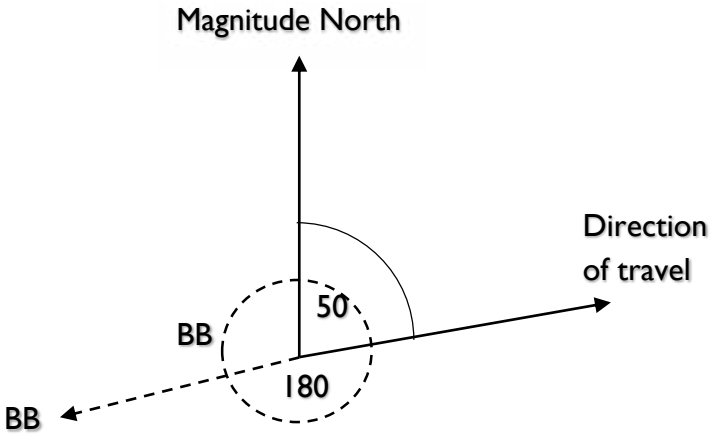
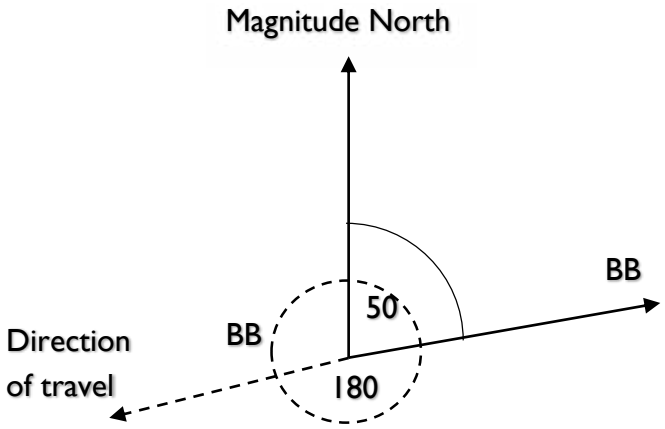
Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Start the lesson by calling learners to give direction to places in the community making reference to the cardinal points. That is North, South, East and West. Brainstorm learners for the meaning of Bearing. Bearings give directions in terms of an angle. Call 2 students to the front of the class, placing them far apart. Ask learners to talk about the distance between the students in terms of angle. Write on the board Kofi 50^0 Kwame. Guide learners to read it as "from Kofi measures 50 towards Kwame" Guide learners to draw a diagram to explain that.  Introduce learners to the three figure bearings. Draw the diagrams and guide learners to use the three figure bearing to describe them.	

	 In the first diagram, 9^0 gives 009^0 and 99^0 gives a bearing 099^0. Guide learners to use protractor to find the marked angles. For each diagram write the three-digit bearing.  Learners recognize true bearings as the angle measured in the clockwise direction from the North. Guide learners to express the following vectors graphically and measure each angle. (i) $\overrightarrow{PQ}=\begin{pmatrix}-3\\4\end{pmatrix}$ (ii) $\overrightarrow{BC}=\begin{pmatrix}2\\3\end{pmatrix}$ In pairs learners draw the following vectors and measure each angle. (i) $\overrightarrow{AB}$=(3km,060) (ii) $\overrightarrow{QR}$=(5km,120) <u>Assessment</u> State the bearing of the point kweku in each of the diagram. 	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Week Ending: 14th OCT, 2022	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Geometry & Measurement
Class: B7	**Class Size:**	**Sub Strand:** Back Bearing

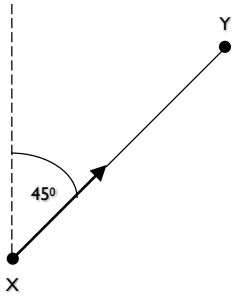
Content Standard: B7.3.2.3 Demonstrate understanding of bearings, vector and its components using real life cases	**Indicator:** B7.3.2.3.2 Explain how to find the back bearing when the direction of travel has a bearing which is less than 180° and/ or greater than 180°	**Lesson:** 2 of 2
Performance Indicator: Learners can find the Back Bearing when the direction is either greater or less than 180.	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 58		

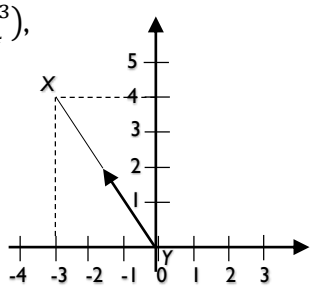
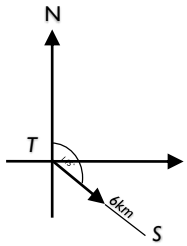
Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Draw these diagrams on the and ask learners in groups to solve them. Call groups to present their answers on the board.  Introduce learners to the back bearing. Explain to learners that bearings are useful if you are heading out to someplace and then returning along the same line of travel. 1. When the direction of travel bearing is less than 180 degrees. Example your bearing is 50, then your back bearing is 230. Back bearing = (180 + direction of travel bearing) BB = (180 + 50) = 230	

	 Back bearing = (180 + bearing) 2. When the direction of travel bearing is greater than 180. For example if your bearing is 230, then your back bearing is 50 degrees. BB = B -180 BB = 230 – 180 = 50  In pairs, learners solve these examples • If the bearing of Y from X is 060, find the bearing of X from Y. • If the bearing of P from Q is 245, find the bearing of Q from P. <u>Assessment</u> • If the bearing of a point Q from another point P is 040, find the bearing of P from Q. • If the baring of P from Q is 145, find the baring of Q from P.	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	Graph sheet, Protractor, Ruler

TERM THREE
WEEKLY LESSON NOTES
WEEK 6

Week Ending: 21st OCT, 2022	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Geometry & Measurement
Class: B7	**Class Size:**	**Sub Strand:** Scalar and Vector Quantities
Content Standard: B7.3.2.3 Demonstrate understanding of bearings, vector and its components using real life cases	**Indicator:** B7.3.2.3.3 Distinguish between scalar and vector quantities	**Lesson:** 1 of 2
Performance Indicator: Learners can distinguish between scalar and vector quantities		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)
References: Mathematics Curriculum Pg. 70		

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Brainstorm learners for the meaning of scalar quantity and vector quantity. A vector quantity is any quantity which has both magnitude and direction. Examples are displacement, acceleration, momentum, velocity, etc. Whiles A scalar quantity has magnitude only. Examples are time, speed, distance, mass, etc. Draw on the board, a representation of a vector.  The directed line segment *XY is a vector. The length* of the line segment *XY* is the *magnitude* of the vector and the *direction* is represented by the bearing *045⁰*. Have learners read on the internet for more information on scalar quantity and vector quantity. Put learners into groups of five. Have them group these examples under scalar quantity and vector quantity, weight, force, velocity time, speed, distance, mass, volume, energy, work momentum. Guide learners to identify a vector as a movement (distance) along a given bearing.	

	$\overrightarrow{AB} = \begin{pmatrix} a \\ b \end{pmatrix}$ **FREE VECTORS** They are denoted by a pair of block letters and an arrow. **POSITION VECTORS** They are denoted by small letters printed in bold type. Write this on the board and guide learners to interpret it. $\overrightarrow{AB} = \begin{pmatrix} a \\ b \end{pmatrix}$. The horizontal component ***a*,** is measured along the x-axis and the vertical component, ***b*** is measured along the y-axis from *A* to *B*. $\overrightarrow{AB} = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$. Means a particle is moved 4units to the right and 5units upwards from point A to another point B. In groups, learners interpret the following vectors. $\overrightarrow{XY} = \begin{pmatrix} -3 \\ 4 \end{pmatrix}$, $\overrightarrow{PQ} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$, $\overrightarrow{MN} = \begin{pmatrix} 2 \\ -3 \end{pmatrix}$. Guide learners to represent vectors graphically. E.g. $\overrightarrow{XY} = \begin{pmatrix} -3 \\ 4 \end{pmatrix}$,  E.g. 2. $\overrightarrow{TS}$ = (6km,145°).  <u>Assessment</u> Express the following graphically; 1) $\overrightarrow{PQ} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$, 2) $\overrightarrow{BC} = \begin{pmatrix} 2 \\ -3 \end{pmatrix}$. 3) $\overrightarrow{AB}$ = (3km, 060) 4) $\overrightarrow{QR}$ = (5km, 120).	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

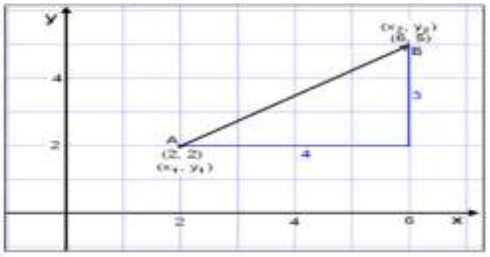
Week Ending: 21st OCT, 2022	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Geometry & Measurement
Class: B7	**Class Size:**	**Sub Strand:** Scalar and Vector Quantities

Content Standard: B7.3.2.3 Demonstrate understanding of bearings, vector and its components using real life cases	**Indicator:** B7.3.2.3.4-5 Represent vector in the column form x/y and determine its magnitude and direction	**Lesson:** 2 of 2

Performance Indicator: Learners can represent vector in the column form x/y and determine its magnitude and direction.	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

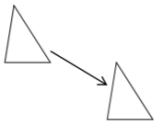
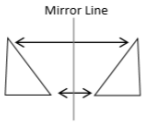
References: Mathematics Curriculum Pg. 70-71

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Write this questions and task learners to express them graphically. 1) $\overrightarrow{PQ} = \binom{1}{4}$, 3) $\overrightarrow{AB}$ = (2km, 030) Give learners time to solve and call volunteers to share their answers with the class. Revise with learners that vectors can be represented by; • Column or component form = $\binom{1}{4}$ • Magnitude and bearing form = $\overrightarrow{AB}$ = (2km, 030) In groups, let learners write each of the following as column vectors using graph. $\overrightarrow{CD}$=(5km,030°), $\overrightarrow{AB}$=(25km,150°) Let learners use any other method apart from graph to write the following as column vectors and find it magnitude and direction; $\overrightarrow{ST}$=(10km, 270°) $\overrightarrow{PQ}$= (70km, 090°) Guide learners to convert vectors in the column (component) form x/y to the Magnitude –Bearing form (k,θ) and vice versa. Use the Pythagorean theorem to find the length or the magnitude of a vector.	

	$\|\overrightarrow{AB}\| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$  <u>Assessment</u> Find the magnitude and the direction of the following vectors $\overrightarrow{AB} = \begin{pmatrix} 12 \\ 15 \end{pmatrix}$ $\overrightarrow{QR} = \begin{pmatrix} 15 \\ 9 \end{pmatrix}$	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	Graph sheet, Protractor, Ruler

TERM THREE
WEEKLY LESSON NOTES
WEEK 7

Week Ending: 28th OCT, 2022	**DAY:**	**Subject:** Mathematics	
Duration: 60MINS		**Strand:** Geometry & Measurement	
Class: B7	**Class Size:**	**Sub Strand:** Position and Transformation	
Content Standard: B7.3.3.1 Perform a single transformation on a 2D shape using graph paper (including technology) and describe the properties of the image under the transformation	**Indicator:** B7.3.3.1.1 Determine shapes in real life that have reflectional (or fold) symmetries.	**Lesson:** 1 of 2	
Performance Indicator: Learners can determine shapes in real life that have reflectional		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 72-76			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Point to the words on the board and read them aloud with pupils. Example: Reflection, Translation, Rotation, Enlargement, etc. Ask learners if they know the meaning of any of these words. Encourage pupils to share their ideas with the class. (For example, learners might recognize that 'enlargement' means to make something bigger.) Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Show an example of translation by dropping the board duster on the ground, showing that it is a translation from the position in your hand to on the ground. Brainstorm learners for the meaning of translation. *To move in any direction, but keep the same shape is translation*. Draw an example on the board and say: The triangle is still the same shape and size, but it moves to a new location.  Show an example of reflection. Demonstrate with your face with the mirror line drawn down the middle. Show that each side of your face is a reflection of the other side.  Guide learners to come up with their observations. The distance between the reflected shape and the mirror line is the same as between the original shape and the mirror line.	

Identify examples of designs (or objects) in everyday life that have reflectional (or fold) symmetries (e.g. adinkra symbols).

Show an example of rotation. For example, demonstrate that as you walk, your legs rotate about a fixed point (your hip). You can also place the tip of a pencil at the center point, and turn the pencil around to show how the triangle turns about the point.

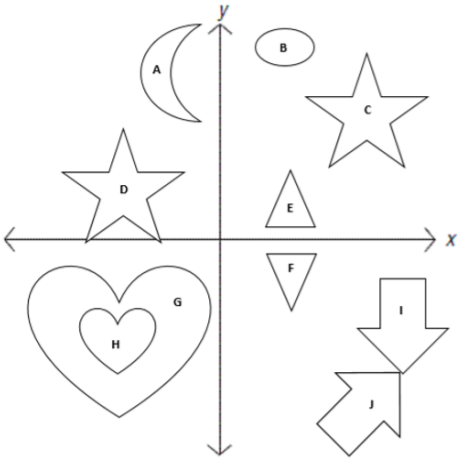
Show an example of enlargement. Hold up a small piece of chalk and a bigger piece of chalk. Say that the bigger piece of chalk is an enlargement of the smaller piece of chalk.

Write the following directions on the board:
a) Draw a star.
b) Draw a translation of your star.

Ask learners to work in pairs to draw the translation. Move around the classroom to make sure learners understand and are doing the task.

Invite one pair to stand and explain what they did.
(Example answer: We drew a star and moved it to the right. It kept the same size and shape, and only its location changed.)

<u>Assessment</u>
Study the diagram below and answer the following questions.



a) which shapes are translations.
b) which shapes are reflections.
c) which shapes are rotations.
d) which shapes are enlarged.

Write down the letters that answers each question.

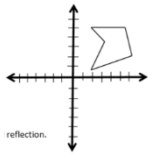
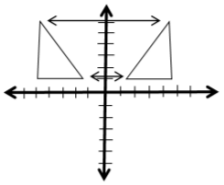
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Week Ending: 28th OCT, 2022	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Geometry & Measurement
Class: B7	**Class Size:**	**Sub Strand:** Position and Transformation

Content Standard: B7.3.3.1 Perform a single transformation on a 2D shape using graph paper (including technology) and describe the properties of the image under the transformation	**Indicator:** B7.3.3.1.2 Plot points and shapes (i.e. plane figures) on a coordinate plane and draw their images under reflection in given lines	**Lesson:** 2 of 2

Performance Indicator: Learners can draw images under reflection in given lines.	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

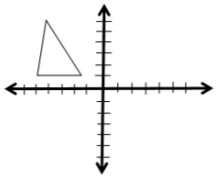
References: Mathematics Curriculum Pg. 72-76

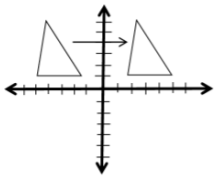
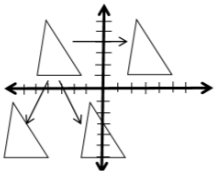
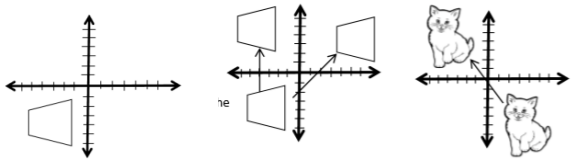
Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Draw the Cartesian plane and shape to the right on the board. Ask pupils to draw the plane and shape in their exercise books.  Draw a translation of the shape. Invite a learner to draw the translation on the board. Make corrections if necessary. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Revise the meaning and features of reflection. Draw a triangle on a co-ordinate plane on the board and draw the reflection of this triangle. Ask learners what that means? Let learners share their ideas and discuss as a class.  Let learners understand that to reflect a shape means to flip it over a mirror line. It means we will have the same shape, but it will be facing the opposite direction and it will move to the other side of the mirror line. Have learners draw the reflection of the triangle about the y-axis. Draw an arrow to show the movement. Write the following problem on the board: Draw a rectangle anywhere on the co-ordinate plane. Show its reflection across the x-axis and the y-axis. Ask learners to work in pairs and write their answers in their exercise books. Move around the classroom to make sure pupils understand and are doing the task.	

	Invite a pair to come to the front and share their answer on the board. Plot points and shapes (i.e. plane figures) with given coordinates in the number plane. i. Plot the points A (3, 1), B (3, 3), C (4, 3), D (4, 2), E (5, 2), F (5, 3), H (6, 3), and I (6, 1). Guide learners to identify points with given coordinates and lines (i.e. constant lines parallel to the x-axis or y-axis) in the number plane. Draw and label the axes of the coordinate plane and label the lines such as Line 1 is y-axis or x=0; Line 2 is x-axis or y=0; Line 3 is y=x; Line 5 is y=−1, etc.	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	Graph sheet, Protractor, Ruler

TERM THREE
WEEKLY LESSON NOTES
WEEK 8

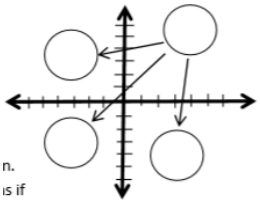
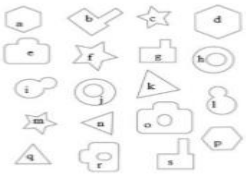
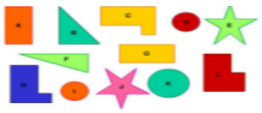
Week Ending: 4TH NOV, 2022	**DAY:**	**Subject:** Mathematics	
Duration: 60MINS		**Strand:** Geometry & Measurement	
Class: B7	**Class Size:**	**Sub Strand:** Position and Transformation	
Content Standard: B7.3.3.1 Perform a single transformation on a 2D shape using graph paper and describe the properties of the image under the transformation	**Indicator:** B7.3.3.1.3 Plot points and shapes on a coordinate plane and draw their images under translation by a given vector.		**Lesson:** 1 of 2
Performance Indicator: Learners can draw images under translation by a given vector		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 72-76			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Point to the words on the board and read them aloud with pupils. Example: Reflection, Translation, Rotation, Enlargement, etc. Ask learners if they know the meaning of any of these words. Encourage pupils to share their ideas with the class. (For example, learners might recognize that 'enlargement' means to make something bigger.) Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Brainstorm learners for the meaning of translation? Encourage them to use their own words. Answer: To move up and down or side to side. Draw a triangle on the co-ordinate plane on the board.  Say; I am going to translate this triangle. What does it mean to translate the triangle on the graph. Invite learners to share their ideas and discuss as a class. Explain to learners that to translate a shape means to move it without changing its size or shape. It means we will have exactly the same triangle, just in a different location. Guide learners to translate the triangle to the right. Draw an arrow to show the movement.	

	 Explain further that, these two triangles are congruent. Shapes are congruent if they change but keep the same size and shape. Demonstrate translation of a shape in different directions. Draw two more translations of the triangle on the Cartesian plane to show learners that transformation can be in any direction.  Ask learners to draw a transformation of the triangle in their exercise books. Move around the classroom to make sure learners understand and are doing the task. Their triangle could be anywhere on the co-ordinate plane, but it should be the same size and shape as the original triangle. Invite learners to come draw their transformation on the co-ordinate plane on the board. Make corrections if necessary. Draw the Cartesian plane to the right on the board and write the following problems on the board: a) Copy the Cartesian plane and trapezoid. Translate the trapezoid to two different locations. b) Draw a small cat on the Cartesian plane. Translate your cat to another location on the plane.  Invite learners in pairs to come to the front and share their answers on the board. Make corrections if necessary.	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Week Ending: 4TH NOV, 2022	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Geometry & Measurement
Class: B7	**Class Size:**	**Sub Strand:** Position and Transformation

Content Standard: B7.3.3.1 Perform a single transformation on a 2D shape using graph paper and describe the properties of the image under the transformation	**Indicator:** B7.3.3.1.4 Verify the concept of congruent and similar shapes in coordinate plane.	**Lesson:** 2 of 2
Performance Indicator: Learners can verify the concept of congruent and similar shapes in coordinate plane	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 72-76		

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Revise with learners on congruent shapes. Explain that Shapes are congruent if they change but keep the same size and shape. Ask learners to draw a circle anywhere on the co-ordinate plane. Show three different transformations of your circle. Have learners explain the relationship between the circles.  n. is if The circles are said to be ***congruent***. Have learners verify which shapes are similar and which are congruent.  <u>Assessment</u> Which of the following shapes are congruent? 	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	Graph sheet, Protractor, Ruler

TERM THREE
WEEKLY LESSON NOTES
WEEK 9

Week Ending: 11th NOV, 2022	**DAY:**	**Subject:** Mathematics	
Duration: 60MINS		**Strand:** Handling Data	
Class: B7	**Class Size:**	**Sub Strand:** Statistics	
Content Standard: B7.4.1.1 Select, justify, and use appropriate methods to collect data	**Indicator:** B7.4.1.1.1- Select and justify a method to collect data to answer a given question		**Lesson:** 1 of 2
Performance Indicator: Learners can select and justify a method to collect data	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)		
References: Mathematics Curriculum Pg. 77-80			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	In groups, Ask learners to find answers for the following questions. a. How many tables are in your classroom? b. How many chairs are in your classroom? c. How many male teachers teach at the school? d. How many female teachers teach at the school? Have learners present their findings to the class for discussion and how they arrived at their answers. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Brainstorm learners for the meaning of Data. *Data are any numerical facts, information, or measurement of something* In small groups, learners discuss and write down how they would make decisions in the following situations, what facts they would take into account and how they would collect these 'facts: (a) The type of drinks to buy for a class party. (b) The make of football boots to buy for the school team. (c) Do people who eat more fufu develop pot belly? (d) The number of desks in each classroom. (e) The amount of money B6 students spend on bus fare to school every month. (f) Buy a mobile phone from an online shop. Lead a discussion on the methods of data collection below and ask them to identify which method they will use to gather the facts for each situation in E.g.1. above) That is questionnaires, interview, observation, experiments, survey, databases, electronic media or internet. <u>Assessment</u> Learners to use different methods to collect data on students age in the school	Counters, bundle and loose straws base ten cut square, Bundle of sticks, rectangular cut out, bottle tops, algebra tiles

PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

Week Ending: 11th NOV, 2022	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Handling Data
Class: B7	**Class Size:**	**Sub Strand:** Statistics

Content Standard: B7.4.1.1 Select, justify, and use appropriate methods to collect data	**Indicator:** B7.4.1.1.2- Design and administer a questionnaire for collecting data to answer questions and record the results.	**Lesson:** 1 of 2
Performance Indicator: Learners can design and administer a questionnaire	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 77-80		

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Call volunteer learners to the board to solve sample questions. Introduce the lesson by sharing performance indicators.	
PHASE 2: **NEW LEARNING**	Show a sample questionnaire to learners and let them observe how it is. Demonstrate how to use the questionnaire with learners. Guide learners to conduct a survey by producing a question form (such as the one below) and collecting real information. 1) Hello, What's your name? _____ 2) How old are you? _____ 3) What's your favourite school subject? _____ 4) What's your worst subject? _____ 5) What's the most important school subject? _____ 6) What is your favourite hobby _____ 7) What's your favourite day of the week? _____ 8) How much do you spend on bus fare to school every day? _____ Let learners use the table below to organize the data obtained with the question form (or questionnaire). Name | Age | Favourite subject | Worst subject | Important subject | Favourite hobby | Favourite weekday | Daily bus fare (cedes) <u>Assessment</u> Learners design and administer a questionnaire for collecting favorite food of students in the school.	Sample questionnaire
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	

TERM THREE
WEEKLY LESSON NOTES
WEEK 10

Week Ending: 18th NOV, 2022	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Handling Data
Class: B7	**Class Size:**	**Sub Strand:** Statistics

Content Standard: B7.4.1.1 Select, justify, and use appropriate methods to collect data	**Indicator:** B7.4.1.1.3- Organize and present data from a survey into a table and/or chart, and analyze it to solve and/or pose problems.	**Lesson:** 1 of 2
Performance Indicator: Learners can tallies to represent data in a frequency table	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 77-80		

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Call volunteer learners to the board to solve sample questions. Introduce the lesson by sharing performance indicators.	
PHASE 2: **NEW LEARNING**	Explain to pupils the meaning of tally marks (strokes which represent the number of time a particular event or appears) Engage learners to count the number of tables and chairs in the classroom. Example: tables = 10, chairs = 12 Demonstrate how to represent the data collected using tallies. Tables = 𝍸 𝍸 Chairs = 𝍸 𝍸 // In pairs, let learners use tallies to represent the number of boys and girls in the classroom. Have them present their work for discussion. Task learners to solve more questions using tallies. Example: 20 learners are each asked to give the number of sisters they have. The data is collected as follows: Michael (4), Issa (4), Janet (5), Abass (3), Jane (1) Idrissa (2) and Fanta (1). Ask learners to work in pairs and display the information with tally marks. <u>Assessment</u> Henry scored the following marks in an Exams. Mathematics 14, English 10, Social Studies 13, French 19, Business Studies 8 and Integrated Science 11. Use tallies to organize into a frequency table marks obtained in the exams.	Sample questionnaire

<table>
<tr>
<td></td>
<td>Guide learners to construct a frequency table and discuss the titles in each column.
<table>
<tr><td>Event (Marks)</td><td>Tally</td><td>Frequency</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
</table>
</td>
<td></td>
</tr>
<tr>
<td>PHASE 3:
REFLECTION</td>
<td>Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson.

Take feedback from learners and summarize the lesson.</td>
<td></td>
</tr>
</table>

Week Ending: 18th NOV, 2022	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Handling Data
Class: B7	**Class Size:**	**Sub Strand:** Statistics

Content Standard: B7.4.1.1 Select, justify, and use appropriate methods to collect data	**Indicator:** B7.4.1.1.3- Organize and present data from a survey into a table and/or chart, and analyze it to solve and/or pose problems.	**Lesson:** 2 of 2

Performance Indicator: Learners can use tally to represent data in a frequency table	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

References: Mathematics Curriculum Pg. 77-80

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Call volunteer learners to the board to solve sample questions. Introduce the lesson by sharing performance indicators.	
PHASE 2: **NEW LEARNING**	Revise with learners on the meaning of tally and how to use tally to represent data collected. Guide learners solve more examples on how to use tallies to organize into a frequency table. Use the data below which was obtained by a group of learners for the number of people living in households around their houses. 3 4 2 4 3 2 2 5 4 3 2 6 3 5 4 1 2 6 3 5 5 2 4 1 5 4 2 4 3 4 2 4 4 6 2 4 3 4 2 4 Guide learners to complete the frequency table below for the data recorded from the survey of people living in households around their houses. No./ Household | Tally | Frequency | Angle of sector 1 | // | 2 | $\frac{2}{40} \times 360 = 18^c$ 2 | //// //// | 10 | 3 | //// // | 7 | 4 | //// //// /// | 13 | 5 | //// | 5 | 6 | /// | 3 | Learners to draw a pie chart to illustrate the data in the frequency table (i.e. in E.g. 1 above). They write their conclusion about the number of people living in the households and/or pose questions on the pie chart.	Sample questionnaire

	In pairs learners draw a graph or chart for data organized in a frequency tables and use it to answer and/or pose questions. <u>Assessment</u> The table below shows how Fayol spends his day. Complete the blanks in the table with information on how you spend your day. Draw a double bar graph to compare how you spend your day with Fayol. Activity | School | Sleeping | Homework | Eating | Other No. of hours | 8 | 8 | 3 | 1 | 4 No. of hours | | | | |	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson. <u>Homework</u> The table below shows the amount of rainfall recorded in millimeters per month in the two towns in Ghana. Draw a double bar c hart to represent the data, write your conclusion and/or pose questions based on the chart | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec Kumasi | 5 | 10 | 15 | 20 | 50 | 45 | 55 | 35 | 40 | 50 | 35 | 10 Oda | 3 | 10 | 13 | 25 | 40 | 50 | 60 | 50 | 40 | 45 | 35 | 8	

TERM THREE
WEEKLY LESSON NOTES
WEEK 11

Week Ending: 25TH NOV, 2022	**DAY:**	**Subject:** Mathematics
Duration:		**Strand:** Handling Data
Class: B7	**Class Size:**	**Sub Strand:** Statistics
Content Standard: B7.4.1.2 Determine the measures of central tendency	**Indicator:** B7.4.1.2.1 Calculate the mean for a given ungrouped data and use it to solve problems.	**Lesson:** 1 of 2
Performance Indicator: Learners can use tally to represent data in a frequency table	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 77-80		

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Call volunteer learners to the board to solve sample questions. Introduce the lesson by sharing performance indicators.	
PHASE 2: **NEW LEARNING**	Guide learners to explain the measures of central tendency • Mean: The average of given numbers • Median: Is the middle number in a sorted list of numbers • Mode: the most occurring number in a sorted list of numbers. Guide learners to find the mean for a data set by dividing the sum of all the items in the data set by the by the number of items. Example: The mean for the data set {8, 9, 7, 6, 8,10} $= \frac{8+9+7+6+8+10}{6}$ In groups, let learners find the mean for the data set below which is the marks obtained out of a total of 5 in a mathematics class test. 3 4 2 4 3 2 2 5 4 3 4 1 2 6 3 5 5 2 4 1 Demonstrate to learners on how to find the median for a data set by arranging the items in the set in an array and identifying the middle item. Example: Find the median of 19, 29, 36, 15, and 20. Start by arranging the numbers in ascending order 15,19, 20, 29, 36 and choose the middle number to be 20. NB. since there are 5 values (odd number), 20 is the median (middle number)	Sample questionnaire

	Demonstrate to learners on how to find the median for a data set in a frequency table. <u>Assessment</u> Find the mean for the marks obtained out of a total of 5 in a mathematics class test presented in the frequency table: Find the mean of the ages of children at a party presented in the frequency table	
PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson. <u>Homework</u> Solve problems involving calculating the mean or average. i. A shop keeper sold the following loaves of bread over the last 6 days: 25, 48, 25, 33, 57, 50. What was the average number of loaves sold each day? ii. Sena has had the following scores in five of the common core subjects this term: 75, 87, 90, 88, 79. If she wishes to have an average score of 85, what must she score on the sixth test?	

Score	1	2	3	4	5
Frequency	2	6	4	5	3

Ages (x):	1	3	5	6	7	8	9	10
Frequency (f):	2	5	6	10	8	5	3	1

Week Ending: 25TH NOV, 2022	**DAY:**	**Subject:** Mathematics
Duration:		**Strand:** Handling Data
Class: B7	**Class Size:**	**Sub Strand:** Chance or Probability

Content Standard: B7.4.2.1 Identify the sample space for a probability experiment	**Indicator:** B7.4.2.1.1 Demonstrate understanding of likelihood of a single outcome occurring by providing examples of events that are impossible, possible, or certain from personal contexts.	**Lesson:** 1 of 2

Performance Indicator: Learners can use tally to represent data in a frequency table	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

References: Mathematics Curriculum Pg. 77-80

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Call volunteer learners to the board to solve sample questions. Introduce the lesson by sharing performance indicators.	
PHASE 2: **NEW LEARNING**	Describe each outcome using words like: impossible, possible, or certain. i. The dog will fly tomorrow (impossible). ii. Someone in the class would be a teacher in the future (possible). iii. Ghana will still be an African country tomorrow (certain). Ask learners to work in groups to discuss the outcome of the following events using words like: impossible, possible, or certain A. A coin lands heads side up. B. The day after Monday will be Tuesday. C. A new-born baby will be a girl. D. It will rain in Winneba in the first week of January. Learners to classify the likelihood of a single outcome occurring in a probability experiment as impossible, possible, or certain. In groups, learners discuss the following outcomes of throwing a dice using words like impossible, possible, or certain. A. Obtaining the number 1 B. Obtaining the number 7 C. Obtaining the number 4 Guide them to discuss the following outcomes of throwing two dice using words like impossible, possible, or certain. A. Obtaining a total of 12 B. Obtaining a total of 2 C. Obtaining a total of 13	Sample questionnaire

PHASE 3: **REFLECTION**	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	