SECOND TERM
WEEKLY LESSON NOTES
WEEK 1

Week Ending: 06-04-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Number
Class: B8	**Class Size:**	**Sub Strand:** Fractions

Content Standard: B8.1.3.1 Apply the understanding of operation on fractions to solve problems involving fractions of given quantities and round the results to given decimal and significant places.	**Indicator:** B8.1.3.1.1 Review fractions and solve problems involving basic operations on fractions	**Lesson:** 1 of 1

Performance Indicator: Learners can review fractions and solve problems involving basic operations on fractions	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)
References: Mathematics Curriculum Pg. 102	

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Engage learners in simple brain teaser. Example: I have GH₵200, and I want to give half of it to my son for transport. How much will I give to my son? Learners in pairs discuss the question and find the answer. Ask them to share their answers with the class. Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Review the concept of fractions. Engage learners to shade given fraction of squares in a shape or find the fraction shaded in the shape: i.e. shade $\frac{3}{4}$ of the rectangle.  Learners in their groups shade given fractions of squares. Write down $\frac{2}{3}$ on the board and guide learners to find 3 equivalent fractions. So $\frac{2}{3} = \frac{4}{6}, \frac{6}{9}, \frac{8}{12}$ Demonstrate how to express the fraction $\frac{6}{10}$ in its simplest form. Find a common a factor that can divide the numerator and denominator without a reminder. So we can use 2 $\frac{\cancel{6}}{\cancel{10}} = \frac{3}{5}$ Have learners express the following fractions in its simplest form.	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	1. $\frac{6}{10}$ 4. $\frac{4}{12}$ 2. $\frac{12}{18}$ 5. $\frac{8}{14}$ 3. $\frac{16}{20}$ Guide learners to express fractions as a mixed number. Example $\frac{12}{5} = 2\frac{2}{5}$	
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: 06-04-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Number
Class: B8	**Class Size:**	**Sub Strand:** Fractions

Content Standard: B8.1.3.1 Apply the understanding of operation on fractions to solve problems involving fractions of given quantities and round the results to given decimal and significant places.	**Indicator:** B8.1.3.1.1 Review fractions and solve problems involving basic operations on fractions	**Lesson:** 1 of 1
Performance Indicator: Learners can review fractions and solve problems involving basic operations on fractions	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 102		

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Let learners determine the missing number in the box 1 / 5 / 15 / 35 — 2 / 7 / 18 / 39 — 3 / 9 / 21 / ? Answer: 43 Share performance indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Review the basic operations on fractions. Write an addition problem on the board $\frac{4}{13} + \frac{2}{13}$ Ask learners to observe the problems carefully. Guide them to note that they have the same denominator but different numerators. Learners in pairs solve the problem and present their answers to the class. When the fractions have the same denominator, we add the numerators and write the sum all over the same denominator Example: $\frac{4}{13} + \frac{2}{13} = \frac{4+2}{13} = \frac{6}{13}$ Write two more examples on the board and let learners work in pairs. 1. $\frac{9}{15} + \frac{6}{15}$ 2. $\frac{4}{5} + \frac{3}{5}$ Write on the board. $\frac{3}{4} + \frac{1}{8}$. Guide learners to add fractions with different denominators. To subtract fractions with different denominators we need to find a common denominator, or a denominator that is the same. First we need to find the LCM of the two numbers in the denominators. The lowest number that is divisible by both numbers is the LCM.	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	We must change the numerators and denominators before we can add the fractions. The new denominator will be the LCM, 8. We will rewrite each fraction as an equivalent fraction with denominator 8. Solve the problem on the board: $\frac{3}{4} + \frac{1}{8} = \frac{6}{8} + \frac{1}{8} = \frac{6+1}{8} = \frac{7}{8}$ Learners subtract the following fractions and simplify their answers. 1. $\frac{4}{5} - \frac{3}{5}$ 2. $\frac{6}{7} - \frac{4}{7}$ 3. $\frac{3}{4} - \frac{3}{4}$ 4. $\frac{2}{4} - \frac{2}{3}$ 5. $\frac{3}{4} - \frac{1}{3}$ Multiplying a whole number by a fraction, e.g. $5 \times \frac{2}{3}$ or finding five two-thirds means $\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{10}{3} = 3\frac{2}{3}$ To multiply a whole number by a mixed fraction (e.g. $3 \times 2\frac{2}{3}$) one can multiply the whole number by the whole number and then whole number by the fraction and add the products or change the mixed fraction to improper fraction and multiply; i.e. $3 \times 2\frac{2}{3} = (3\times2) + (3 \times \frac{2}{3})$ $= 6 + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = 6\frac{6}{3}$ To multiply a whole number by a fraction (e.g. $3 \times 2\frac{2}{3}$) first change all into common fractions, then multiply the numerators separately and multiply the denominators separately and simplify; i.e. $3 \times 2\frac{2}{3} = \frac{3}{1} \times \frac{8}{3} = \frac{3\,X\,8}{1\,X\,3} = 3\frac{24}{3} = 8$ Multiplying a fraction by a whole number the multiplication is interpreted as "of"; e.g. $\frac{2}{3} \times 5$ means shade $\frac{2}{3} of\ 5$; i.e. finding two-thirds of each of five objects; i.e. $\frac{2}{3} \times 5$ can be illustrated by shading $\frac{2}{3} of\ 5$ sheets of paper, which leads to the shading of 10 thirds, $\frac{2}{3} \times 5 = \frac{2}{3} of\ 5 = 10\ (\frac{1}{3}) = \frac{10}{3} = 3\frac{1}{3}$ To multiply a mixed fraction by a whole number (e.g. $4\frac{4}{5} \times 5$) First change all into common fractions, then multiply the numerators separately and multiply the denominators separately and simplify; i.e. $4\frac{4}{5} \times 5 = \frac{24}{5} \times \frac{5}{1} = \frac{120}{5} = \frac{24}{1} = 24$	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 2

Week Ending: 14-04-2023	**DAY:**	**Subject:** Mathematics	
Duration: 60MINS		**Strand:** Number	
Class: B8	**Class Size:**	**Sub Strand:** Powers Of Natural Numbers	
Content Standard: B8.1.2.3 Demonstrate understanding and the use of the laws of indices in solving problems involving powers of natural numbers	**Indicator:** B8.1.2.3.4 Solve real life problems involving powers of natural numbers.	**Lesson:** 1 of 2	
Performance Indicator: Learners can solve real life problems involving powers of natural numbers		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 102			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Guide learners to solve exponential equations and Solve real life problems involving powers of natural numbers 1. A person has a piece of land that is 50 meters long and 30 meters wide. How many square meters is the land? Solution: The area of the land is given by the product of its length and width, so we have: Area = 50 m x 30 m = 1500 m^2 Therefore, the land has an area of 1500 square meters. 2. A car travels at a speed of 60 km/h for 3 hours. How far does the car travel? Solution: The distance travelled by the car is given by the product of its speed and time, so we have: Distance = Speed x Time = 60 km/h x 3 h = 180 km Therefore, the car travels 180 kilometers. 3. A building has 10 floors, each with a height of 3 meters. How high is the building? Solution: The total height of the building is given by the product of the height of each floor and the number of floors, so we have: Height = 10 x 3 m = 30 m Therefore, the building is 30 meters high. 4. A recipe calls for 2 cups of flour, 1/2 cup of sugar, and 1/4 cup of butter. If you want to make twice the recipe, how much flour do you need? Solution: If we want to make twice the recipe, we need to double the amount of each ingredient. So we have: Flour = 2 cups x 2 = 4 cups Sugar = 1/2 cup x 2 = 1 cup Butter = 1/4 cup x 2 = 1/2 cup Therefore, we need 4 cups of flour to make twice the recipe.	Counters, bundle and loose straws base ten cut square, Bundle of sticks

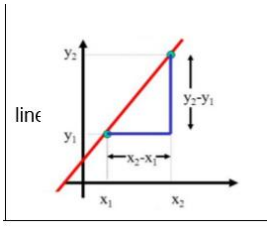
	5. A container of juice contains 1 liter of juice. If we pour 1/4 of the juice into a glass, how much juice is left in the container? Solution: If we pour 1/4 of the juice into a glass, we are left with 3/4 of the juice in the container. So we have: Juice left in container = 1 L x 3/4 = 0.75 L Therefore, there is 0.75 liters of juice left in the container <u>Assessment</u> Guide learners to solve real-life problems on populations. While studying her family's history, Saratu discovers records of ancestors 12 generations back. She wonders how many ancestors she has had in the past 12 generations. She starts to make a diagram to help her figure this out. The diagram soon becomes very complex Through illustrations, make a table and a graph showing the number of ancestors in each of the 12 generations. ii. Write an equation for the number of ancestors in a given generation n.	
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: 14-04-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Algebra
Class: B8	**Class Size:**	**Sub Strand:** The Gradient Of A Line

Content Standard: B8.2.1.1 Demonstrate the ability to draw table of values for a linear relation, graph the relation in a number plane, determine the gradient of the line and use it to write equation of a line of the form y = mx + c.	**Indicator:** B8.2.1.1.1 Calculate the gradient of a line and use it to write equation of a line of the form y = mx + c.	**Lesson:** 2 of 2

Performance Indicator: Learners can calculate the gradient of a line and use it to write equation of a line of the form y = mx + c	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

References: Mathematics Curriculum Pg. 112

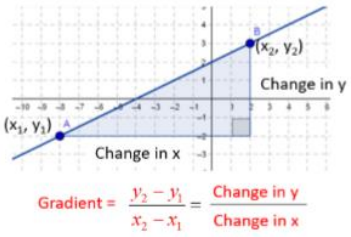
Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Explain the concept of gradient using real life examples and to discover the practical meaning of gradient. The gradient is the measure of how steep the hill the rider is climbing is. The gradient is the slope (or steepness) of the roofing of the building. Determine the formula for calculating the gradient of a line. The formula for calculating the gradient of a straight.  $\frac{\Delta y}{\Delta x} = \frac{y2-y1}{x2-x1}$ Determine the gradient when given two coordinates. Find the gradient of a line which passes through the point; i. A (1, 1) and B (7, 2) ii. P (-2, 4) and Q (3, 5) iii. C (3, -2) and D (-3, 4) Determine the gradient of a straight line when its equation is given. Find the gradient from the equation of the straight line below. 1. y = 5x + 13	Counters, bundle and loose straws base ten cut square, Bundle of sticks

2. $2x - 8y + 3 = 0$
3. $y = -3x + 12$

Determine the gradient from a graph. From the graph, the coordinates are A (-8,-2), B (2, 3).

$m = \frac{-2-3}{-8-2} = \frac{-5}{-10} = \frac{1}{2}$

The gradient of the line is $\frac{1}{2}$



Determine the slope-intercept form of the equation of a straight line

Hint: The equation of a straight line in slope-intercept form is $y = mx + c$.

Find the equation of a line with slope 2 and y-intercept -3. Hence find the value of y when x is 4.

Find the equation of a line in slope-intercept form having y-intercept $\frac{7}{2}$ and slope $-\frac{5}{2}$

Find the equation of a line with slope $\frac{1}{2}$ and y-intercept 4
E.g.7 Determine the point-slope form of the equation of a straight line Hint: The point-slope form of the equation of a straight line is $y - y_1 = m(x - x_1)$

Find the equation of a line with slope $\frac{2}{3}$ that passess through the point (3, -1)

Find the equation of a line that passes through the point (3, -7) and has the slope $m = \frac{5}{4}$

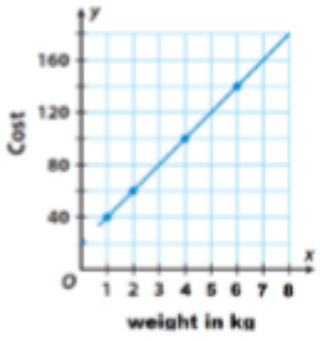
Find the equation of a line which passes through the points (5, 4) and (-10, 2).

	Write the equation $5x + 4y - 3 = 0$ in the form $y = mx + c$. Hence state the gradient and the intercept.	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 3

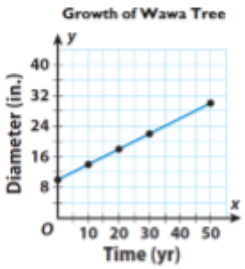
Week Ending: 14-04-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Number
Class: B8	**Class Size:**	**Sub Strand:** Linear Relations

Content Standard: B8.2.1.1 Demonstrate the ability to draw table of values for a linear relation	**Indicator:** B8.2.1.1.2 Use graph of a linear relation to determine subsequent missing elements in the ordered pairs of the relation	**Lesson:** 1 of 2
Performance Indicator: Learners can use graph of a linear relation to determine subsequent missing elements in the ordered pairs of the relation		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)
References: Mathematics Curriculum Pg. 115-116		

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Guide learners to use graph of a linear relation to determine subsequent missing elements in the ordered pairs of the relation. Write a sample question on the board and take learners through its solution. Use information from a graph to find missing elements. The graph represents the relation $yy = 20xx$, where y is the cost (in Ghana cedis) of the weight (in kilograms) of meat sold in a market.  Use the graph to find: i. the cost of 3.5kg of meat ii. the weight of meat that can be bought with GH₵80.	Counters, bundle and loose straws base ten cut square, Bundle of sticks

<table>
<tr>
<td></td>
<td>iii. Using the relation from the graph, how many kilograms of meat can be bought at a cost of GH₵240.

Use information from a graph to find missing element.

The diameter of a wawa tree is currently 10 inches when it is measured at chest height. After 50 years, the diameter is expected to increase by an average growth rate of 2/5 inch per year. The equation y = 2/5x + 10 gives you y. the diameter of the tree in inches, after x years

Use the graph to complete the table below

<table>
<tr><td>X (years)</td><td>0</td><td>10</td><td>20</td><td>30</td><td>50</td></tr>
<tr><td>Y (diameter)</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

What will be the diameter of the tree in 100 years?</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.

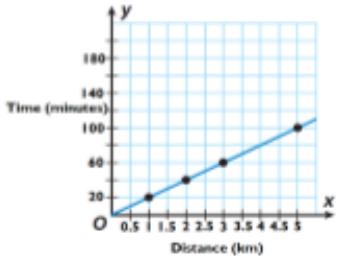
Take feedback from learners and summarize the lesson.</td>
<td></td>
</tr>
</table>

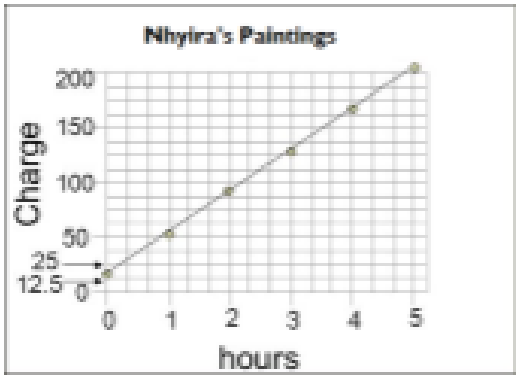
Week Ending: 14-04-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Algebra
Class: B8	**Class Size:**	**Sub Strand:** Linear Relations

Content Standard: B8.2.1.1 Demonstrate the ability to draw table of values for a linear relation	**Indicator:** B8.2.1.1.3 Use graphs of linear relations to solve real life problems	**Lesson:** 2 of 2

Performance Indicator: Learners can use graphs of linear relations to solve real life problems	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

References: Mathematics Curriculum Pg. 117

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Guide learners to use graphs of linear relations to solve real life problems. Write a sample question on the board and take learners through its solution. Every morning, you go for a walk. The distance you walk can be modelled by the equation d = ½h, where d is the distance walked in kilometers and h is the number of hours you've walked. Make a table for the relation and draw a graph with the values to see how far you've walked after 6hours. Copy and complete the table for the relation: Distance | 1 | 2 | 3 | 4 | 5 Time | | | | |  Nhyira paints portraits of people for a living. The graph below shows how much she charges based on how long it takes her to paint the portrait. Use the graph to answer the questions that follow	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	How much does she charge for a portrait that takes 3 hours to paint? ii. Is she charges GH₵175, how many hours did she use to paint the portrait? iii. How many hours will she require to paint a portrait that cost GH₵300?  	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 4

Week Ending: 28-04-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Number
Class: B8	**Class Size:**	**Sub Strand:** Algebraic Expressions

Content Standard: B8.2.1.1 Demonstrate the ability to draw table of values for a linear relation	**Indicator:** B8.2.2.1.1 Use the distributive property to remove brackets and solve multiplication of binomial expression	**Lesson:** 1 of 2

Performance Indicator: Learners can use the distributive property to remove brackets and solve multiplication of binomial expression	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

References: Mathematics Curriculum Pg. 115-116

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Guide learners to explain Expanding expression. *Expanding expression is a way of removing brackets or parenthesis from an expression.* To expand a given expression; Multiply every term inside the brackets by the term outside the brackets. Change the operators accordingly and combine the terms. Write this question on the board and task learners to solve in pairs. Expand -5x (3x + 4) <u>Solution</u> $-5x(3x + 4) = -5x(3x) - 5x(4)$ $= -15x^2 - 20x$ So the expanded form of -5x (3x + 4) is $-15x^2 - 20x$. Let learners solve the following a) 3(x + 4) – 2(x - 5) b) 2(6-5x) – 3(2+2x) <u>Solution</u> To simplify 3(x + 4) - 2(x - 5), we first distribute the 3 and -2 across the terms inside the parentheses: 3(x + 4) - 2(x - 5) = 3x + 12 - 2x + 10 Next, we can combine like terms:	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	$3x - 2x + 12 + 10 = x + 22$ Therefore, the simplified form of $3(x + 4) - 2(x - 5)$ is $x + 22$. Guide learners to multiply binomial expressions. To multiply two binomial expressions, you can use the FOIL method, which stands for First, Outer, Inner, Last. *1. Multiply the first term of each binomial together.* *2. Multiply the outer terms of each binomial together.* *3. Multiply the inner terms of each binomial together.* *4. Multiply the last term of each binomial together.* *5. Add the results of steps 1-4 to obtain the final product.* Write this example on the board and let learners solve in pairs: $(3x + 2)(2x - 5)$ Using the FOIL method, we get: First: $(3x)(2x) = 6x^2$ Outer: $(3x)(-5) = -15x$ Inner: $(2)(2x) = 4x$ Last: $(2)(-5) = -10$ Adding the results of steps 1-4, we get: $6x^2 - 15x + 4x - 10$ Simplifying, we get: $6x^2 - 11x - 10$ Therefore, the product of $(3x + 2)(2x - 5)$ is $6x^2 - 11x - 10$. Learners work in groups to solve the following. a) $(y+3)(y+7)$ b) $(k-4)(k+10)$ c) $(2x+5)(3x-1)$ d) $(x-5)(6x+12)$ e) $(2t+3)(3t-1)$	
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: 28-04-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Number
Class: B8	**Class Size:**	**Sub Strand:** Algebraic Expressions

Content Standard: B8.2.1.1 Demonstrate the ability to draw table of values for a linear relation	**Indicator:** B8.2.2.1.1 Use the distributive property to remove brackets and solve multiplication of binomial expression	**Lesson:** 1 of 2

Performance Indicator: Learners can use the distributive property to remove brackets and solve multiplication of binomial expression	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

References: Mathematics Curriculum Pg. 115-116

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Guide learners to multiply binomial expressions. *To multiply two binomial expressions, you can use the FOIL method, which stands for First, Outer, Inner, Last.* *1. Multiply the first term of each binomial together.* *2. Multiply the outer terms of each binomial together.* *3. Multiply the inner terms of each binomial together.* *4. Multiply the last term of each binomial together.* *5. Add the results of steps 1-4 to obtain the final product.* Write this example on the board and let learners solve in pairs: $(3x + 2)(2x - 5)$ Using the FOIL method, we get: First: $(3x)(2x) = 6x^2$ Outer: $(3x)(-5) = -15x$ Inner: $(2)(2x) = 4x$ Last: $(2)(-5) = -10$ Adding the results of steps 1-4, we get: $6x^2 - 15x + 4x - 10$ Simplifying, we get: $6x^2 - 11x - 10$ Therefore, the product of $(3x + 2)(2x - 5)$ is $6x^2 - 11x - 10$. Learners work in groups to solve the following. $(y+3)(y+7)$ $(k-4)(k+10)$ $(2x+5)(3x-1)$ $(x-5)(6x+12)$ $(2t+3)(3t-1)$	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	<u>Solution</u> To solve the expression (y+3)(y+7), we can use the FOIL method: First: $y * y = y^2$ Outer: $y * 7 = 7y$ Inner: $3 * y = 3y$ Last: $3 * 7 = 21$ Putting all of the results together, we get: y2 + 7y + 3y + 21 Simplifying, we get: $y^2 + 10y + 21$ Therefore, (y+3)(y+7) simplifies to $y^2 + 10y + 21$. To solve the expression (2x+5)(3x-1), we can use the FOIL method: First: 2x * 3x = 6x^2 Outer: 2x * (-1) = -2x Inner: 5 * 3x = 15x Last: 5 * (-1) = -5 Putting all of the results together, we get: $6x^2$ - 2x + 15x - 5 Simplifying, we get: $6x^2$ + 13x - 5 Therefore, (2x+5) (3x-1) simplifies to $6x^2$ + 13x - 5. <u>Assessment</u> Expand and simplify the following a) $(k + 2m)^2$ b) $(2n + 3)^2$ c) $(4x + 5)^2$ d) (x - 6)(x - 6) e) (h+8)(h-8)	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 5

Week Ending: 05-05-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Number
Class: B8	**Class Size:**	**Sub Strand:** Addition, Subtraction Of Algebraic Expressions
Content Standard: B8.2.1.1 Demonstrate the ability to draw table of values for a linear relation	**Indicator:** B8.2.2.1.2 Perform addition, subtraction, multiplication and division of algebraic expressions including fractions	**Lesson:** 1 of 2
Performance Indicator: Learners can perform addition, subtraction, multiplication and division of algebraic expressions including fractions		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)
References: Mathematics Curriculum Pg. 115-116		

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Guide learners to solve addition, subtraction, multiplication and division of algebraic expression using the PEDMAS strategy. To use the PEMDAS strategy, follow these steps: • Simplify any expressions inside parentheses first. • Evaluate any exponents next. • Perform multiplication and division, from left to right. • Perform addition and subtraction, from left to right. Write an example on the board and task learners to work in pairs. Simplify $10x^2 + (6x-4x) – (5x – 2x)^2$ <u>Solution</u> To simplify the expression $10x^2 + (6x-4x) - (5x - 2x)^2$ using the PEMDAS strategy, we follow the order of operations as follows: Simplify any expressions inside parentheses first: $(6x - 4x) = 2x$ $(5x - 2x)^2 = (3x)^2 = 9x^2$. Now the expression becomes: $10x^2 + 2x - 9x^2$ $10x^2 - 9x^2 + 2x$ $= x^2 + 2x$. Therefore, the simplified expression is x^2 + 2x. Example 2: solve $(7y-5y)^2 – 2(10y-8y) +4y$ $= (2y)^2 – 2(2y) + 4y$	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	= $4y^2 – 4y + 4y$ // and +4y - 4y cancels out = $4y^2$ Therefore, the simplified form of the expression is = $4y^2$ <u>Assessment</u> 1. 3(5x+2x) – (4-5x) 2. (t + k) + (5t x 2) 3. $(6m)^2 – 4(2m \times m) + 2m$ 4. 2y-y(6y-2y) – (-2 x 2y) Guide learners to solve problems based on multiplication and division of algebraic fractions. *To solve problems based on multiplication and division of algebraic fractions, follow these general steps:* *1. Simplify each algebraic fraction by factoring out any common factors in the numerator and denominator.* *2. To multiply algebraic fractions, multiply the numerators together and multiply the denominators together. Then, simplify the resulting fraction by factoring out any common factors.* *3. To divide algebraic fractions, invert the second fraction and multiply it by the first. Then, simplify the resulting fraction by factoring out any common factors.* *Example 1: Multiply* $\frac{(2x^2 + 4x)}{(x+2)}$ *x* $\frac{(x + 1)}{(x^2-4x)}$ *Solution:* *First, simplify each fraction. We can factor out a 2x from the first fraction to get:* $\frac{(2x^2 + 4x)}{(x+2)} = \frac{2x(x + 2)}{(x+2)} = 2x$ *For the second fraction, we can factor out an x from the denominator to get:* $\frac{(x + 1)}{(x^2-4x)} = \frac{(x + 1)}{x(x-4)}$ *Now we can multiply the two fractions together:* $2x * \frac{(x + 1)}{x(x-4)}$ *Multiplying the numerators gives us:* $2x(x + 1) = 2x^2 + 2x$ *Multiplying the denominators gives us:* $x(x - 4) = x^2 - 4x$ *So the final answer is:*	

	$= \frac{(2x^2 + 2x)}{(x^2-4x)}$ *We can simplify this by factoring out a 2x from the numerator and a x from the denominator:* $= \frac{2x(x + 2)}{x(x-4)} = \frac{2(x + 2)}{x(x-4)}$ *Example 2: Divide* $\frac{(3x^2-9x)}{(x^2-4)} \div \frac{(2x^2 + 8x)}{(x^2-2x)}$ *Solution: First, simplify each fraction. We can factor out a 3x from the numerator of the first fraction and factor out a 2x from the numerator of the second fraction:* $\frac{(3x^2-9x)}{(x^2-4)} = \frac{3x(x-3)}{(x-2)(x+2)}$ $\frac{(2x^2 + 8x)}{(x^2-2x)} = \frac{2x(x+4)}{x(x-2)}$ *Now we can invert the second fraction and multiply it by the first:* $\frac{(3x^2-9x)}{(x^2-4)} \times \frac{x(x-2)}{2x(x+4)}$ *Multiplying the numerators gives us:* *3x(x - 3)(x - 2)* *Multiplying the denominators gives us:* *2x(x + 4)(x - 2)(x + 2)* *So the final answer is:* $\frac{3x(x-3)(x-2)}{2x(x+4)(x-2)(x+2)}$ *We can simplify this by cancelling out the (x - 2) factor in the numerator and denominator:* $\frac{3x(x-3)}{2x(x+4)(x+2)}$ <u>Assessment</u> 1) $\frac{a}{7} \times \frac{b}{8}$ 2) $\frac{3x-3}{4x-4}$ 3) $\frac{a}{ab} \div \frac{1}{a}$ 4) $\frac{7}{8r} \times \frac{2}{5r}$	
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: 05-05-2023	**DAY:**	**Subject:** Mathematics	
Duration: 60MINS		**Strand:** Number	
Class: B8	**Class Size:**	**Sub Strand:** Algebraic Expressions	
Content Standard: B8.2.1.1 Demonstrate the ability to draw table of values for a linear relation	**Indicator:** B8.2.2.1.3 Substitute values to evaluate algebraic expressions including fractions and use these to solve problems.		**Lesson:** 1 of 2
Performance Indicator: Learners can substitute values to evaluate algebraic expressions including fractions and use these to solve problems		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 119			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Guide learners to substitute values to evaluate algebraic expressions including fractions and use these to solve problems. Take learners through the steps in substituting values into algebraic expressions. To substitute values to evaluate algebraic expressions including fractions: 1. Identify the variables in the expression that you want to substitute values for. 2. Replace each variable with the corresponding value. 3. Simplify the expression by performing any necessary arithmetic operations, such as addition, subtraction, multiplication, and division. Example, Evaluate the expression (3x - 2)/(x + 1) when x = 4. *1. The variable in this expression is x.* *2. We replace x with the value 4:* *(3x - 2)/(x + 1) = (3(4) - 2)/(4 + 1)* *3. Simplify the expression by performing the arithmetic operations:* *(3(4) - 2)/(4 + 1) = (10/5) = 2* *Therefore, when x = 4, the value of the expression (3x - 2)/(x + 1) is 2.* Example 2: Evaluate the expression $\frac{(2x+3)}{(x-4)}$ when x = 5. *1. Identify the variable in the expression: x.* *2. Replace x with the value 5:*	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	$\frac{(2x+3)}{(x-4)}$ = *(2(5) + 3)/(5 - 4)* *3. Simplify the expression by performing the arithmetic operations: (2(5) + 3)/(5 - 4) = (13/1) = 13* *Therefore, when x = 5, the value of the expression (2x + 3)/(x - 4) is 13.* Example 3: Evaluate the expression (5y - 2)/(2y + 1) when y = -3. *1. Identify the variable in the expression: y.* *2. Replace y with the value -3:* *(5y - 2)/(2y + 1) = (5(-3) - 2)/(2(-3) + 1)* *3. Simplify the expression by performing the arithmetic operations: (5(-3) - 2)/(2(-3) + 1) = (-17/-5) = 3.4* *Therefore, when y = -3, the value of the expression (5y - 2)/(2y + 1) is 3.4.* Example 4: Evaluate the expression $(4a^2 - 3b)/(2a - b)$ when a = 2 and b = 1. *1. Identify the variables in the expression: a and b.* *2. Replace a with the value 2 and b with the value 1:* *$(4a^2 - 3b)/(2a - b) = (4(2)^2 - 3(1))/(2(2) - 1)$* *3. Simplify the expression by performing the arithmetic operations: $(4(2)^2 - 3(1))/(2(2) - 1) = (13/3)$* *Therefore, when a = 2 and b = 1, the value of the expression (4a^2 - 3b)/(2a - b) is 13/3.*	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 6

Week Ending: 12-05-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Geometry & Measurement
Class: B8	**Class Size:**	**Sub Strand:** Alternate And Corresponding Angles

Content Standard: B8.3.1.1 Demonstrate understanding and use of the relationship between parallel lines and alternate and corresponding angles and use the sum of angles in a triangle to deduce the angle sum in any polygon	**Indicator:** B8.3.1.1.1 Draw and determine the values of alternate and corresponding angles.	**Lesson:** 1 of 2
Performance Indicator: Learners can draw and determine the values of alternate and corresponding angles	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 123		

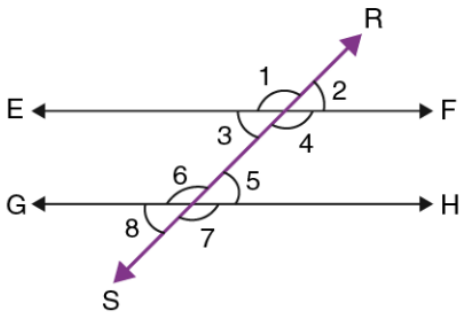
Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Revise with learners on how angles are formed. *An angle is a measure of the space between two intersecting lines or surfaces, often measured in degrees or radians. It is formed when two lines or surfaces meet at a common point, called the vertex of the angle.* Revise with learners on the types of angles. *1. Acute Angle: An acute angle is an angle whose measure is between 0 and 90 degrees.* *2. Right Angle: A right angle is an angle whose measure is exactly 90 degrees. It is often represented by a small square placed at the vertex of the angle.* *3. Obtuse Angle: An obtuse angle is an angle whose measure is between 90 and 180 degrees.* *4. Straight Angle: A straight angle is an angle whose measure is exactly 180 degrees. It is essentially a straight line.* *5. Reflex Angle: A reflex angle is an angle whose measure is between 180 and 360 degrees.* *6. Complementary Angles: Two angles are complementary if their measures add up to 90 degrees.* *7. Supplementary Angles: Two angles are supplementary if their measures add up to 180 degrees.* *8. Congruent Angles: Two angles are congruent if they have the same measure.*	Counters, bundle and loose straws base ten cut square, Bundle of sticks

9. Adjacent Angles: Two angles are adjacent if they share a common vertex and a common side, but do not overlap.

10. Vertical Angles: Vertical angles are two non-adjacent angles formed by the intersection of two lines. They are equal in measure.

Introduce learners to alternate and corresponding angles. Using pictures have them identify alternate and corresponding angles.

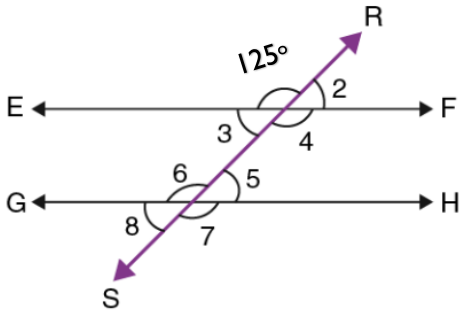
- *Alternate angles: Alternate angles are pairs of angles that are formed on opposite sides of the transversal and on different lines.*
- *Corresponding angles: Corresponding angles are pairs of angles that are formed by a transversal and two lines that are not parallel.*



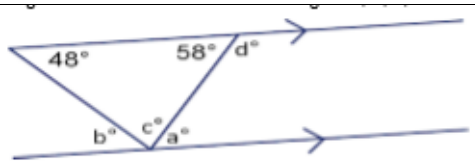
From the above diagram, EF and GH are the two parallel lines.
RS is the transversal line that cuts EF at L and GH at M.
If the two parallel lines are cut by a transversal, then the alternate angles are equal.
Therefore <3 = <5 and <4 = <6
<1 = <7 and <2 = <8

On the other hand, the corresponding angles are;
1&6, 2&5, 3&8 and 4&7

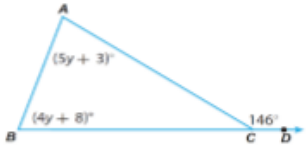
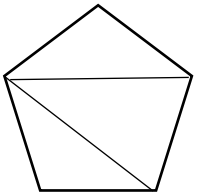
<u>Assessment</u>
Learners in pairs draw the diagram and calculate the values of the angles marked 1, 3,4,5,6,7,8

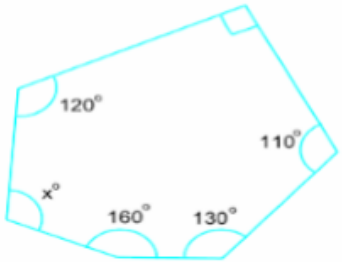


Calculate the value of the angles a, b, c, and d

		
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: 12-05-2023	**DAY:**	**Subject:** Mathematics	
Duration: 60MINS		**Strand:** Geometry & Measurement	
Class: B8	**Class Size:**	**Sub Strand:** Sum Of Interior Angles	
Content Standard: B8.3.1.1 Demonstrate understanding and use of the relationship between parallel lines and alternate and corresponding angles and use the sum of angles in a triangle to deduce the angle sum in any polygon	**Indicator:** B8.3.1.1.2 Determine the values of angles in a triangle using knowledge of the sum of interior angles in a triangle and other properties.	**Lesson:** 2 of 2	
Performance Indicator: Learners can determine the values of angles in a triangle using knowledge of the sum of interior angles in a triangle and other properties.		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 124			

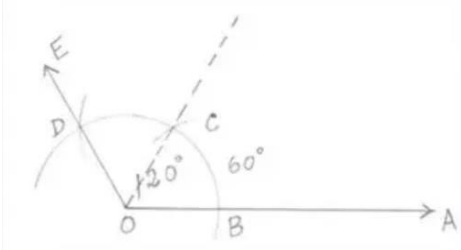
Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Revise with learners on polygons and the types of polygons. Guide learners to calculate the values of y and the angles in the triangle.  Learners in pairs deduce the formula for the sum of interior angles in a polygon and determine the value of an angle in a regular hexagon. *To derive the formula for the sum of interior angles in a polygon, we can start by dividing the polygon into triangles. Any polygon can be divided into triangles by drawing all the possible diagonals from one vertex. The number of triangles that result from this division is always two less than the number of sides in the polygon.* *For example, a pentagon can be divided into three triangles, as shown below:* 	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	From this diagram, we can see that the sum of the interior angles of the pentagon is equal to the sum of the interior angles of the three triangles. *Each triangle has two interior angles that are shared with the other triangles and one angle that is unique to that triangle. Therefore, the sum of the interior angles of each triangle is 180 degrees, and the sum of the interior angles of the polygon is:* *Sum of interior angles = (number of triangles) x 180 degrees* *The number of triangles in the polygon is two less than the number of sides or vertices, so we can substitute (n - 2) for the number of triangles:* *Sum of interior angles = (n - 2) x 180 degrees* *where n is the number of sides or vertices in the polygon.* *Therefore, we have derived the formula for the sum of interior angles in a polygon, which is:* *Sum of interior angles = (n - 2) x 180 degrees.* Learners to use the formula for finding the sum of interior angles in a polygon (n-2)180 to determine the value of x in the hexagon. 	
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.	

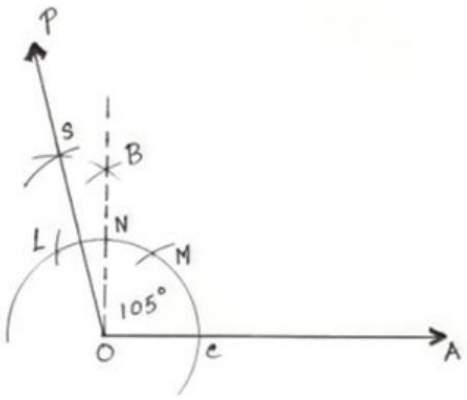
SECOND TERM
WEEKLY LESSON NOTES
WEEK 7

Week Ending: 19-05-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Geometry & Measurement
Class: B8	**Class Size:**	**Sub Strand:** Construct & Bisect Angles

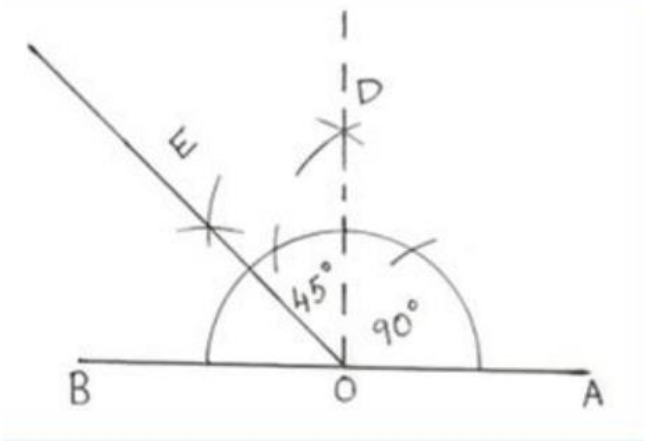
Content Standard: B8.3.1.2 Demonstrate the ability to perform geometric constructions of the angles (75˚, 105˚, 60˚, 135˚ and 150˚), and construct triangles and find locus of points under given conditions.	**Indicator:** B8.3.1.2.1 Construct and bisect angles of 120˚, 105˚, 135˚ and 150˚	**Lesson:** 1 of 2
Performance Indicator: Learners can construct and bisect angles of 120˚, 105˚, 135˚ and 150˚	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 123		

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Use a pair of compasses and a ruler, guide learners to construct angles of 120˚, 105˚, 135˚ and 150˚ <u>To Construct an angle of 120⁰</u> • *Draw a ray OA.* • *With O as center and any suitable radius draw an arc cutting OA at B.* • *With B as center and the same radius cut the arc at C, then with C as center and same radius cut the arc at D. Join OD and produce it to E.*  Then, **∠AOE = 120°**. <u>To Construct an angle of 105⁰</u> • *Take any ray OA.* • *With O as center and any convenient radius, draw an arc cutting OA at B.* • *With B as center and the same radius, draw an cutting the first arc at C.*	Counters, bundle and loose straws base ten cut square, Bundle of sticks

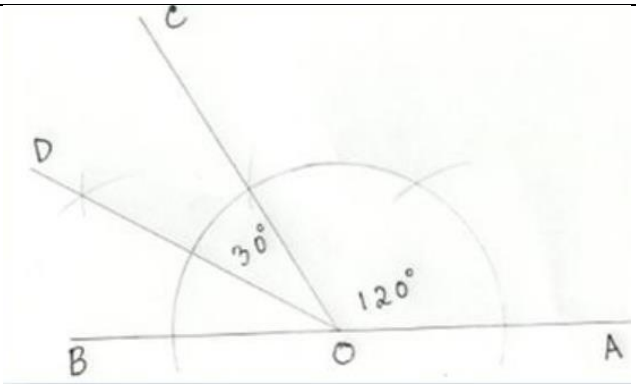
- *With C as center and the same radius, cut off an arc cutting again the first arc at D.*
- *With C and D as center and radius of more than half of CD, draw two arcs cutting each other at E, join OE.*
- *After making 90° angle take L and N as center and draw two arcs cutting each other at S.*
- *Join SO.*



<u>To Construct an angle of 135^0</u>
Construct ∠AOD = 90°
Produce ∠AO to B.
Draw OE to bisect ∠DOB.
∠DOE = 45°
∠EOA = 45° + 90° = 135°



<u>To Construct an angle of 135^0</u>
Construct ∠AOC = 120°
Produce ∠AO to B.
Draw OD to bisect ∠COB.
Now ∠COD = 30°
Therefore, ∠AOD = 120° + 30° = 150°

	 <u>Assessment</u> Using a pair of compasses and a ruler only, construct the following angles; 120°, 105°, 135° and 150°	
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: 19-05-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Geometry & Measurement
Class: B8	**Class Size:**	**Sub Strand:** Construct Of Triangles

Content Standard: B8.3.1.2 Demonstrate the ability to perform geometric constructions of the angles (75˚, 105˚, 60˚, 135˚ and 150˚), and construct triangles and find locus of points under given conditions	**Indicator:** B8.3.1.2.2: Construct scalene triangles, isosceles triangles, equilateral triangles, obtuse-angled triangle, and acute-angled triangles in different orientations under given conditions.	**Lesson:** 2 of 2

Performance Indicator: Learners can determine the values of angles in a triangle using knowledge of the sum of interior angles in a triangle and other properties.	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

References: Mathematics Curriculum Pg. 127-132

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Gide learners to use a pair of compasses and a ruler to construct an equilateral triangle when a side is given and justify why it is an equilateral triangle • *Draw a straight line segment to serve as the base of your triangle. Label the endpoints as points A and B.* • *Use a ruler to measure the length of the given side. Let's say the length is "a". Mark a point C on the line segment AB, at a distance of "a" from point A.* • *With a compass, set the width to the length "a". Place the compass tip on point C and draw an arc that intersects the line segment AB. Label the intersection points as D and E.* • *Without changing the compass width, place the compass tip on point D and draw another arc that intersects the arc drawn in the previous step. Label the intersection point as F.* • *Draw a straight line connecting point C and point F.* • *Draw a straight line connecting point F and point B.* Guide learners to use a pair of compasses and a ruler to construct an equilateral triangle • *Draw a straight line segment to serve as the base of your triangle. Label the endpoints as points A and B.* • *Use a ruler to measure and mark a second point, C, on the same line but at a different distance from point A than point B. This will determine the length of one side of the triangle.*	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	• *With a compass, set the width to the length of the second side of the triangle. Place the compass tip on point B and draw an arc that intersects the line segment AB.* • *Without changing the compass width, place the compass tip on point A and draw another arc that intersects the line segment AB.* • *Label the intersection point of the arcs as point D.* • *Draw a straight line connecting point C and point D. This will be the second side of the triangle.* • *Draw a straight line connecting point C and point B. This will be the third side of the triangle.* Using a pair of compasses and a ruler, guide learners to perform geometric construction of an isosceles right-angled triangle when the base line is given. *1. Draw a straight line segment to serve as the base of your triangle. Label the endpoints as points A and B.* *2. Use a ruler to measure and mark a point C on the line segment AB. This will be the midpoint of AB.* *3. With a compass, set the width to the length of AC. Place the compass tip on point C and draw an arc that intersects the line segment AB. Label the intersection points as D and E.* *4. Without changing the compass width, place the compass tip on point D and draw another arc that intersects the arc drawn in the previous step. Label the intersection point as F.* *5. Draw a straight line connecting point C and point F.* *6. Draw a straight line connecting point F and point B.* <u>Assessment</u> 1. Use a pair of compasses and a ruler to perform geometric construction of an isosceles triangle when all the sides are given. 2. Use a pair of compasses and a ruler to perform geometric construction of an isosceles triangle when the base angles and base side are known 3. Use a pair of compasses and a ruler to construct acute-angled triangles, obtuse-angled triangles and right-angled triangles when a side and two angles are given 4. Use a pair of compasses and a ruler to construct triangles when all the sides are given.	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 8

Week Ending: 26-05-2023	**DAY:**	**Subject:** Mathematics	
Duration: 60MINS		**Strand:** Geometry & Measurement	
Class: B8	**Class Size:**	**Sub Strand:** Construct & Bisect Angles	
Content Standard: B8.3.1.2 Demonstrate the ability to perform geometric constructions of the angles (75˚, 105˚, 60˚, 135˚ and 150˚), and construct triangles and find locus of points under given conditions.	**Indicator:** B8.3.1.2.3: Construct loci	**Lesson:** 1 of 2	
Performance Indicator: Learners can construct loci	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)		
References: Mathematics Curriculum Pg. 133-141			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Have learners understand that a 'locus' refers to the set of all points that satisfy a specific geometric condition. It represents the path or trajectory followed by a point or object under certain constraints or rules. The concept of locus is often used in geometry to describe the collection of points that satisfy a given property. For example, the locus of points equidistant from two fixed points is a straight line called the perpendicular bisector. Similarly, the locus of points equidistant from a fixed point is a circle. Demonstrate how to construct a loci *1. Identify the condition: Determine the specific condition or property that the points must satisfy.* *2. Analyze the condition: Understand the requirements of the condition or property. Break it down into simpler components if needed. For example, if the condition involves the distance between points, consider the distances involved and their relationships.* *3. Use geometric tools: Depending on the condition, utilize geometric tools such as rulers, compasses, protractors, or specific geometric constructions to help determine and visualize the locus.*	Counters, bundle and loose straws base ten cut square, Bundle of sticks

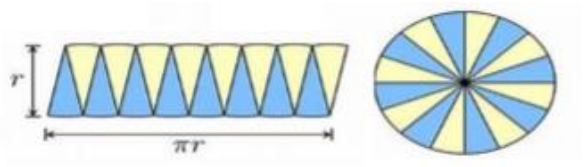
	4. Consider different scenarios: Explore different cases or variations of the condition to gain a better understanding of the locus. This might involve changing parameters or considering different possibilities within the condition. *5. Record the locus: Once you have determined the set of points that satisfy the condition, record or represent the locus appropriately. This could be by drawing the locus on a coordinate plane, labeling it with relevant equations or descriptions, or using mathematical notation to express the locus.* *6. Verify and refine: After constructing the locus, verify that the points on the locus indeed satisfy the condition. If necessary, refine the construction by checking additional points or adjusting the construction based on any discrepancies found.* Guide learners to construct loci under given conditions including: (i) the locus of sets of points from a fixed point; (ii) the locus of points equidistant from two fixed points; (iii) the locus of points equidistant from two intersecting straight lines, and (iv) the locus of points equidistant from two parallel lines. Describe the locus of a circle by tracing the path of a point P which moves in such a way that its distance from a fixed point, say O, is always the same to construct circles Perform geometric construction to locate the centre of a circle by locating the intersection of the perpendicular bisectors of any two chords on the circle Draw circles of given radii at the points as centre and chord. Construct a regular hexagon within a circle given the length of a side <u>Assessment</u> Use a pair of compasses and a ruler to construct a hexagon ABCDEF such that |AB| = 6cm. Find the measure of the angles AOB and compare to its value.	
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: 26-05-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Geometry & Measurement
Class: B8	**Class Size:**	**Sub Strand:** Construct Of Triangles

Content Standard: B8.3.1.2 Apply the Pythagoras theorem, the primary trigonometric ratios and the formulas for determining the area of a circle to solve real problems.	**Indicator:** B8.3.2.1.1 Use the relationship between the diameter and circumference of a circle to deduce the formula for finding its area, and use this to solve problems	**Lesson:** 2 of 2

Performance Indicator: Learners can use the relationship between the diameter and circumference of a circle to deduce the formula for finding its area, and use this to solve problems	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

References: Mathematics Curriculum Pg. 142

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Guide learners to use the relationship between the diameter and circumference of a circle to deduce the formula for finding its area. E.g.1: Divide a circle into sectors (minimum of 16) then cut the sectors and arrange to form a rectangle to deduce the area of the circle.  $\therefore A = \pi r \times r = \pi r^2$ Alternatively; The relationship between the diameter and circumference of a circle is given by the formula: C = πd where C represents the circumference and d represents the diameter of the circle. From this relationship, we can deduce the formula for finding the area of a circle. We know that the circumference of a circle is the distance around its boundary, while the area of a circle is the measure of the region enclosed by the circle. To derive the formula for the area, we can	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	make use of the fact that the circumference is directly related to the diameter. We start with the equation for the circumference of a circle: $C = \pi d$ We can rewrite the diameter in terms of the radius (r), which is half of the diameter: $d = 2r$ Substituting this expression for the diameter in the equation for the circumference, we get: $C = \pi(2r)$ Simplifying further: $C = 2\pi r$ Now, we can use the relationship between the circumference and the radius to find the formula for the radius: $C = 2\pi r$ Dividing both sides of the equation by 2π: $C / (2\pi) = r$ Now, let's focus on the formula for the area of a circle. The area (A) of a circle is given by the formula: $A = \pi r^2$ <u>Assessment</u> Let learners solve problems on area of a circle. (i) Find the area of a circle whose radius is 14cm (Take $\pi = 22/7$). (ii) Find the area of a semi-circle whose radius is 7cm (Take $\pi = 22/7$) (iii) Two circles have a common center; the small circle has radius 7cm, the big circle has radius 14cm.Find the shaded area. (Take $\pi = 22/7$).	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 9

Week Ending: 02-06-2023	**DAY:**	**Subject:** Mathematics	
Duration: 60MINS		**Strand:** Data	
Class: B8	**Class Size:**	**Sub Strand:** Statistics	
Content Standard: B8.4.1.1 Select, justify, and use appropriate methods to collect data (quantitative and qualitative)	**Indicator:** B8.4.1.1.1 Identify types of given data including numerical, categorical, ungrouped and grouped data		**Lesson:** 1 of 2
Performance Indicator: Learners can identify types of given data including numerical, categorical, ungrouped and grouped data		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 153			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Discuss, in small groups, information collected in the process of investigation which may be numeric. i. Numeric (and discrete): the number of Nissan cars sold by Japan Motors, Ghana in a year; the number of children in a family; the number of learners in B8 class. ii. Numeric (and continuous): the weights of babies in a crèche (e.g. 4.5kg) which contains fractional values. Discuss (in groups) information collected in the process of investigation which may be non-numeric. i. Non-numeric (cannot be quantified): sex (male or female); income group, movie type, age group, marital status, boxers' weight class, etc. ii. Sort out the examples of the non-numeric information in (i) with values that can be put on ordinal scale (boxers' weight class; age group) iii. Sort out the examples of the non-numeric information in (i) That can be put into categories (Categorical data): sex (male or female); marital status; income group, etc. i. The scores for 11 learners in a class test are 25, 30, 35, 40, 45, 26, 29, 50, 45, 37 and 47(these individual scores are not grouped in any way).	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	ii. Find out those in the group 25 to 35 (i.e. 5) and those in the group 36 to 50 (i.e. 6) Data is now grouped	
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: 02-06-2023	**DAY:**	**Subject:** Mathematics	
Duration: 60MINS		**Strand:** Data	
Class: B8	**Class Size:**	**Sub Strand:** Statistics	
Content Standard: B8.4.1.1 Select, justify, and use appropriate methods to collect data (quantitative and qualitative)	**Indicator:** B8.4.1.1.1 Identify types of given data including numerical, categorical, ungrouped and grouped data		**Lesson:** 1 of 2
Performance Indicator: Learners can identify types of given data including numerical, categorical, ungrouped and grouped data		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 153			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Discuss, in small groups, information collected in the process of investigation which may be numeric. i. Numeric (and discrete): the number of Nissan cars sold by Japan Motors, Ghana in a year; the number of children in a family; the number of learners in B8 class. ii. Numeric (and continuous): the weights of babies in a crèche (e.g. 4.5kg) which contains fractional values. Discuss (in groups) information collected in the process of investigation which may be non-numeric. i. Non-numeric (cannot be quantified): sex (male or female); income group, movie type, age group, marital status, boxers' weight class, etc. ii. Sort out the examples of the non-numeric information in (i) with values that can be put on ordinal scale (boxers' weight class; age group) iii. Sort out the examples of the non-numeric information in (i) That can be put into categories (Categorical data): sex (male or female); marital status; income group, etc. i. The scores for 11 learners in a class test are 25, 30, 35, 40, 45, 26, 29, 50, 45, 37 and 47(these individual scores are not grouped in any way).	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	ii. Find out those in the group 25 to 35 (i.e. 5) and those in the group 36 to 50 (i.e. 6) Data is now grouped	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 10

Week Ending: 09-06-2023	**DAY:**	**Subject:** Mathematics	
Duration: 60MINS		**Strand:** Data	
Class: B8	**Class Size:**	**Sub Strand:** Statistics	
Content Standard: B8.4.1.1 Select, justify, and use appropriate methods to collect data (quantitative and qualitative)	**Indicator:** B8.4.1.1.2 - Select and justify a method to collect data (quantitative and qualitative) to answer a given question.		**Lesson:** 1 of 2
Performance Indicator: Learners can identify types of given data including numerical, categorical, ungrouped and grouped data		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 153			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	E.g. 1- To study how eating cream crackers affects one's output of work (productivity), identify which method can be used to gather the facts for each of the following situations. (i.e. refer to methods stated in E.g. 2 of B7.4.1.1.1) i. Will eating twice a person's normal number of cream crackers increase their productivity? ii. Are people who eat more cream crackers more productive? iii. Does a group of students study better when cream crackers are present or absent? E.g. 2 -Select any study to be undertaken and design an appropriate form to be used in collecting data.	Counters, bundle and loose straws base ten cut square, Bundle of sticks
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: 09-06-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Data
Class: B8	**Class Size:**	**Sub Strand:** Statistics

Content Standard: B8.4.1.1 Select, justify, and use appropriate methods to collect data.	**Indicator:** B8.4.1.1.3 Organize data, present it in frequency tables, line graphs, pie graphs, bar graphs and/or pictographs and analyze it to solve and/or pose problems.	**Lesson:** 1 of 2

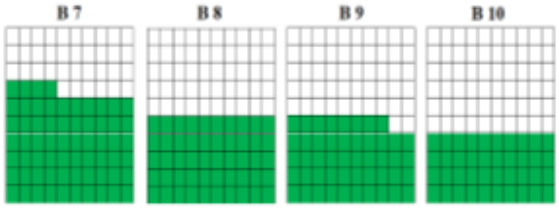
Performance Indicator: Learners can organize data, present it in frequency tables, line graphs, pie graphs, bar graphs	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)
References: Mathematics Curriculum Pg. 153	

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson. Share performance indicators with learners and introduce the lesson.	
PHASE 2: **NEW LEARNING**	The following set of raw data shows the lengths, in millimetres, measured to the nearest mm, of 40 leaves taken from plants of a certain species. 40 54 25 50 58 45 47 49 30 28 52 31 52 41 47 44 46 39 51 59 49 38 43 48 43 43 40 51 40 56 31 53 44 37 35 37 33 38 46 36 Copy and complete the frequency distribution table below, using the data set above	Counters, bundle and loose straws base ten cut square, Bundle of sticks

Lengths (mm)	Tally	Frequency
25 – 29		
30 – 34		
35- 39		
40-44		
45-49		
50-54		
55-59		

E.g. -2 A cleaner of a small office spent GH₵120 of his salary on food; GH₵80 on rent; GH₵40 on clothing, GH₵110 on transport and saved GH₵50. Organise the data and draw (i) a bar chart and (b) a pie chart to represent the data.

E.g. -3 – The waffle chart (i.e. a 10 X 10 cell grid in which each cell represents a percentage point summing up to total 100%) shows that the average score obtained by B7 learners in a mathematics test conducted, is 64%. i. Read and record the average scores obtained by B8, B9 and B10



In a mathematics quiz Cordei scored 75%, Kofi scored 80%, Maama scored 35%, Kpakpo scored 70% and Adjoa scored 50%. Draw a waffle chart to represent the data.

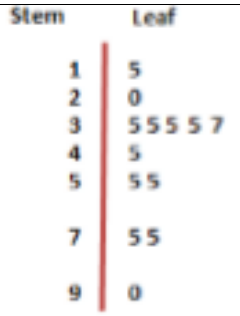
E.g. 4. Make a stem and leaf plot (a stem-and-leaf display or stem-and-leaf plot is a method for presenting quantitative data in a graphical format to assist in visualizing the shape of a distribution and giving a great idea about the distribution of the data.)
i. The data below are scores for 14 B8 learners in a test graded out of a maximum of 100. Make a stem and leaf plot to represent the data.

23,58,62,62,63,65,67,71,71,72,82,82,82

Stem	Leaf
2	3
3	
4	
5	8
6	2 2 3 5 7
7	1 1 2
8	0 2 2 2

From the plot, what can we say about the performance of the 14 B8 learners?

E.g. 5 – The stem and leaf plot shows the scores obtained by learners in a test. Use it to answer the following questions:
i. What are the scores? Write them in ascending order.
ii. What is the mode of the scores?
iii. What is the median of the scores?

		
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.	