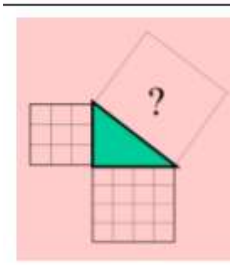
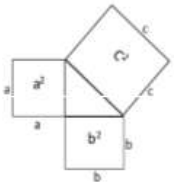
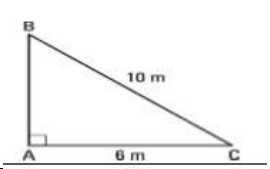
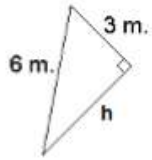
THIRD TERM
WEEKLY LESSON NOTES
WEEK 7

Week Ending: 11-08-2023	**DAY:**	**Subject:** Mathematics	
Duration: 60MINS		**Strand:** Geometry & Measurement	
Class: B8	**Class Size:**	**Sub Strand:** Pythagoras Theorem	
Content Standard: B.8.3.2.1 Apply the Pythagoras theorem, the primary trigonometric ratios and the formulas for determining the area of a circle to solve real problems	**Indicator:** B8.3.2.1.2 Establish the relationship between the hypotenuse 'c' and the two other sides 'a' and 'b' of a right-angled triangle.		**Lesson:** 2 of 2
Performance Indicator: Learners can establish the relationship between the hypotenuse 'c' and the two other sides 'a' and 'b' of a right-angled triangle		**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)	
References: Mathematics Curriculum Pg. 143			

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**	Ask learners if they know what a right-angled triangle is and if they have heard of Pythagoras Theorem. Explain that a right-angled triangle has one angle measuring 90 degrees, and Pythagoras Theorem is a fundamental mathematical concept used to find the relationship between the sides of such triangles. Present the Pythagoras Theorem formula: $c^2 = a^2 + b^2$ Explain that in a right-angled triangle, 'c' represents the length of the hypotenuse (the side opposite the right angle), and 'a' and 'b' represent the lengths of the other two sides. Emphasize that this theorem applies only to right-angled triangles and allows us to calculate the length of any side if we know the lengths of the other two. Provide each learners or group with a right-angled triangle cutout or draw right-angled triangles on the board. Instruct learners to measure the lengths of 'a' and 'b' using rulers and record the values. Guide the learners through the process of calculating the length of the hypotenuse 'c' using Pythagoras Theorem.	Geometric shapes or cutouts of right-angled triangles Rulers

	Have learners share their findings with the class and compare results. Discuss some practical applications of Pythagoras Theorem in real life, such as measuring distances, calculating diagonals in rectangular fields, or determining cable lengths in electronics. Let learners construct squares on the three sides of a right-angled triangle in a square grid and compare the area of the square on the hypotenuse to the squares on the other two sides to state the relationship between the hypotenuse 'c' and the two other sides 'a' and 'b' of a right-angled triangle i.e. $a^2 + b^2 = c^2$  Learners in groups use a pair of compasses and ruler, construct squares on the three sides of a right-angled triangle and measure the area of the square on the hypotenuse and compare to the squares on the other two sides to state the relationship between the hypotenuse 'c' and the two other sides 'a' and 'b' of a right-angled triangle i.e. $a^2 + b^2 = c^2$  Encourage learners to use Pythagoras Theorem to find the unknown side lengths. Review the solutions as a class and address any questions or challenges that learners may have encountered. <u>Assessment</u> Solve problems involving the Pythagoras theorem. i. Determine the missing side marked h in the figure. ii. Find the height AB.   	
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: 11-08-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Geometry & Measurement
Class: B8	**Class Size:**	**Sub Strand:** Pythagoras Theorem

Content Standard: B.8.3.2.1 Apply the Pythagoras theorem, the primary trigonometric ratios and the formulas for determining the area of a circle to solve real problems	**Indicator:** B8.3.2.1.3 Use the Pythagorean theorem to solve problems on right-angled triangle	**Lesson:** 2 of 2

Performance Indicator: Learners can establish the relationship between the hypotenuse 'c' and the two other sides 'a' and 'b' of a right-angled triangle	**Core Competencies:** Communication and Collaboration (CC) Critical Thinking and Problem solving (CP)

References: Mathematics Curriculum Pg. 143

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**	Draw a right-angled triangle on the board and label its sides as a, b, and c (with c being the hypotenuse, the side opposite the right angle). Explain the Pythagorean theorem: $a^2 + b^2 = c^2$ Discuss how this theorem can only be applied to right-angled triangles, where one angle measures 90 degrees. Provide learners with problems to solve. Demonstrate the process of using the Pythagorean theorem to solve a problem step-by-step, guiding the learners through the calculation. Example 1: A right-angled triangle has one side measuring 5cm and another side measuring 12cm. Find the length of the hypotenuse. Solution: Let's label the sides of the triangle as follows: Side a = 5cm Side b = 12cm Side c (hypotenuse) = ? Using the Pythagorean theorem: $a^2 + b^2 = c^2$ $5^2 + 12^2 = c^2$ $25 + 144 = c^2$ $169 = c^2$ Taking the square root of both sides: $c = \sqrt{169}$	Counters, bundle and loose straws base ten cut square, Bundle of sticks

	$c = 13$ units Therefore, the length of the hypotenuse is 13 units. Example 2: A ladder is leaning against a wall. The base of the ladder is 6 meters away from the wall, and the ladder itself is 8 meters long. How high does the ladder reach on the wall? Solution: Let's label the sides of the triangle as follows: Side a (base) = 6 meters Side b (height) = ? Side c (ladder) = 8 meters Using the Pythagorean theorem: $a^2 + b^2 = c^2$ $6^2 + b^2 = 8^2$ $36 + b^2 = 64$ $b^2 = 64 - 36$ $b^2 = 28$ Taking the square root of both sides: $b = \sqrt{28}$ $b \approx 5.29$ meters Therefore, the ladder reaches a height of approximately 5.29 meters on the wall. Example 3: In a triangle with sides measuring 9 cm, 12 cm, and x cm, the longest side (hypotenuse) measures 15 cm. Find the value of x. Solution: Let's label the sides of the triangle as follows: Side a = 9 cm Side b = 12 cm Side c (hypotenuse) = 15 cm Using the Pythagorean theorem: $a^2 + b^2 = c^2$ $9^2 + 12^2 = 15^2$ $81 + 144 = 225$ $225 = 225$ Therefore, the value of x is 15 cm. Have learners work individually or in pairs to solve the problems. Circulate the classroom to assist learners and clarify any doubts they may have. Review the solutions to the problems as a class, either by having learners present their answers or by going through the solutions on the board.	

	Briefly discuss real-life scenarios where the Pythagorean theorem is applied, such as measuring the distance between two points in a grid, calculating the diagonal of a rectangular room, or finding the distance traveled by a hiker on a zigzag path. <u>Assessment</u> 1. A right-angled triangle has one side measuring 6 units and another side measuring 8 units. Find the length of the hypotenuse. 2. A square garden has sides measuring 10 meters. A diagonal path cuts across the garden. Find the length of the diagonal path. 3. An isosceles triangle has equal sides, 6cm long and a base of 4cm long. Find the altitude of the triangle.	
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: 11-08-2023	**DAY:**	**Subject:** Mathematics
Duration: 60MINS		**Strand:** Geometry & Measurement
Class: B8	**Class Size:**	**Sub Strand:** Pythagoras Theorem

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:** B8.3.2.1.3 Use the Pythagorean theorem to solve problems on right angled triangle.	**Lesson:** 1 of 2

Performance Indicator: Learners can use the Pythagorean theorem to solve problems on right angled triangle.	**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.	