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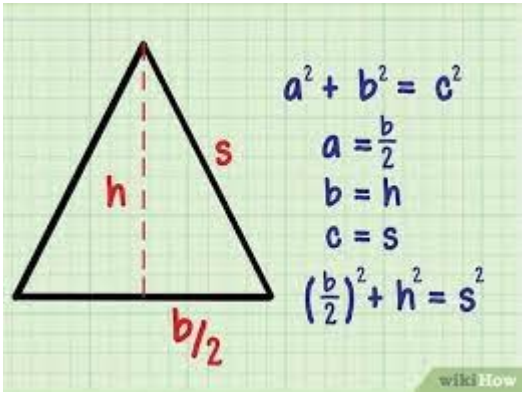
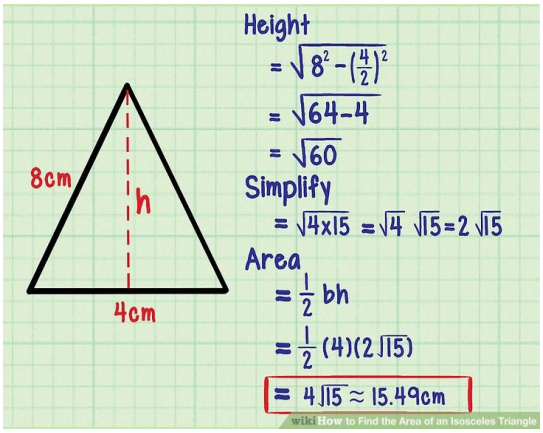
BASIC 8

WEEKLY LESSON PLAN – WEEK 7

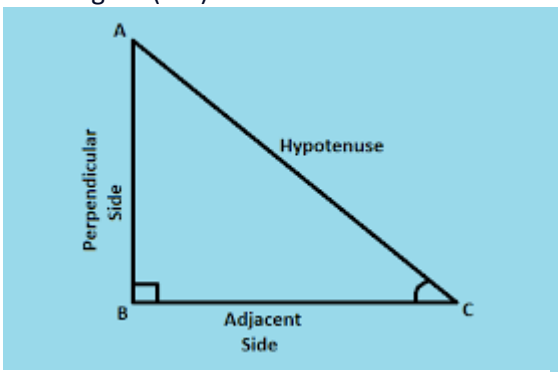
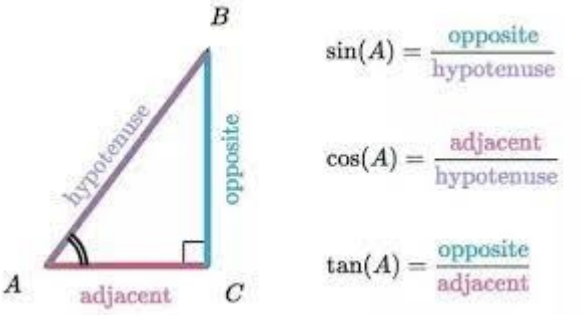
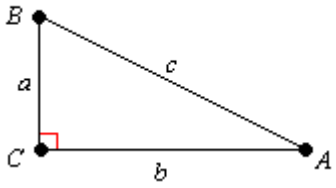
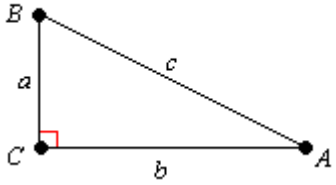
Strand:	Geometry and Measurement		**Sub-Strand:**	Measurement	
Content Standard:	B.8.3.2.1 Apply the Pythagoras theorem, the primary trigonometric ratios and the formulas for determining the area of circle to solve real problems				
Indicator (s)	B8.3.2.1.4 Use the Pythagorean theorem to solve problems on right-angled triangle B8.3.2.1.5 Use Pythagoras theorem to calculate area of a triangle in real life problems B8.3.2.1.6 Establish the relationship between the basic trigonometric ratios and solve problems involving right-angled triangles		**Performance Indicator:** Learners can apply the knowledge on Pythagorean theorem in real life.		
Week Ending	19-05-2023				
Class	B.S.8	**Class Size:**		**Duration:**	
Subject	Mathematics				
Reference	Mathematics Curriculum, Teachers Resource Pack, Learners Resource Pack, Textbook.				
Teaching / Learning Resources	Poster, Pictures, Word Chart.		**Core Competencies:**	• Ability to select the most effective creative tools for working and preparedness to give explanations • Imagining and seeing things in a different way	

DAY/DATE	**PHASE 1 : STARTER**	**PHASE 2: MAIN**	**PHASE 3: REFLECTION**
MONDAY **15-05-2023**	Review Learners knowledge on Isosceles triangles.	1. Demonstrate using Pythagoras theory to calculate the area of an isosceles triangle. 2. Assist Learners on finding for the length of the sides of an Isosceles triangle. 3. Learners in small groups to discuss and solve more examples on finding the length of Isosceles triangle. **Pythagoras theorem Formula for Isosceles triangles;**	Through questions and answers, conclude the lesson.

		The equation for the Pythagorean theorem is the square of the triangle's base added to the square of the triangle's height is equal to the square of the triangle's hypotenuse -- [(A)^2 + (B)^2 = (C)^2] **Finding the Area of an Isosceles Triangle;**  **Finding the Area from the Side Lengths**  ❖ What is the area of a triangle with sides 8 cm, 8 cm, and 4 cm? Let the unequal side, 4 cm, be the base *b*. The height $h = \sqrt{8^2 - (\frac{4}{2})^2}$ $= \sqrt{64 - 4}$ $= \sqrt{60}$ Simplify the square root by finding factors: $h = \sqrt{60} = \sqrt{4 * 15} = \sqrt{4}\sqrt{15} = 2\sqrt{15}.$ Area $= \frac{1}{2}bh$ $= \frac{1}{2}(4)(2\sqrt{15})$ $= 4\sqrt{15}$	

		Leave this answer as written, or enter it in a calculator to find a decimal estimate (about 15.49 square centimeters)	
TUESDAY **16-05-2023**	Learners brainstorm to identify examples of real life problems about finding the area of a triangle to the class.	1. Demonstrate using Pythagoras theorem to calculate area of triangles in real life problems. 2. Assist Learners to practice solving examples of finding the area of triangles in real life problem using Pythagoras theorem. 3. Learners brainstorm to calculate for the length, perimeter and area of triangles using Pythagoras theorem. **Real Life Problems;** The *Pythagorean Theorem* is a statement in geometry that shows the relationship between the lengths of the sides of a right triangle – a triangle with one 90-degree angle. The right triangle equation is $\mathbf{a^2 + b^2 = c^2}$**.** Being able to find the length of a side, given the lengths of the two other sides makes the Pythagorean Theorem a useful technique for construction and navigation. **Architecture and Construction** Given two straight lines, the Pythagorean Theorem allows you to calculate the length of the diagonal connecting them. This application is frequently used in architecture, woodworking, or other physical construction projects. For instance, say you are building a sloped roof. If you know the height of the roof and the length for it to cover, you can use the Pythagorean Theorem to find the diagonal length of the roof's slope. You can use this information to cut properly sized beams to support the roof, or calculate the area of the roof that you would need to shingle. **Laying Out Square Angles** The Pythagorean Theorem is also used in construction to make sure buildings are square. A	Through questions and answers, conclude the lesson. **Exercise;** 1. A person has to walk 100 m to go from position X in the north of east direction to the position B and then to the west of Y to reach finally at position Z. The position Z is situated at the north of X and at a distance of 60 m from X. Find the distance between X and Y. 2. If the square of the hypotenuse of an isosceles right triangle is 128 cm^2, find the length of each side. 3. Find the perimeter of a rectangle whose length is 150 m and the diagonal is 170 m.

		triangle whose side lengths correspond with the Pythagorean Theorem – such as a 3 foot by 4 foot by 5 foot triangle – will always be a right triangle. When laying out a foundation, or constructing a square corner between two walls, construction workers will set out a triangle from three strings that correspond with these lengths. If the string lengths were measured correctly, the corner opposite the triangle's hypotenuse will be a right angle, so the builders will know they are constructing their walls or foundations on the right lines. **Navigation** The Pythagorean Theorem is useful for two-dimensional navigation. You can use it and two lengths to find the shortest distance. For instance, if you are at sea and navigating to a point that is 300 miles north and 400 miles west, you can use the theorem to find the distance from your ship to that point and calculate how many degrees to the west of north you would need to follow to reach that point. The distances north and west will be the two legs of the triangle, and the shortest line connecting them will be the diagonal. The same principles can be used for air navigation. For instance, a plane can use its height above the ground and its distance from the destination airport to find the correct place to begin a descent to that airport. **Surveying** Surveying is the process by which cartographers calculate the numerical distances and heights between different points before creating a map. Because terrain is often uneven, surveyors must find ways to take measurements of distance in a systematic way. The Pythagorean Theorem is used to calculate the steepness of slopes of hills or mountains. A surveyor looks through a telescope toward a measuring stick a fixed distance away, so that the telescope's line of sight and the measuring stick form a right angle. Since the surveyor knows both the height of the measuring stick and the horizontal distance of the stick from the telescope, he can then use the theorem to find the length of the slope that covers that distance, and from that length, determine how steep it is.	

THURSDAY **18-05-2023**	Discuss the concept of " Trigonometry" with the Learners.	1. Assist Learners to identify the primary trigonometric ratios. 2. Demonstrate for Learners to observe using trigonometric ratios to solve problems involving right-angled triangles. 3. Assist Learners to solve more examples of using trigonometric ratios to calculate problems involving right-angled triangles. 4. Discuss the angles of elevation and depression in real life with the Learners. The three primary trigonometric ratios; ▪ sine (sin) ▪ cosine (cos) ▪ tangent (tan).  	Learners in small groups to use trigonometric ratios and the Pythagoras theorem to solve problems involving angles of elevation and depression **Exercise;** 1. Write expressions for the sine, cosine, and tangent of ∠A .  2. Write expressions for the secant, cosecant, and cotangent of ∠A . 

Name of Teacher: ***School:*** ***District:***