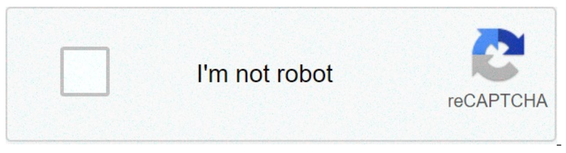

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7.2 special right triangles answer key

G.2.5: Explain and use angle and side relationships in problems with special right triangles, such as 30°, 60°, and 90° triangles and 45°, 45°, and 90° triangles. In a 45-45-90 triangle, legs (x) are congruent (since it is isosceles) and the hypotenuse is times the leg. LEG LEGHYPOTENUSE 10 10 5 In a 30-60-90 triangle, the shortest leg = x, the hypotenuse is 2 times the shortest leg and the longer leg is times the shortest leg. SHORTEST LEG LONGEST LEG HYPOTENUSE 10 20 5 1 7.1 Geometric Mean 7.2 Pythagorean Theorem 7.3 Special Right Triangles 7.4 Trigonometry 7.5 Angles of Elevation & Depression 7.6 Law of Sines 7.7 Law of Cosines 2 7.1 Geometric Mean Objective: We will be able to define the geometric mean between two numbers, and solve problems involving the relationships between parts of a right triangle and its altitude to its hypotenuse. PS is an _____. There is an interesting relationship ……. right altitude similar We say: “x” is the _____ between “k” and “m”. geometric mean The positive square root of the product of two numbers. example: Find x: 3 example: Find the geometric mean between - 1. 6 and 15 3. 25 and 7 We do not have the lengths of two sides, so we can not use the Pythagorean Theorem at first, but we can use geometric mean to find unknowns. example: find x, y, and z 4 7.2 Pythagorean Theorem Objective: We will be able to use the Pythagorean Theorem & its converse to solve problems. How do we find out? Which side do we choose as the hypotenuse? A _____ _____ is a set of 3 _____ numbers that satisfy the _____ Theorem. *Use _____ where ____ is the _____ number. 1. 8, 16, 152. 52, 20, 48 Can these measures form the sides of a right triangle, and if so, can they be considered a Pythagorean Triple? Pythagorean Triple whole a 2 + b 2 = c 2 c largest 5 7.3 Special Triangles Objective: We will use the properties of 45-45-90 and 30-60-90 triangles to solve problems. Start with a square… How do we find the length of the hypotenuse? _____ Pythagorean Thm. a 2 + b 2 = c 2 n n n n h n 6 n 5 45-45-90 examples: find the remaining sides of the 45-45-90 triangles. _____ 15 x find x & y: 6 Start with an equilateral triangle… a 2 + b 2 = c 2 n 12 y 30-60-90 examples: find x and y in the 30-60-90 triangles. _____ y h n full side 2n is the hypotenuse REMEMBER! x y x 15 x 26 7 7.4 Trigonometry Objective: We will be able to set up trigonometric ratios using right triangles, and be able to solve problems (find side lengths and angles) using trig. ratios. trigonometric When we compare the lengths of the sides of a right triangle, we use trigonometric ratios: _____, _____, and _____. cosine sinetangent These ratios can give us the measures of the angles! They are abbreviated as shown: _____ ( ) ___ ( ) _____ ( ) _____ _____ = = ____ Remember! “_____ - _____ - _____ “ Greek letter for angle measure “theta” sin A = cos A = tan A = sin B = cos B = tan B = A C B o h a hypotenuse adjacent leg opposite leg hypotenuse adjacent leg opposite leg h h o o a a soh cah toa a = 4 b = 3 c = 5 A = B = 8 examples: Find the angleWhat if you know the angle already ? Keep the decimal ratio in your calculator during your calculations, but round your FINAL answer to the tenths! 9 7.5 Angles of Elevation and Depression Objective: We will be able to trigonometry to solve problems involving angles of elevation and depression: real world applications! Angle of Elevation: The angle between the line of sight and the horizontal when an observer looks upward. Trigonometry in real world situations…..... Read the problem. Draw the picture Set up the trigonometric ratio Solve. Answer the question in a complete sentence. Angle of Depression: The angle measure from the horizontal line of sight down to the object. (Use alternate interior angle thm.) 125’ 70’ 35’ 200’

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