Click Here

Part 1: Word Problems The text presents 4 word problems related to distances and Pythagorean Theorem calculations. For each problem, students are asked to solve the problem by rounding their answers to the nearest tenth. **Part 2: Distance Calculations** This section contains 4 distance calculation problems. Students are asked to find the distance between two points or calculate the length from one point to another. **Part 3: Pythagorean Theorem Applications** The text presents 5 applications of the Pythagorean Theorem, including finding missing sides and calculating distances. For each problem, students are asked to apply the theorem to solve the problem. **Additional Questions** There are two additional questions: 1. What is the formula for Pythagorean Theorem problems? (Answer: $a^2 + b^2 = c^2$) 2. Which type of triangle does the Pythagorean Theorem work on? (Answer: Right triangle) Overall, this text is designed to test students' understanding of basic geometry and trigonometry concepts, including the Pythagorean Theorem and its applications. The Pythagorean Theorem is a fundamental concept in mathematics that explains the relationship between the sides of a right triangle. It states that the sum of the squares of the two shorter sides is equal to the square of the length of the longest side, known as the hypotenuse. This theorem has various applications and is used to find the length of the hypotenuse when the lengths of the other two sides are known. The theorem can be represented by the equation $a^2 + b^2 = c^2$, where a and b are the shorter sides and c is the longest side. It is named after Pythagoras, a Greek mathematician and philosopher, who first discovered this concept. is the specific mathematical term that is used to denote this longest side? Answer: The word "hypotenuse" is of Greek origin (hypoteinousa). The prefix "hypo-" means under while "tenuse" comes from the word "tenein", which means to stretch. 3. In trigonometry, the Pythagorean theorem is considered a special case of a more generic law. In other words, this mathematical law is a more general formula that can be used for all types of triangles. What is the name of this law? 4. True or false: There is only one way to prove the Pythagoras theorem. 5. The 20th President of the United States provided an algebraic proof of the Pythagorean theorem. Who is he? Answer: In his proof, Garfield divided a trapezoid into 3 sections, namely 2 identical right-angled triangles of equal area and another isosceles triangle. By performing some algebraic manipulation, he arrived at the equation $a^2 + b^2 = c^2$. 6. Given a right-angled triangle and the lengths of its three sides are 3, 4 and 5. These three positive integers are known as a Pythagorean triple denoted by (3, 4, 5), as they satisfy the equation stated by the Pythagorean theorem. If I multiply each of the number by 10, will the resulting numbers, namely 30, 40 and 50 be another Pythagorean triple? 7. There are many formulae that can be used to generate Pythagorean triples. One of them states that a = m^2 - n^2, b = 2mn, c = m^2 + n^2 form a Pythagorean triple given that three conditions are met. First, the greatest common divisor of m and n is 1; second, only m or only n can be even; and third, m must be greater than n. What is the name of this formula? 8. A Pythagorean prime is any prime number that is also the length of the hypotenuse of a Pythagorean triple . The first few Pythagorean primes are 5, 13, 17, 29... What is the formula used to generate Pythagorean primes? (given that n is a subset of positive integers) Answer: The first few Pythagorean triples are (3, 4, 5), (5, 12, 13), (8, 15, 17), (7, 24, 25). Note that 4 x 1 + 1 = 5, 4 x 3 + 1 = 13, 4 x 4 + 1 = 17 and 4 x 6 + 1 = 25. Here, n = 1, 3, 4 and 6. Hence, the general formula that is used to generate Pythagorean primes is given by 4n + 1. Some values of n, such as 2 and 5 will NOT yield Pythagorean primes. 9. Which of the following coordinate systems uses the Pythagorean theorem to find the distance between 2 points? 10. The Pythagorean theorem can only be applied to which of the following triangles? Triangle A: a triangle that is inscribed in a semicircle, where the diameter of the semicircle is its longest side Triangle B: an equilateral triangle Triangle C: a scalene triangle, with length 7, 8 and 9 Triangle D: a triangle with length 1, 1 and square root of 2