

Geometry: The Pythagorean Theorem & Real-World Applications



Name: _____ Date: _____

Part A: Apply the Pythagorean Theorem $a^2 + b^2 = c^2$ to solve each problem below. Select the best answer.

1. A firefighter leans a 13-foot ladder against the exterior wall of a building. If the base of the ladder is placed 5 feet away from the wall, how high up the wall does the top of the ladder reach?
A. 11 feet
B. 12 feet
C. 14 feet
D. 8 feet
2. What is the length of the diagonal of a rectangular television screen that measures 16 inches wide and 12 inches tall?
A. 28 inches
B. 20 inches
C. 24 inches
D. 19.2 inches
3. Find the straight-line distance between the coordinate points A(1, 2) and B(7, 10) on a Cartesian grid.
A. 14 units
B. 10 units
C. 8 units
D. 12.5 units

Part B: Pythagorean Triple & Calculation Fluency. Complete each algebraic statement with the correct missing value.

Word bank: 25, 15, 10, 169, 5

1. In the foundational 3-4-5 right triangle, the sum of the leg squares is $3^2 + 4^2 = 9 + 16 =$ _____, whose square root equals the hypotenuse 5.
2. For a right triangle with legs of length 9 cm and 12 cm, $c^2 = 81 + 144 = 225$, giving a hypotenuse of _____ cm.
3. In the 5-12-13 integer triple, the square of the 13-unit hypotenuse equals _____.
4. The distance between point (0, 0) and point (3, 4) on a coordinate plane is exactly _____ units.