

The Pythagorean Theorem and Its Converse

Grade 8 math · Test · Standards: 8.G.B.6, 8.G.B.7

Name: _____ Date: _____ Class: _____

This test covers the Pythagorean Theorem, its converse, and applications in two and three dimensions. It has 8 questions worth 20 points and should take about 45 minutes. A calculator with a square root key is allowed.

Standards: 8.G.B.6, 8.G.B.7 · **Level:** Grade 8

Time: 45 minutes · 8 questions · Total: 20 points · Calculator: as allowed by your teacher

Question 1 Hypotenuse (2 points)

Two legs of a right triangle measure 15 and 36. How long is the hypotenuse?

Question 2 Missing leg (2 points)

The hypotenuse of a right triangle is 37 and one leg is 12. What is the length of the other leg?

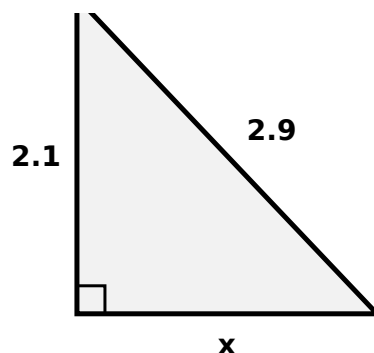
Question 3 Right triangles? (3 points)

For each list of side lengths, decide whether a right triangle is possible and show the check.

- a. 11, 60, 61 (1 point)
- b. 14, 48, 50 (1 point)
- c. 9, 12, 16 (1 point)

Question 4 Decimal sides (3 points)

Find x in the right triangle. Show the equation and check your answer.



Lengths are in centimeters.

Question 5 Squares on the sides (3 points)

The squares built on the legs of a right triangle have areas 100 and 576.

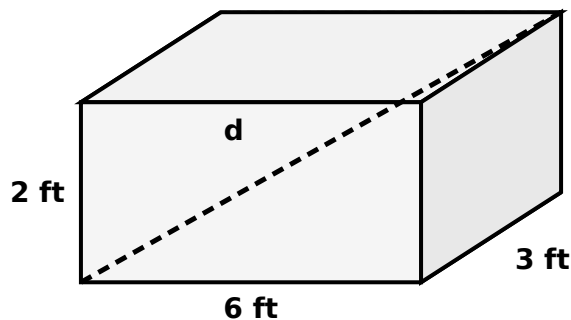
- Find the area of the square on the hypotenuse. (1 point)
- Find the length of the hypotenuse. (1 point)
- Is a triangle with sides 10, 24, and 26 a right triangle? Explain. (1 point)

Question 6 Ladder (2 points)

A 20-foot ladder leans against a wall with its base 6 feet from the wall. How high up the wall does it reach? Round to the nearest tenth of a foot.

Question 7 Crate diagonal (3 points)

A crate is 6 feet long, 3 feet wide, and 2 feet tall.



A crate: 6 ft by 3 ft by 2 ft.

- Find the diagonal of the base to the nearest tenth of a foot. (1 point)
- Find the length of the longest pole that fits inside the crate. (2 points)

Question 8 Cutting the corner (2 points)

A rectangular field is 40 meters by 96 meters. A student walks along the diagonal instead of along two sides. How many meters does the shortcut save?