# Special Right Triangles Worksheet Answer Key PDF

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## Part 1: Building a Foundation

**What is the side ratio of a 45°-45°-90° triangle?**

undefined. A) 1:2:√3

**undefined. B) 1:1:√2 ✓**

undefined. C) 1:√3:2

undefined. D) 1:1:2

The side ratio of a 45°-45°-90° triangle is 1:1:√2.

**Which of the following are properties of a 30°-60°-90° triangle? (Select all that apply)**

**undefined. A) The hypotenuse is twice the length of the shortest side. ✓**

undefined. B) The legs are of equal length.

**undefined. C) The side opposite the 60° angle is √3 times the shortest side. ✓**

**undefined. D) The angles are 30°, 60°, and 90°. ✓**

The properties include that the hypotenuse is twice the length of the shortest side and the side opposite the 60° angle is √3 times the shortest side.

**Explain why the 45°-45°-90° triangle is also known as an isosceles right triangle.**

**The 45°-45°-90° triangle is known as an isosceles right triangle because it has two equal angles and two equal sides.**

**List the angles of a 30°-60°-90° triangle and the corresponding side ratios.**

1. What are the angles?

**30°, 60°, 90°**

2. What are the side ratios?

**1:√3:2**

The angles are 30°, 60°, and 90° with side ratios of 1:√3:2.

**If the leg of a 45°-45°-90° triangle is 5 units, what is the length of the hypotenuse?**

**undefined. A) 5√2 units ✓**
undefined. B) 10 units
undefined. C) 5 units
undefined. D) 10√2 units

The length of the hypotenuse is 5√2 units.

## Part 2: Application and Analysis

**A ladder leans against a wall forming a 30° angle with the ground. If the ladder is 10 feet long, how far is the base of the ladder from the wall?**

undefined. A) 5 feet
**undefined. B) 5√3 feet ✓**
undefined. C) 10 feet
undefined. D) 10√3 feet

The base of the ladder is 5√3 feet from the wall.

**In a 45°-45°-90° triangle, if one leg measures 7√2 units, what are the possible lengths of the other sides? (Select all that apply)**

**undefined. A) 7 units ✓**
**undefined. B) 7√2 units ✓**
undefined. C) 14 units
undefined. D) 14√2 units

The possible lengths of the other sides are 7 units and 7√2 units.

**Given a 30°-60°-90° triangle with a hypotenuse of 16 units, calculate the lengths of the other two sides.**

**The lengths of the other two sides are 8 units and 8√3 units.**

**If a 45°-45°-90° triangle has a hypotenuse of 8√2 units, what is the length of each leg?**

undefined. A) 4 units
**undefined. B) 8 units ✓**
undefined. C) 4√2 units
undefined. D) 8√2 units

The length of each leg is 8 units.

**Which of the following transformations can result in a 30°-60°-90° triangle? (Select all that apply)**

**undefined. A) Cutting an equilateral triangle in half. ✓**
undefined. B) Bisectin a 45°-45°-90° triangle.
**undefined. C) Dividing a square diagonally. ✓**
undefined. D) Splitting a rectangle into two right triangles.

Cutting an equilateral triangle in half and dividing a square diagonally can result in a 30°-60°-90° triangle.

## Part 3: Evaluation and Creation

**Which scenario best illustrates the use of a 30°-60°-90° triangle in real life?**

undefined. A) Designing a square garden.
**undefined. B) Calculating the height of a tree using its shadow. ✓**
undefined. C) Building a rectangular swimming pool.
undefined. D) Creating a circular fountain.

Calculating the height of a tree using its shadow best illustrates the use of a 30°-60°-90° triangle.

**You are tasked with designing a triangular park with a 45°-45°-90° shape. Which features should you include to maintain the triangle's properties? (Select all that apply)**

**undefined. A) Equal length paths for the legs. ✓**
**undefined. B) A hypotenuse path √2 times longer than the legs. ✓**
**undefined. C) A right angle at the park's entrance. ✓**
undefined. D) Unequal length paths for the legs.

You should include equal length paths for the legs and a hypotenuse path √2 times longer than the legs.

**Design a real-world problem that involves a 30°-60°-90° triangle and explain how you would solve it using the triangle's properties.**

**An example could be calculating the height of a building using its shadow and the angle of elevation.**

**Analyze how the properties of special right triangles can simplify calculations in geometry problems.**

**The properties of special right triangles allow for quick calculations and easier problem-solving in various geometric contexts.**