LESSON MAKER PRO

Right Triangle Paths

Find a missing leg or hypotenuse.

GRADE 8 · 8.MG.4.d

8.MG.4.d "Determine the measure of a side of a right triangle, given the measures of the other two sides."

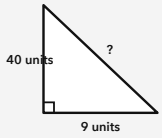
NAME _____ DATE _____

USE THE PYTHAGOREAN THEOREM

In a right triangle, the two legs are a and b, and the hypotenuse is c. Use $a^2 + b^2 = c^2$, then take the positive square root to find a missing side.

WORKED EXAMPLE

Use the right triangle shown. Find the length of the missing hypotenuse, x.

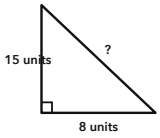


1. $9^2 + 40^2 = x^2$
2. $81 + 1600 = x^2$
3. $x = 41$

Answer: 41 units

PRACTICE 6 problems

1 Use the right triangle shown. Find the missing hypotenuse.



ANSWER _____

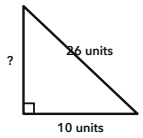
2 A right triangle has a hypotenuse of 25 units and one leg of 7 units. Find the other leg.

ANSWER _____

3 A right triangle has legs that measure 20 units and 21 units. Find the hypotenuse.

ANSWER _____

4 Use the right triangle shown. Find the missing leg.



ANSWER _____

5 A right triangle has a hypotenuse of 41 units and one leg of 9 units. Find the other leg.

ANSWER _____

6 A right triangle has legs that measure 12 units and 35 units. Find the hypotenuse.

ANSWER _____

APPLY IT Show your work

1 A skateboarder is building a ramp support. The support reaches 16 feet up from the ground and is 30 feet from the base of the ramp. How long is the slanted support?

WORK SPACE

ANSWER _____

2 A rectangular game poster is 18 inches tall and has a diagonal of 30 inches. What is the width of the poster?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A right triangle has legs of x units and x + 7 units. Its hypotenuse is 17 units. Find x and both leg lengths. Show your equation.

WORK SPACE AND ANSWER

ANSWER KEY

Right Triangle Paths

GRADE 8 · 8.MG.4.d

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Use the right triangle shown. Find the missing hypotenuse.	**17 units**
2	A right triangle has a hypotenuse of 25 units and one leg of 7 units. Find the other leg.	**24 units**
3	A right triangle has legs that measure 20 units and 21 units. Find the hypotenuse.	**29 units**
4	Use the right triangle shown. Find the missing leg.	**24 units**
5	A right triangle has a hypotenuse of 41 units and one leg of 9 units. Find the other leg.	**40 units**
6	A right triangle has legs that measure 12 units and 35 units. Find the hypotenuse.	**37 units**

PART 2 · APPLY IT

1. **34 feet** The vertical height and ground distance are the legs. Compute $16^2 + 30^2 = 1156$, so the support is 34 feet.
2. **24 inches** The height and width are legs, and the diagonal is the hypotenuse. Compute $x^2 + 18^2 = 30^2$, so x = 24 inches.

CHALLENGE

x = 8; the legs are 8 units and 15 units.

Accept equivalent work that uses the Pythagorean Theorem and gives positive side lengths. Require units when the problem includes units.