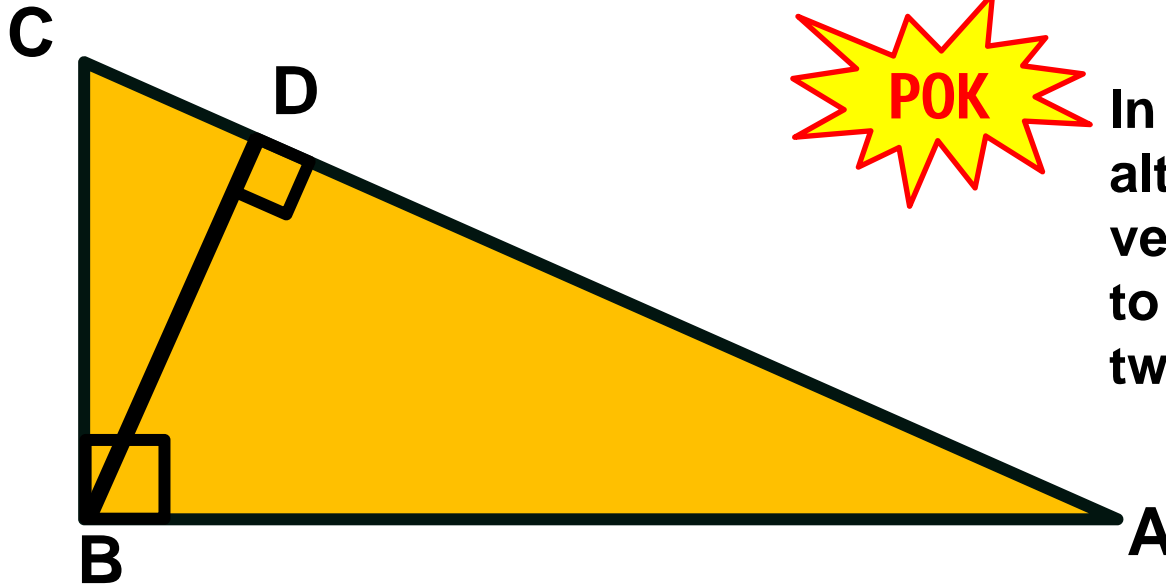# 8.4

Using Similar Right Triangles

Right Triangle Similarity Theorem
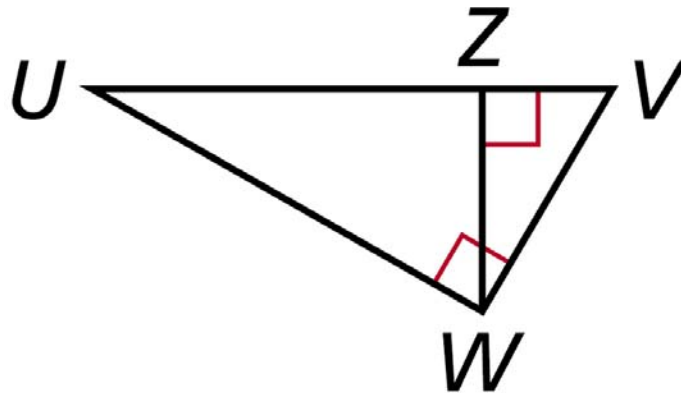

POK

In a right triangle, an altitude drawn from the vertex of the right angle to the hypotenuse forms two right similar triangles.

Sketch the triangles and then write a similarity statement comparing the triangles.
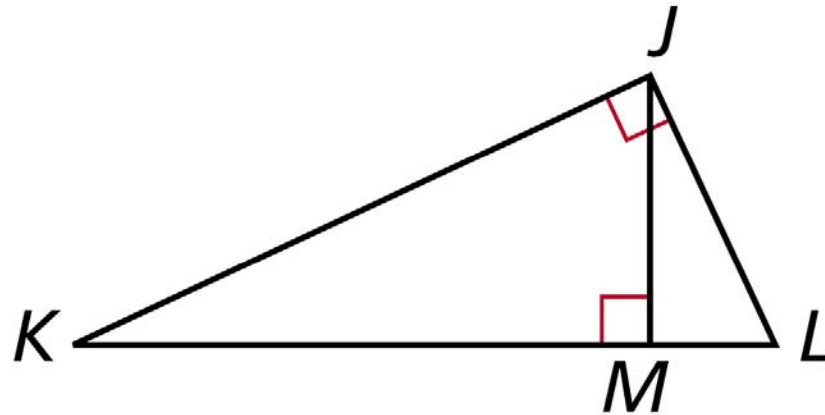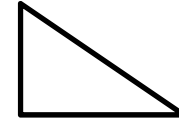
Practice 1

Write a similarity statement comparing the triangles. You may want to sketch the three right triangles to help you out.
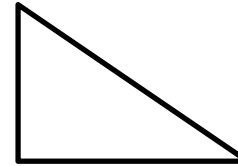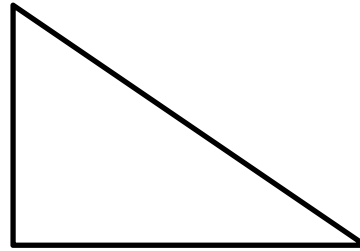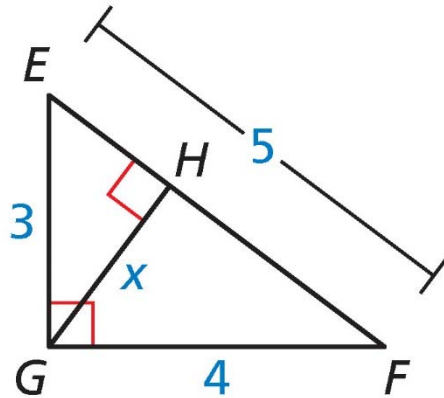
Practice 2

Write a similarity statement comparing the triangles. You may want to sketch the three right triangles to help you out.

Using Similar Triangles to Find Missing Parts
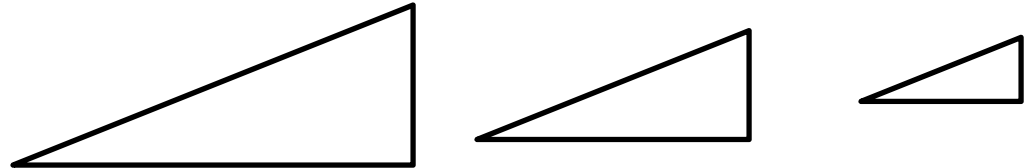
Find the missing variable.

1)

Find the missing variable.

2)
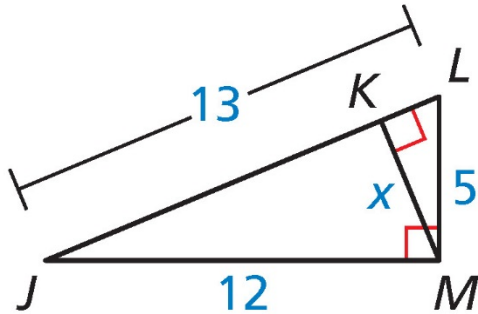
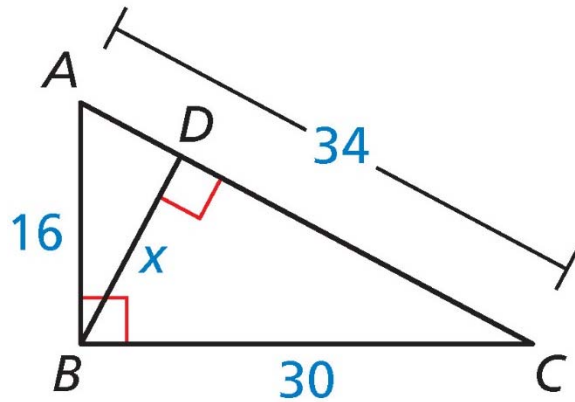# <u>Using Similar Triangles to Find Missing Parts</u>

Find the missing variable.

3)
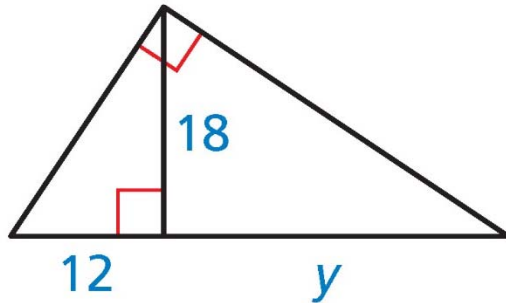
Using Similar Triangles to Find Missing Parts

Find the missing variable.

4)

<u>Using Similar Triangles to Find Missing Parts</u>
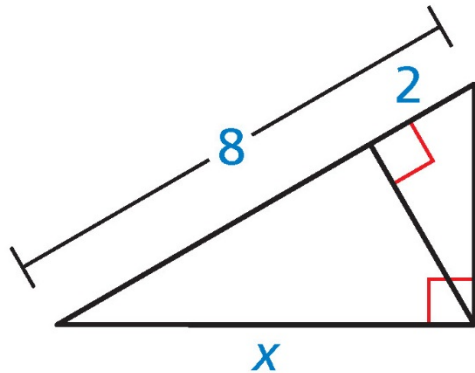
Find the missing variable.

5)

Geometric Mean

The geometric mean of two positive numbers is the positive square root of their product. So the geometric mean of *a* and *b* is the positive number *x* such that:

Finding the Geometric Mean

You've actually may have done something like this in the previous problems when you set up certain proportions such as:

Geometric Mean

Find the geometric mean of each pair of numbers. If necessary, give the answer in simplest radical form.

6) 8 and 32

7) 9 and 16

Geometric Mean

Find the geometric mean of each pair of numbers. If necessary, give the answer in simplest radical form.
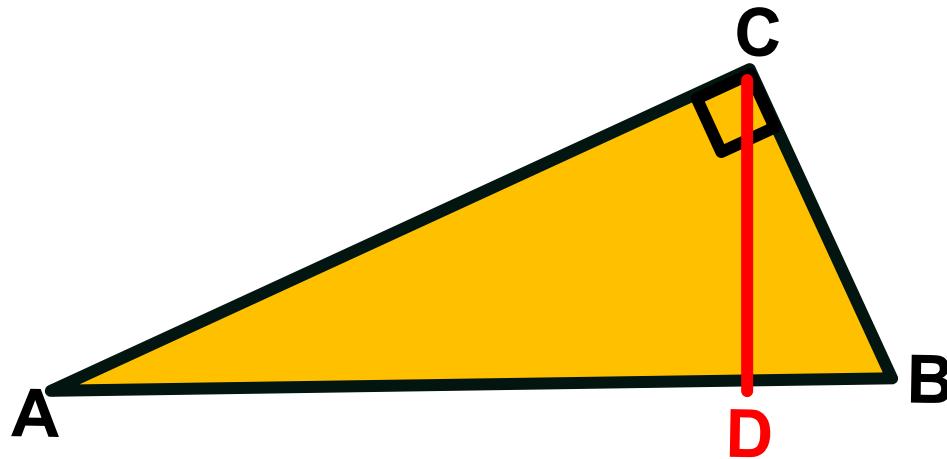
8)   14 and 20

9)   25 and 35

Solving Missing Parts using the Geometric Mean

Geometric Mean (Altitude) Theorem

POK

In a right triangle, the altitude from the right angle to the hypotenuse divides the hypotenuse into two segments.

The length of the altitude is the geometric mean of the lengths of the two segments of the hypotenuse.

Note: Use can use this when the big hypotenuse is divided into smaller parts.

Solving Missing Parts using the Geometric Mean

Geometric Mean (Leg) Theorem

POK

In a right triangle, the altitude from the right angle to the hypotenuse divides the hypotenuse into two segments.
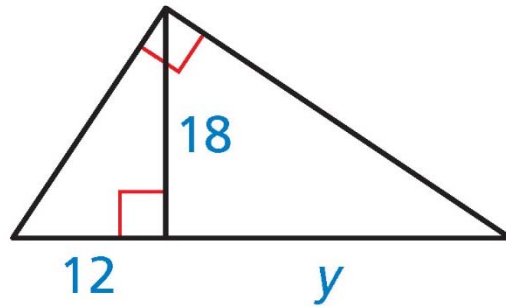
The length of each leg of the right triangle is the geometric mean of the lengths of the hypotenuse and the segment of the hypotenuse that is adjacent to the leg.
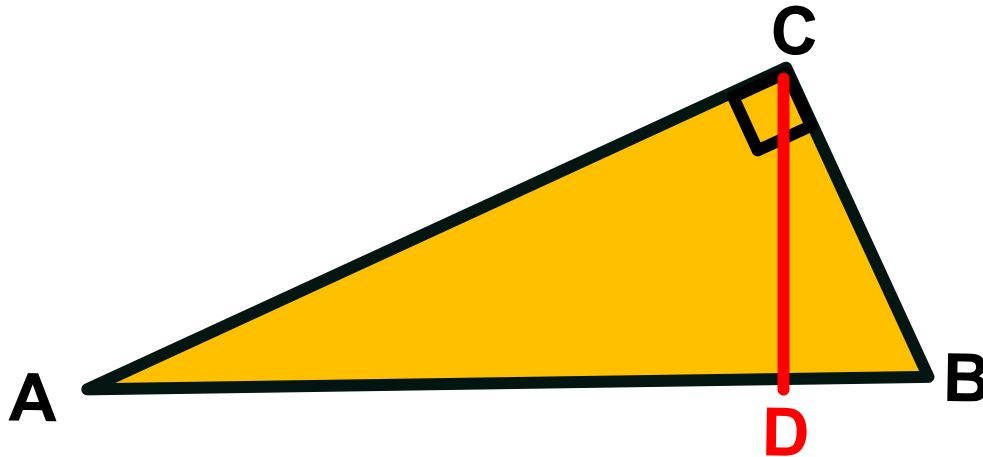
Using the Geometric Mean to Find Missing Parts
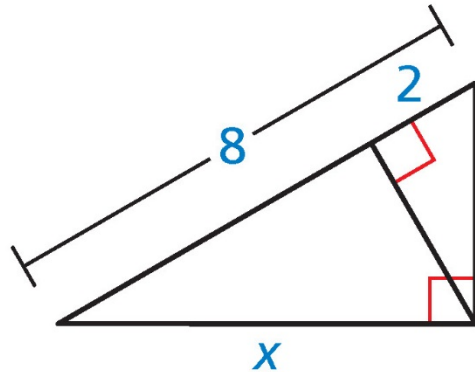
Find the missing variable.

4 again)

18

12   y

Find the missing variable.

5 again)

Using the Geometric Mean to Find Missing Parts

Find the missing variable.

10)

5   8

y

11)

x

25

10

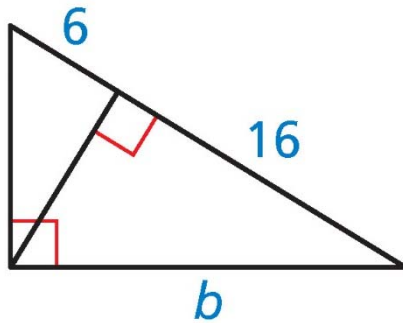# Using the Geometric Mean to Find Missing Parts

Find the missing variable.

12)

13)