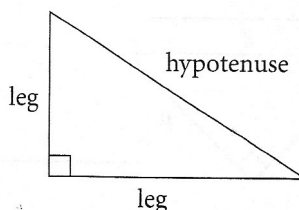


## Quick Review

- A right triangle has two **legs** that form the right angle. The side opposite the right angle is called the **hypotenuse**.



- The three sides of a right triangle form a relationship known as the **Pythagorean Theorem**.

Pythagorean Theorem: The area of the square on the hypotenuse is equal to the sum of the areas of the squares on the legs.

- In the diagram:

Area of square on hypotenuse:

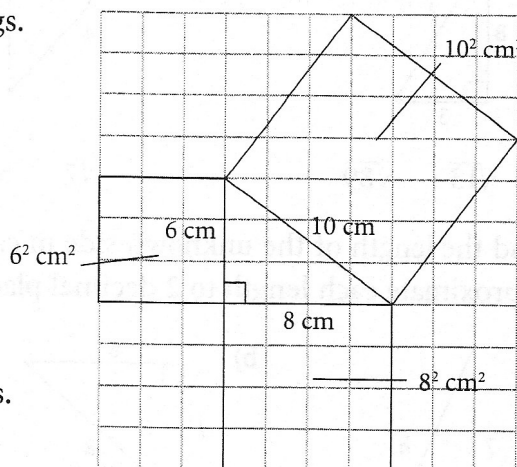
$$10^2 \text{ cm}^2 = 100 \text{ cm}^2$$

Areas of squares on legs:

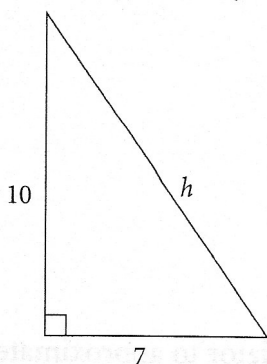
$$6^2 \text{ cm}^2 + 8^2 \text{ cm}^2 = 36 \text{ cm}^2 + 64 \text{ cm}^2 \\ = 100 \text{ cm}^2$$

Notice that  $10^2 = 6^2 + 8^2$ .

This theorem is true for all right triangles.



- You can use the Pythagorean Theorem to find the length of any side of a right triangle when you know the lengths of the other two sides.



To calculate the hypotenuse  $h$ , solve for  $h$  in this equation:

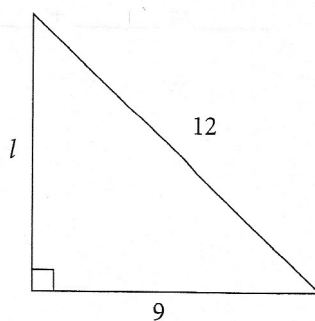
$$h^2 = 7^2 + 10^2$$

$$h^2 = 49 + 100$$

$$h^2 = 149$$

$$h = \sqrt{149}$$

Use a calculator:  $h \doteq 12.2$



To calculate the leg with length  $l$ , solve for  $l$  in this equation:

$$12^2 = l^2 + 9^2$$

$$144 = l^2 + 81$$

$$144 - 81 = l^2 + 81 - 81$$

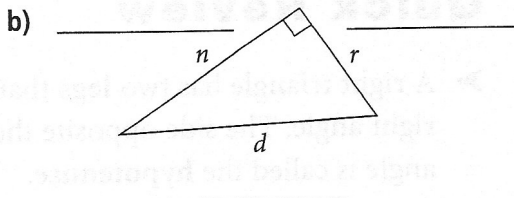
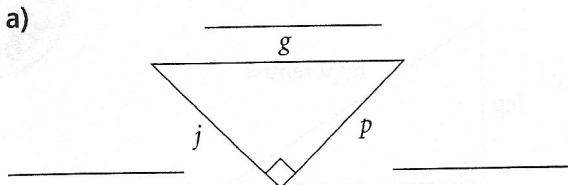
$$63 = l^2$$

$$\sqrt{63} = l$$

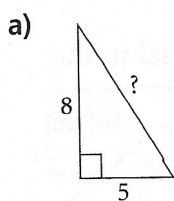
Use a calculator:  $l \doteq 7.9 \text{ cm}$

# Practice

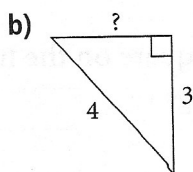
1. Identify the legs and the hypotenuse of each right triangle.



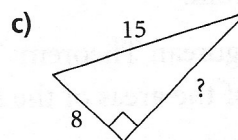
2. Circle the length of the unknown side in each right triangle.



$\sqrt{13}$     $\sqrt{89}$

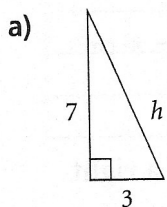


$\sqrt{7}$    5



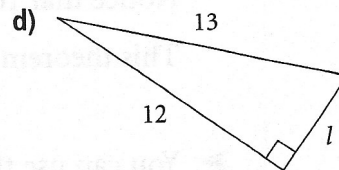
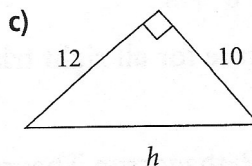
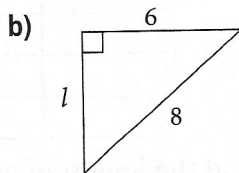
17    $\sqrt{161}$

3. Find the length of the unknown side in each right triangle. Use a calculator to approximate each length to 2 decimal places, if necessary.



$$h^2 = \underline{\quad} + \underline{\quad} \quad \underline{\quad} = \underline{\quad} + \underline{\quad}$$

$$= \quad =$$



4. Find the length of the unknown side in each triangle. Use a calculator to approximate each answer to 1 decimal place.

