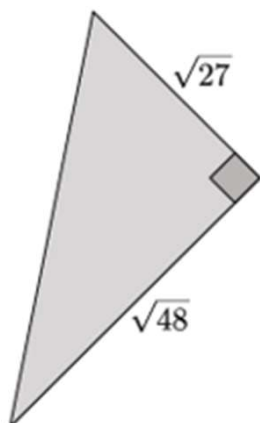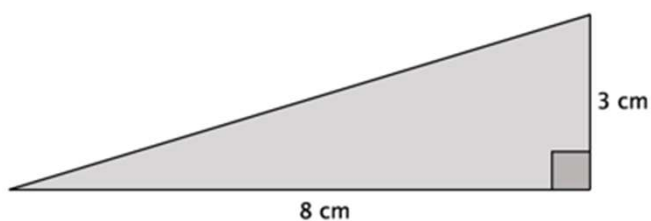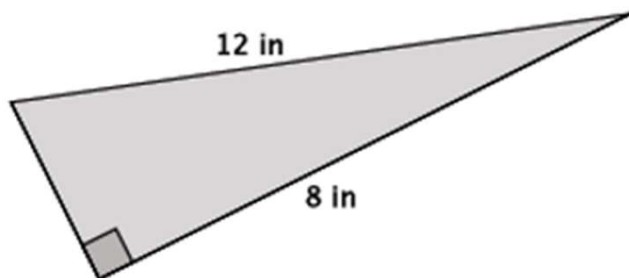# Pythagorean Theorem

1. What is the length of the unknown side of the right triangle? Simplify your answer, if possible.

2. What is the length of the unknown side of the right triangle? Simplify your answer, if possible.
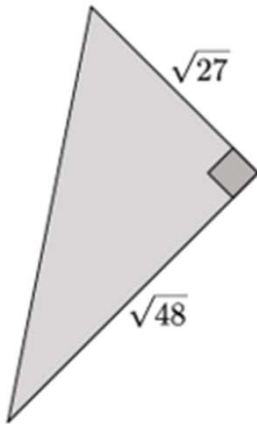

3. What is the length of the unknown side of the right triangle? Simplify your answer, if possible.
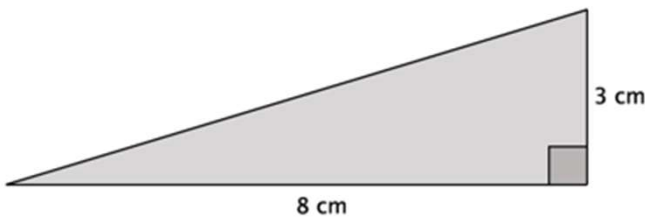
Pythagorean Theorem

1. What is the length of the unknown side of the right triangle? Simplify your answer, if possible.

Let c units represent the length of the hypotenuse.

$$\left(\sqrt{27}\right)^2 + \left(\sqrt{48}\right)^2 = c^2$$
$$27 + 48 = c^2$$
$$75 = c^2$$
$$\sqrt{75} = \sqrt{c^2}$$
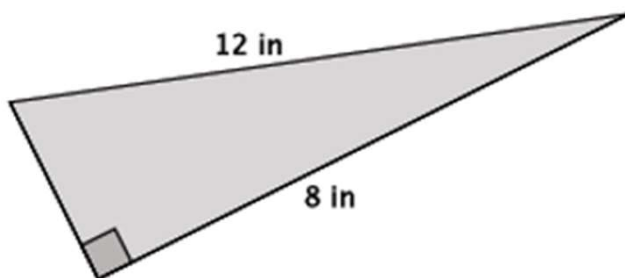$$\sqrt{5^2} \times \sqrt{3} = c$$
$$5\sqrt{3} = c$$

2. What is the length of the unknown side of the right triangle? Simplify your answer, if possible.

3 cm

8 cm

Let c cm represent the length of the hypotenuse.

$$3^2 + 8^2 = c^2$$
$$9 + 64 = c^2$$
$$73 = c^2$$
$$\sqrt{73} = \sqrt{c^2}$$
$$\sqrt{73} = c$$

3. What is the length of the unknown side of the right triangle? Simplify your answer, if possible.

12 in

8 in

Let x in. represent the unknown length.

$$x^2 + 8^2 = 12^2$$
$$x^2 + 64 = 144$$
$$x^2 + 64 - 64 = 144 - 64$$
$$x^2 = 80$$
$$\sqrt{x^2} = \sqrt{80}$$
$$x = \sqrt{80}$$
$$x = \sqrt{2^4 \cdot 5}$$
$$x = \sqrt{2^2} \cdot \sqrt{2^2} \cdot \sqrt{5}$$
$$x = 2 \cdot 2\sqrt{5}$$
$$x = 4\sqrt{5}$$

The length of the unknown side is $4\sqrt{5}$ in.

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