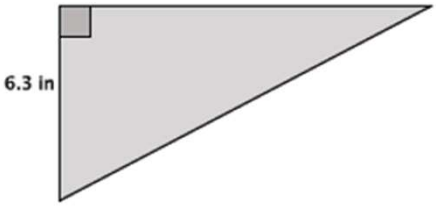
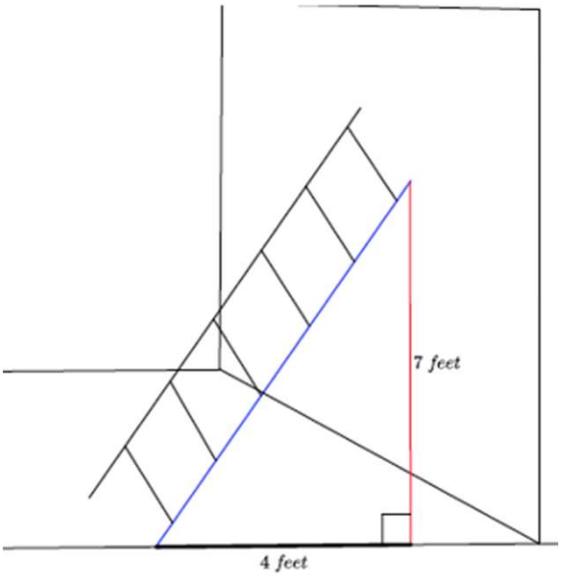
Application of Pythagorean Theorem

1. The area of the right triangle shown below is $26.46\ in^2$. What is the perimeter of the right triangle? Round your answer to the tenths place.



2. What length of ladder is needed to reach a height of 7 feet along the wall when the base of the ladder is 4 feet from the wall? Round your answer to the tenths place.



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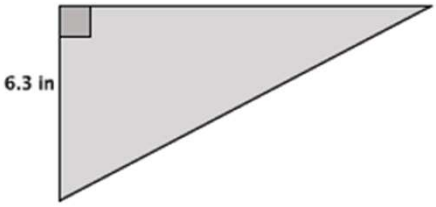

Let b in. represent the length of the base of the triangle where $h = 6.3$

$$A = \frac{bh}{2}$$
$$26.46 = \frac{6.3b}{2}$$
$$52.92 = 6.3b$$
$$\frac{52.92}{6.3} = \frac{6.3b}{6.3}$$
$$8.4 = b$$

Let c in. represent the length of the hypotenuse.

$$6.3^2 + 8.4^2 = c^2$$
$$39.69 + 70.56 = c^2$$
$$110.25 = c^2$$
$$\sqrt{110.25} = \sqrt{c^2}$$
$$\sqrt{110.25} = c$$
$$10.5 = c$$

The length of the hypotenuse is 10.5 in. *The perimeter of the triangle is* 6.3 in. $+ 8.4$ in. $+ 10.5$ in. $= 25.2$ in.

2. What length of ladder is needed to reach a height of 7 feet along the wall when the base of the ladder is 4 feet from the wall? Round your answer to the tenths place.

Let c feet represent the length of the ladder.

$$7^2 + 4^2 = c^2$$
$$49 + 16 = c^2$$
$$65 = c^2$$
$$\sqrt{65} = \sqrt{c^2}$$
$$\sqrt{65} = c$$
$$8.1 = c$$

The ladder must be approximately 8.1 *feet long to reach* 7 *feet up a wall when placed* 4 *feet from the wall.*