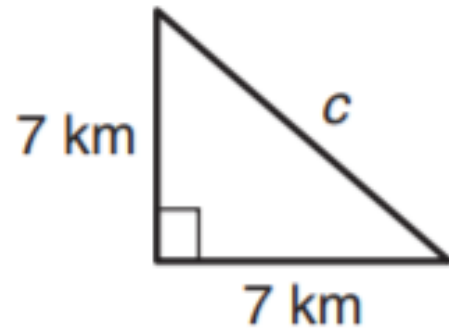
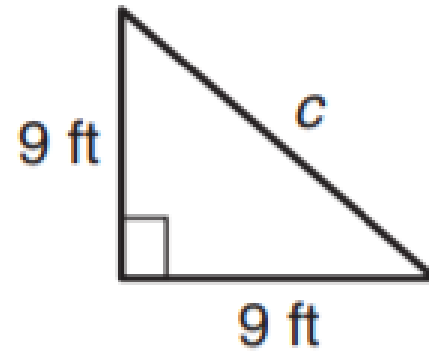


Determine the length of the hypotenuse of each $45^\circ-45^\circ-90^\circ$ triangle.
Write your answer as a radical in simplest form.

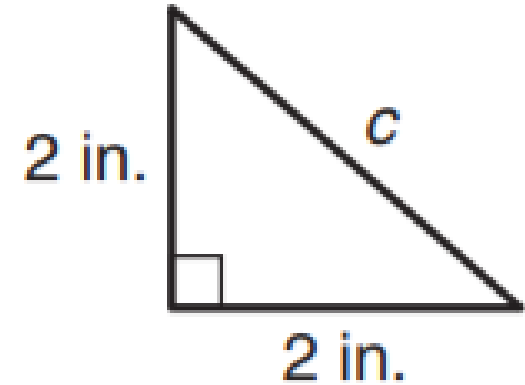
1)



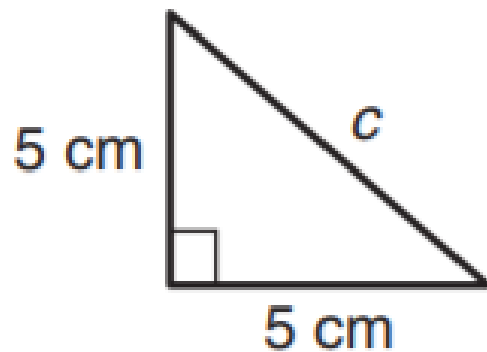
2)



3)

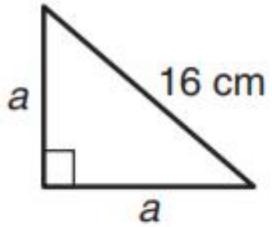


4)



Determine the lengths of the legs of each $45^\circ\text{--}45^\circ\text{--}90^\circ$ triangle.
Write your answer as a radical in simplest form.

Example:



$$a\sqrt{2} = 16$$

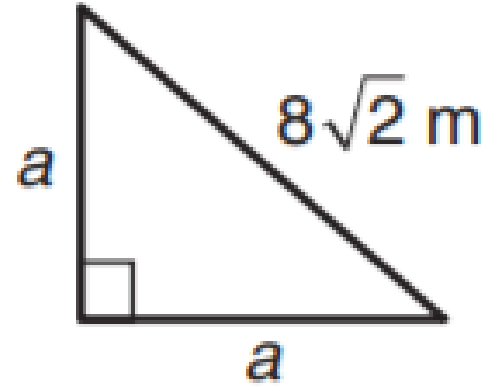
$$a = \frac{16}{\sqrt{2}}$$

$$a = \frac{16\sqrt{2}}{\sqrt{2}\sqrt{2}}$$

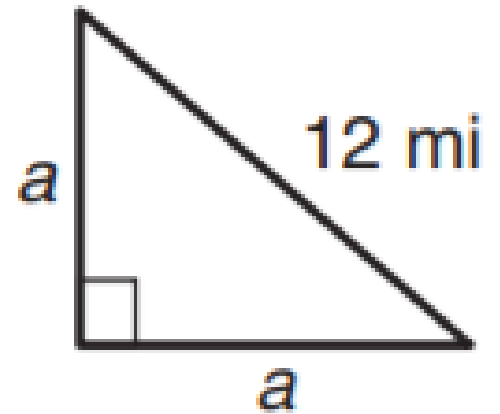
$$a = \frac{16\sqrt{2}}{2} = 8\sqrt{2}$$

The length of each leg is $8\sqrt{2}$ centimeters.

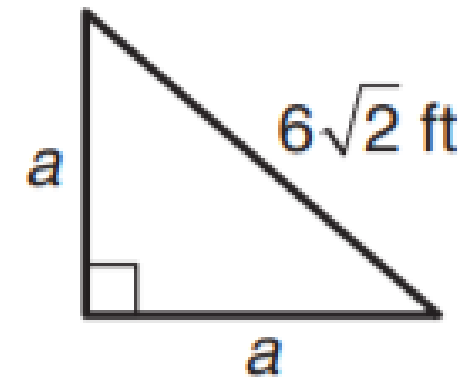
5)



6)



7)

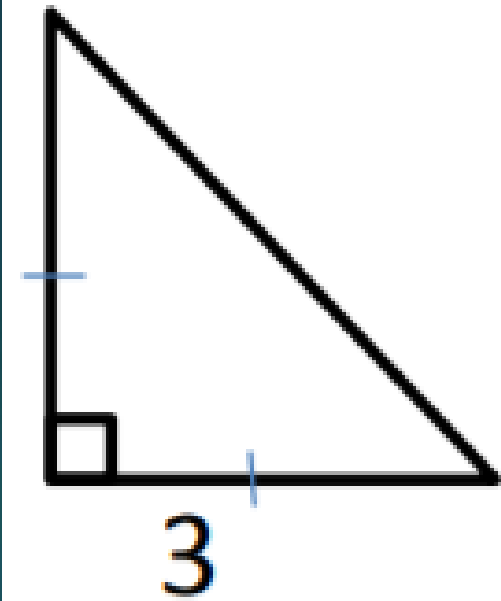


Use the given information to answer each question. Round your answer to the nearest tenth, if necessary.

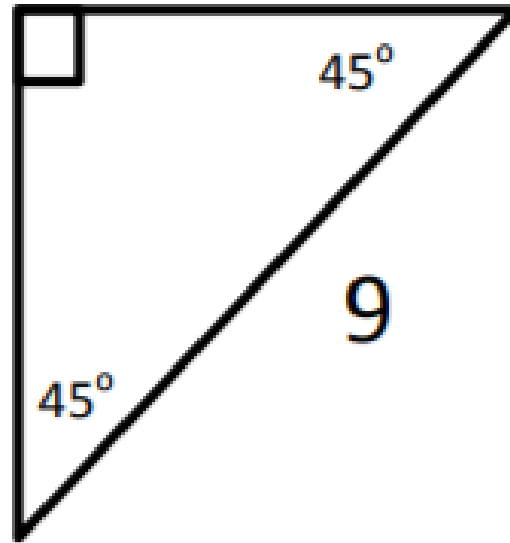
- 8) Emily is building a square bookshelf. She wants to add a diagonal support beam to the back to strengthen it. The diagonal divides the bookshelf into two 45° – 45° – 90° triangles. If each side of the bookshelf is 4 feet long, what must the length of the support beam be?
- 9) Prospect Park is a square with side lengths of 512 meters. One of the paths through the park runs diagonally from the northeast corner to the southwest corner, and it divides the park into two 45° – 45° – 90° triangles. How long is that path?
- 10) Grain elevators are conveyor belts used throughout the Midwest to take produce, like wheat, to the top of a silo for storage. How long would the belt of a grain elevator need to be if the bottom is 50 feet from the base of a silo that is 50 feet high?
- 11) You have a piece of cardboard that you want to cut into a square. You want the diagonal to be approximately 9 inches long. How long should each side be in inches?

For each triangle, one length is given. Find the missing lengths. Leave answers in simplest radical form.

12)



13)



14)

