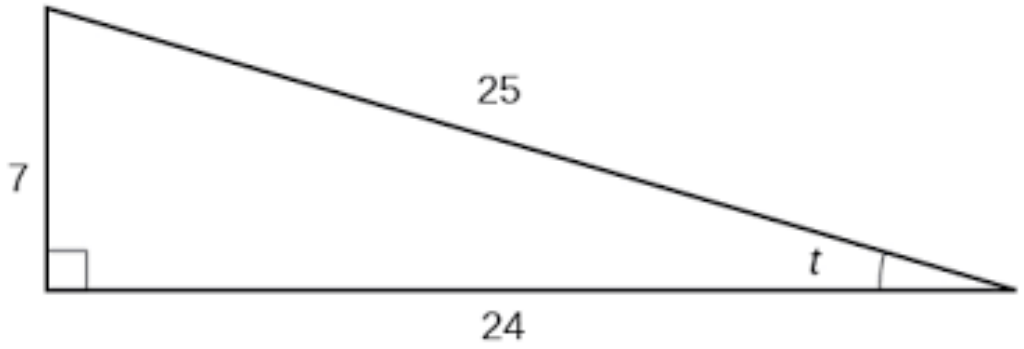
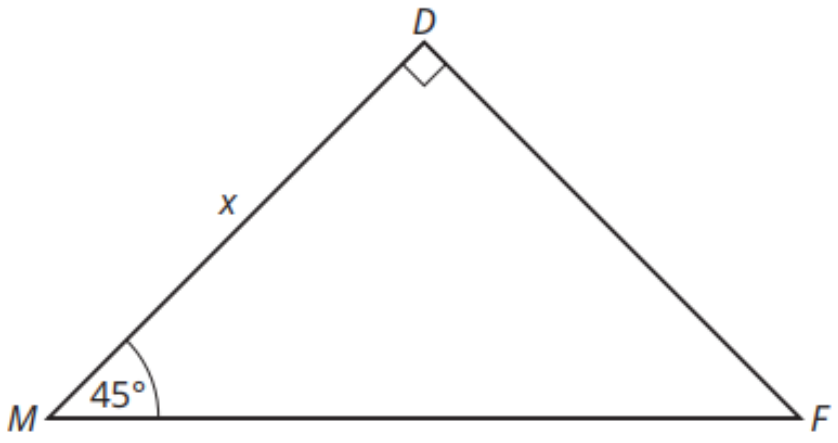
1)What is the reference angle in the picture?

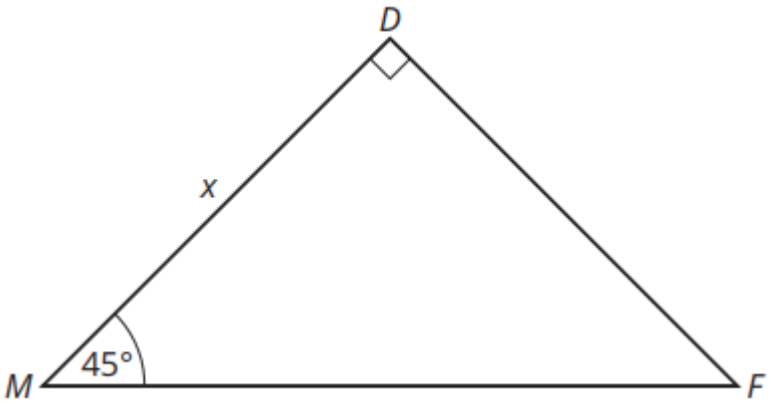
2)Identify the Hypotenuse, the adjacent leg, and the opposite leg.



You have estimated certain constant ratios of side lengths in 45°-45°-90° triangles. You can use what you know about the 45°-45°-90° Triangle Theorem to determine the exact ratios.



10. Given a leg length *x*, determine the lengths of the other sides of the 45°-45°-90° triangle. Label the triangle.



11. Determine the ratio of the:

a. opposite side length to the length of the hypotenuse.

b. adjacent side length to the length of the hypotenuse.

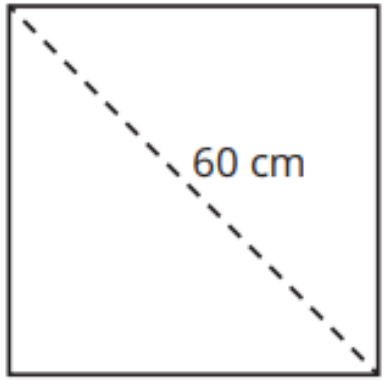
c. opposite side length to the adjacent side length.

Remember:

To rationalize the denominator of a fraction involving radicals, multiply the fraction by a form of 1 so that the product in the denominator includes a perfect square radicand.

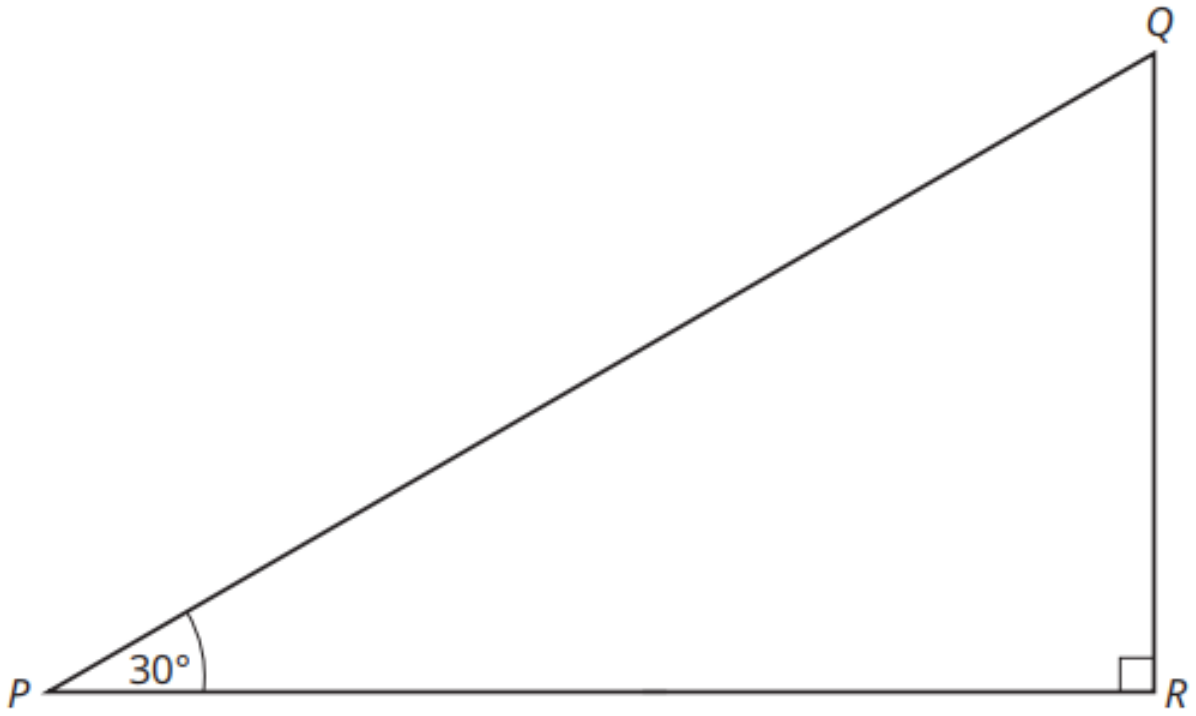
12. Determine the unknown side lengths. Rationalize the denominator.

a.



b. Meena is picking oranges from the tree in her yard. She rests a 12-foot ladder against the tree at a 45° angle. How far is the top of the ladder from the ground?

Triangle *PQR* shown is a 30°-60°-90° triangle.



1. **Choose any point along the hypotenuse of $\triangle PQR$ and label it point *D*. Then construct a vertical line segment, $\overline{DE}$, connecting with side $\overline{PR}$ so that $\overline{DE} \perp \overline{PR}$. Label the other endpoint as point *E*.**

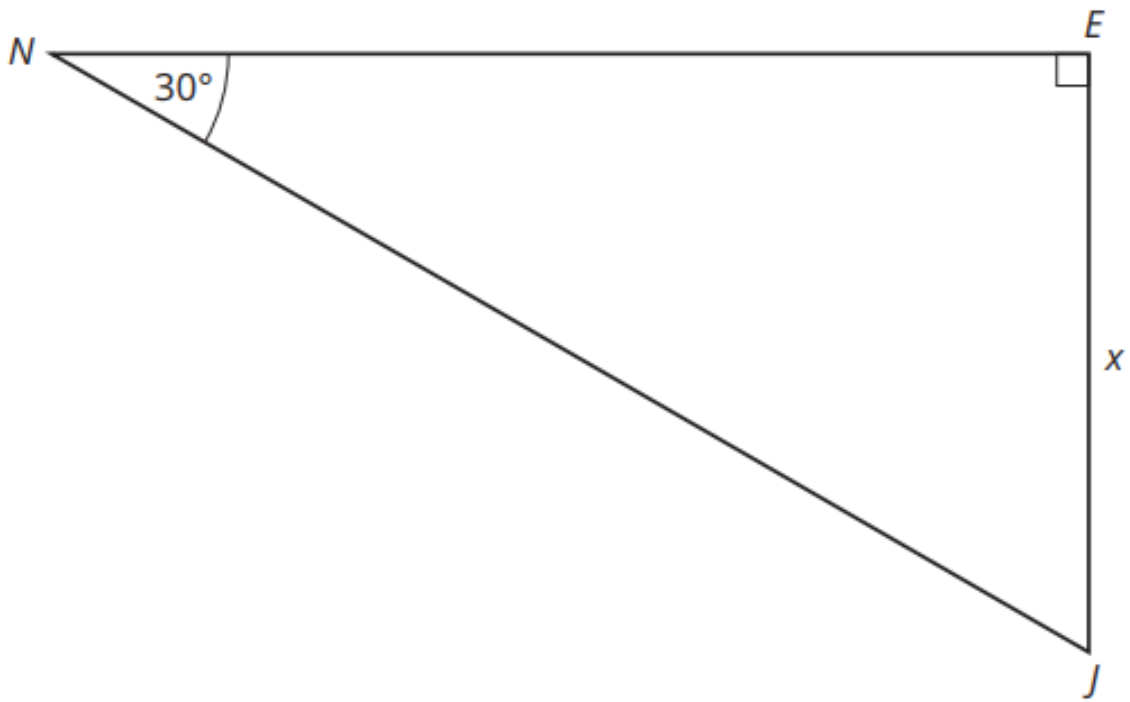
2. **Measure each of the sides of the similar right triangles in millimeters. Record the side length measurements in the table.**

Triangle Name	Length of Side Opposite $\angle P$	Length of Side Adjacent to $\angle P$	Length of Hypotenuse
$\triangle PQR$			
$\triangle PDE$			

3. **Determine each side length ratio for the triangles using $\angle P$ as the reference angle.**

Triangle Name	$\frac{\text{side opposite } \angle P}{\text{hypotenuse}}$	$\frac{\text{side adjacent to } \angle P}{\text{hypotenuse}}$	$\frac{\text{side opposite } \angle P}{\text{side adjacent to } \angle P}$
$\triangle PQR$			
$\triangle PDE$			

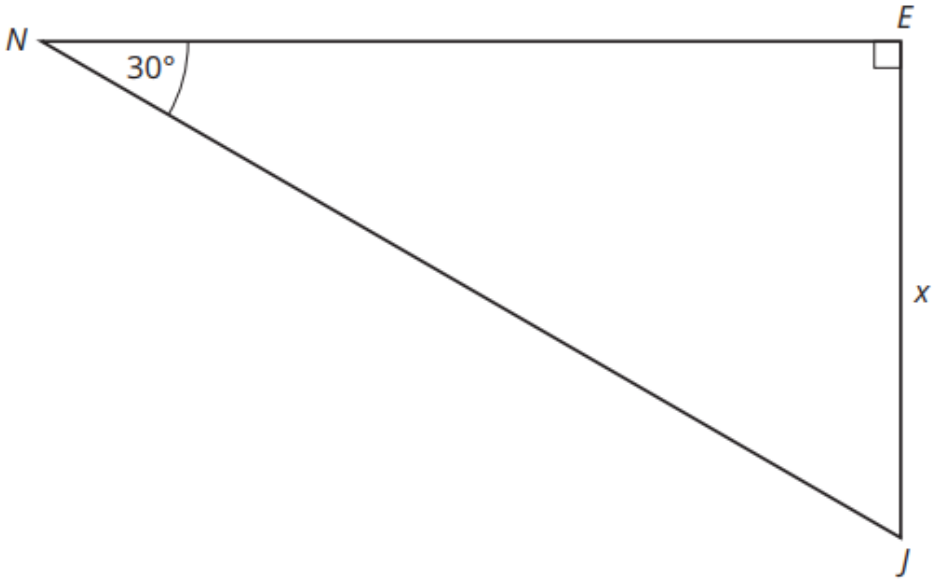
You have estimated certain constant ratios of side lengths in 30°-60°-90° triangles. You can use what you know about the 30°-60°-90° Triangle Theorem to determine the exact ratios.



9. Given a length of the shortest side, *x*, determine the lengths of the other sides of the 30°-60°-90° triangle. Label the triangle.

10. Determine the ratio of the:

a. opposite side length to the length of the hypotenuse.



b. adjacent side length to the length of the hypotenuse.

c. opposite side length to the adjacent side length.