

Special Right Triangles

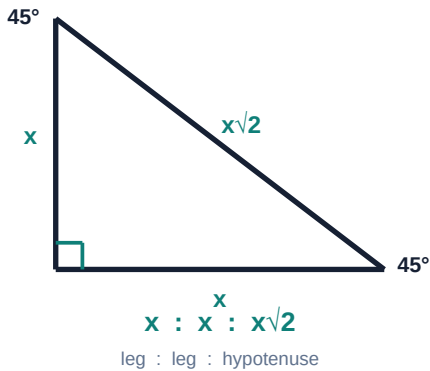
45°-45°-90° • 30°-60°-90°

THE TWO SPECIAL RIGHT TRIANGLES

Match the known side to the ratio, then scale.

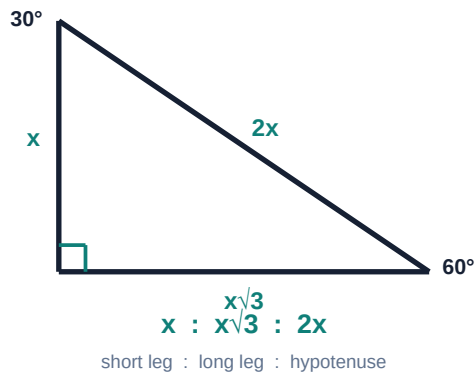
45°-45°-90°

Isosceles right triangle: the legs are equal.



30°-60°-90°

The short leg is always opposite 30°.



ANGLE-TO-SIDE CHECK

90° → hypotenuse 30° → shortest side 60° → long leg

Quick Reference

Keep answers in exact radical form.

Known side	45°-45°-90°	30°-60°-90°
Leg / short leg	other leg = x hyp. = $x\sqrt{2}$	long = $x\sqrt{3}$ hyp. = $2x$
Hypotenuse	leg = $h/\sqrt{2}$	short = $h/2$ long = $(h/2)\sqrt{3}$
Long leg	—	short = long/ $\sqrt{3}$ hyp. = $2(\text{short})$
Recognition	45°, 45°, 90°	30°, 60°, 90°

Fast Examples

45°-45°-90°

Given leg = 6

Other leg = 6

Answer: 6, $6\sqrt{2}$

30°-60°-90°

Given short leg = 5

Long leg = $5\sqrt{3}$

Answer: $5\sqrt{3}$, 10

USE THE SAME PROCESS EVERY TIME

1. Identify the triangle.
2. Match the known side.
3. Solve for x.
4. Find the remaining side(s).