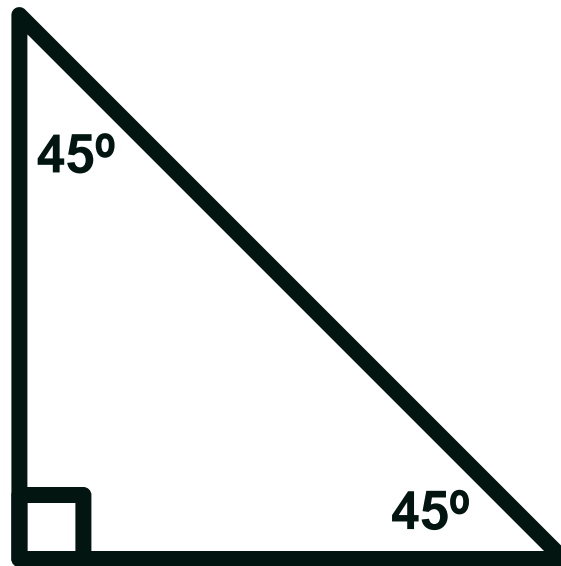


8.5

Special Right Triangles

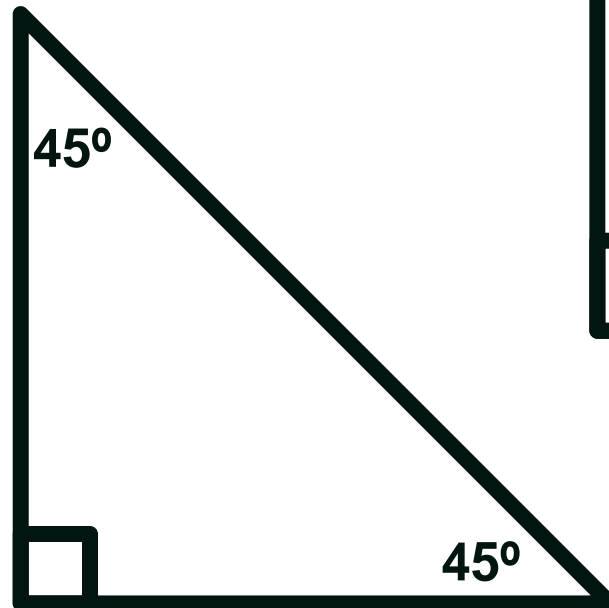
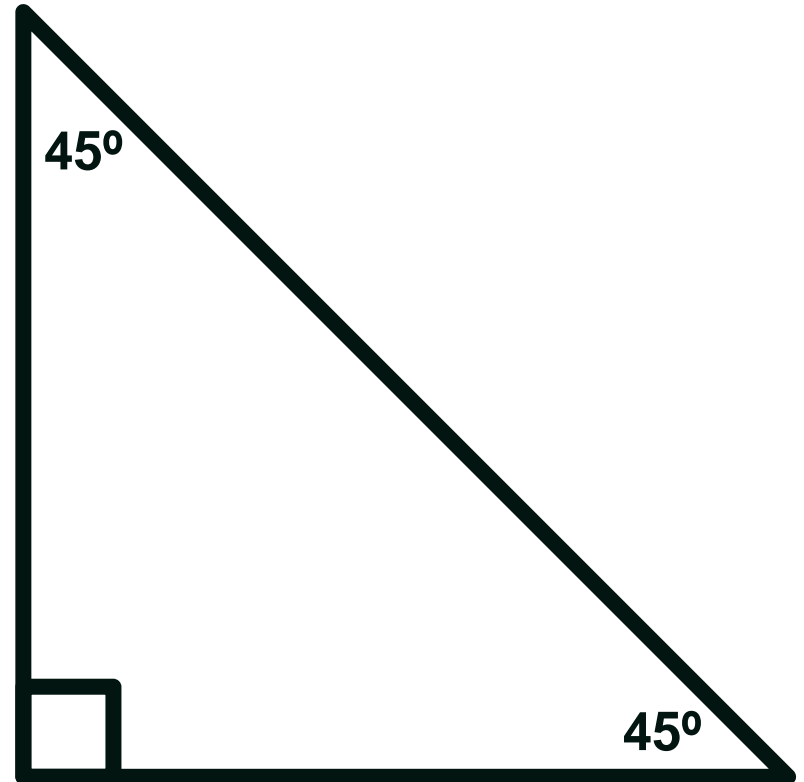
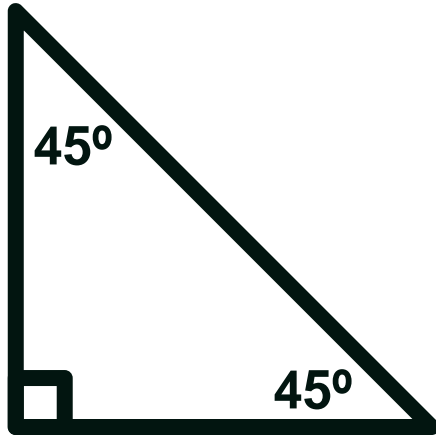
45-45-90 Triangle

An Isosceles Right Triangle



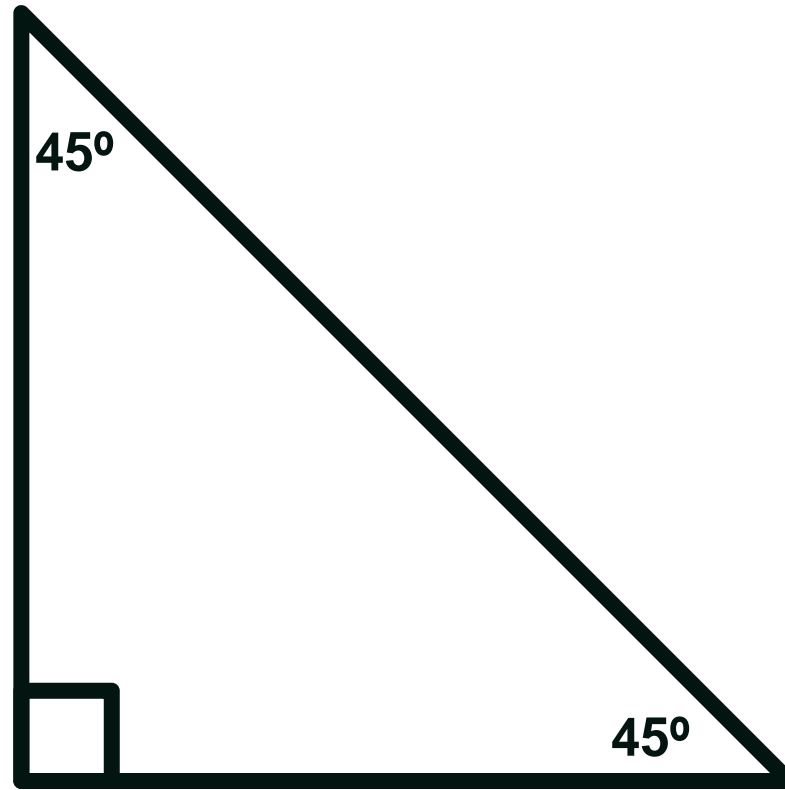
45-45-90 Triangle

An Isosceles Right Triangle

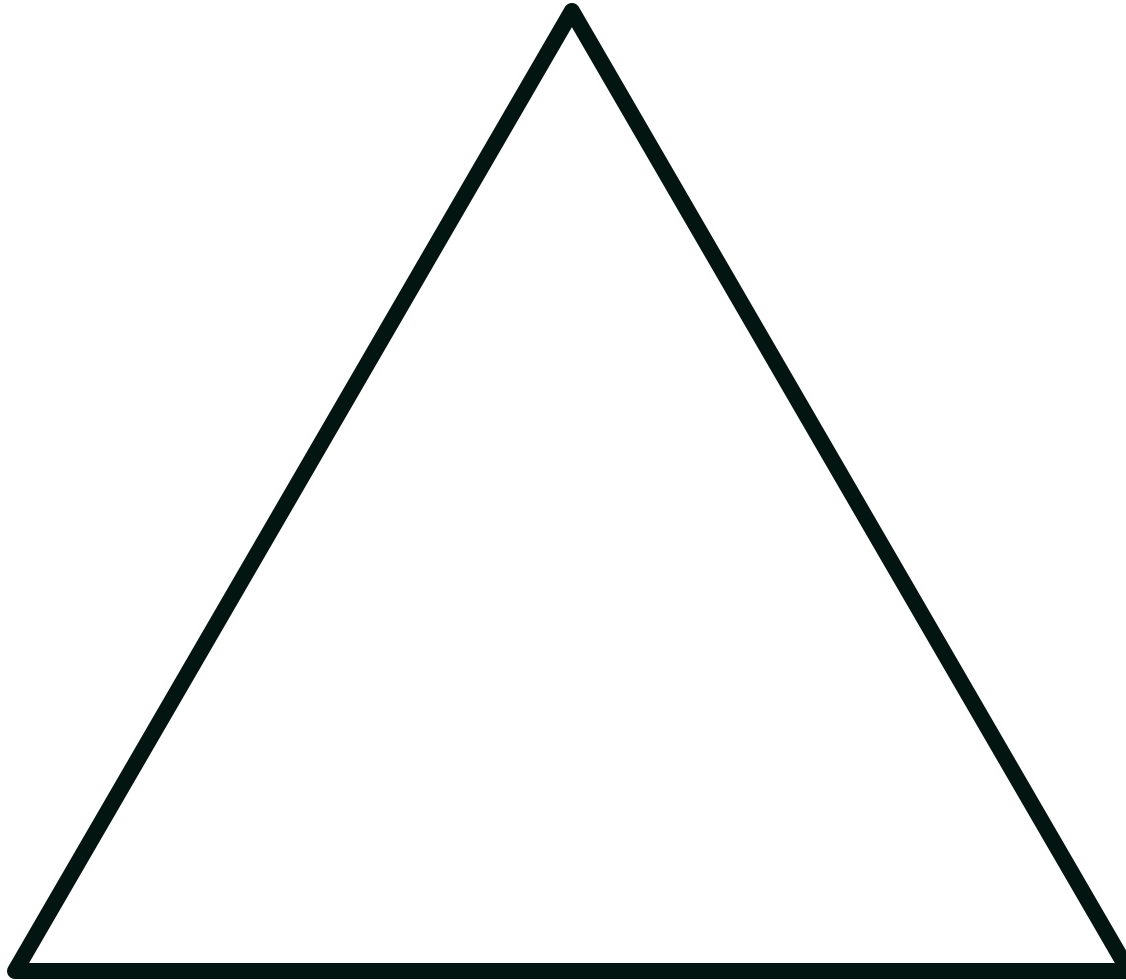


45-45-90 Triangle

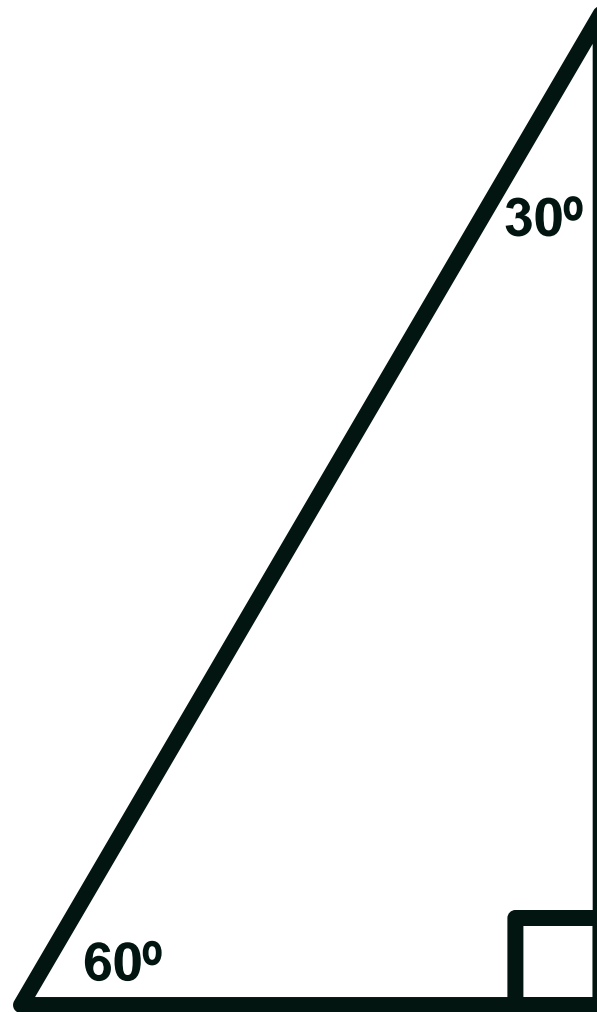
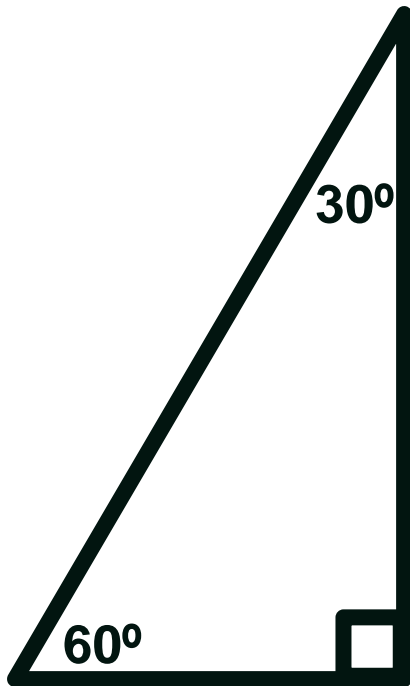
An Isosceles Right Triangle



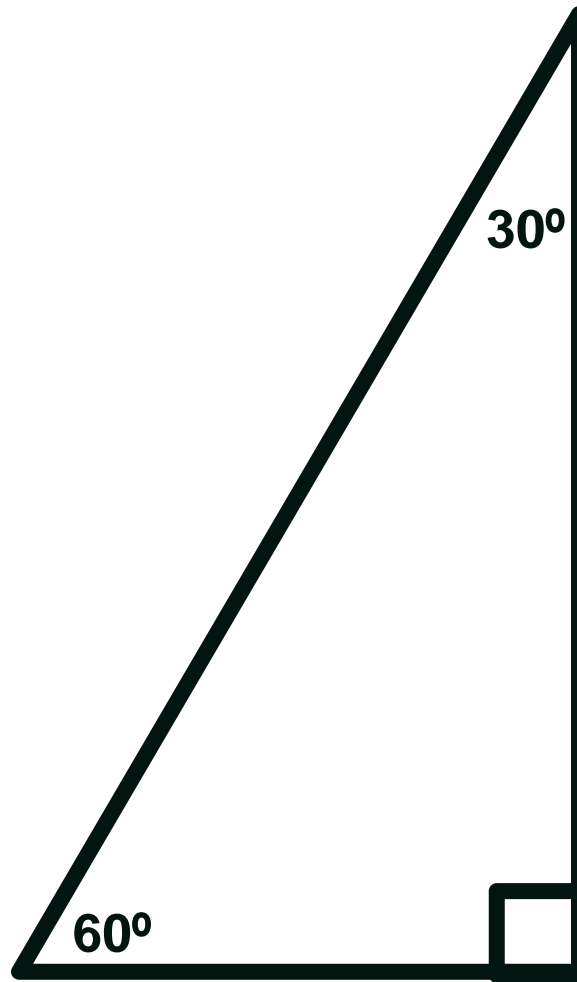
30-60-90 Triangle



30-60-90 Triangle



30-60-90 Triangle



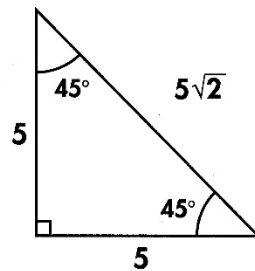
SPECIAL RIGHT TRIANGLES— 45-45-90

Any right triangle contains a 90° angle. The remaining two angles must add up to 90° . When the two angles are each 45° , we have a special triangle called a 45-45-90 triangle.

The properties of a 45-45-90 triangle are as follows:

- 1) both legs are equal in length;
- 2) the hypotenuse is $\sqrt{2}$ times the length of a leg.

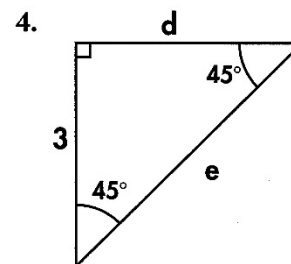
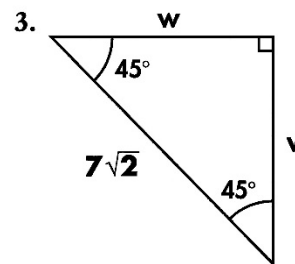
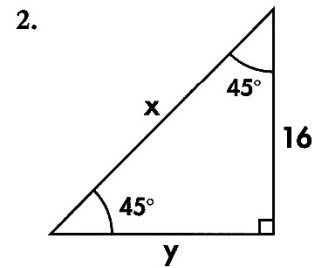
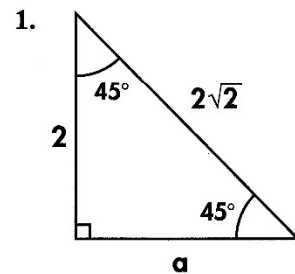
Look at the example below.



OUR SPECIAL
TODAY IS A
45-45-90
TRIANGLE
WITH A BIG,
STEAMING
BOWL OF
HYPOTENUSE
STEW, HON!



Find the missing lengths of the 45-45-90 triangles below.



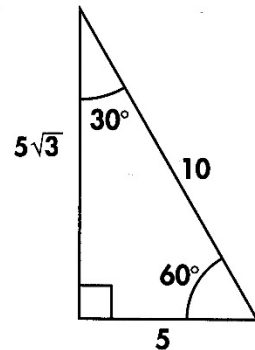
SPECIAL RIGHT TRIANGLES— 30-60-90

Any right triangle contains a 90° angle. The remaining two angles must add up to 90° . When the other two angles are 30° and 60° , we have a special right triangle called a 30-60-90 triangle.

Here are the important properties of a 30-60-90 triangle:

- 1) the hypotenuse is twice as long as the leg opposite the 30° angle;
- 2) the side opposite the 30° angle is half the length of the hypotenuse;
- 3) the side opposite the 60° angle is $\sqrt{3}$ times the length of the shorter leg.

You can see these properties in the triangle below.

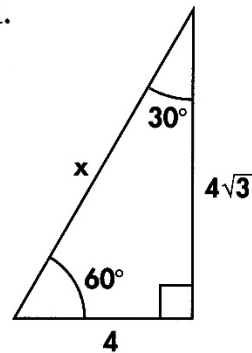


....OOOOH YEAH,
THESE TRIANGLES
ARE SO SPECIAL.
YEAH, THAT'S IT.

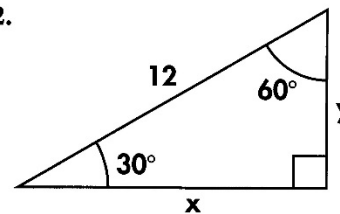


Find the missing sides in the 30-60-90 triangles below.

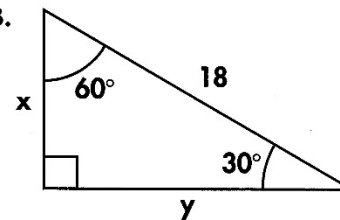
1.



2.



3.



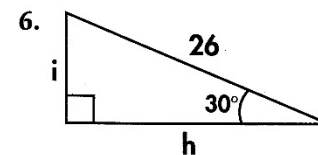
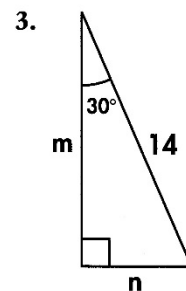
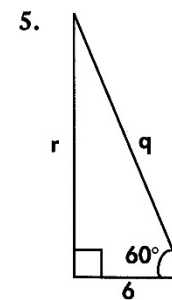
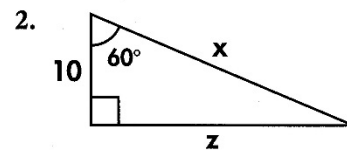
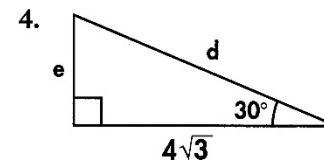
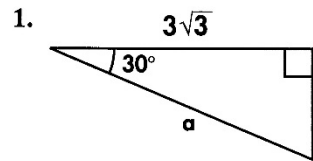
MORE PRACTICE WITH 30-60-90 TRIANGLES



Review the special properties of 30-60-90 triangles below.

- 1) The hypotenuse is twice as long as the leg opposite the 30° angle.
- 2) The side opposite the 30° angle is half the length of the hypotenuse.
- 3) The side opposite the 60° angle is $\sqrt{3}$ times the length of the shorter leg.

Find the missing lengths of the 30-60-90 triangles below.



PRACTICE WITH 45-45-90 TRIANGLES

Use the special properties you have learned about 45-45-90 triangles to find the missing lengths of the triangles below. Here are the properties as a reminder:

- 1) both legs are equal in length;
- 2) the hypotenuse is $\sqrt{2}$ times the length of a leg.

