# Finding Side Lengths in Right Triangles
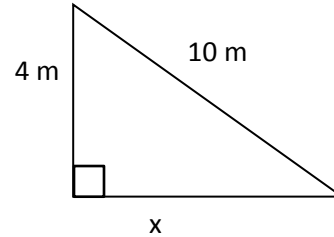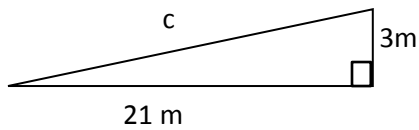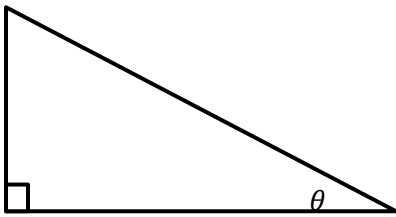
Given 2 sides of a right triangle it is always possible to find the 3$^{rd}$ side using Pythagorean Theorem.
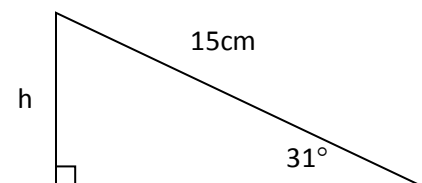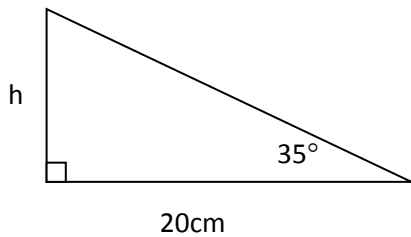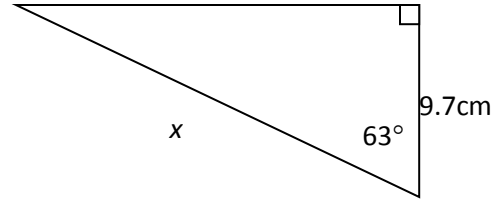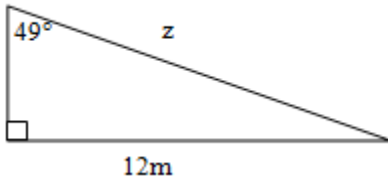
**Examples**



If we know the value of one of the angles of a right triangle (other than the 90$^o$ angle) then we may use the sine, cosine and tangent ratios to find the other sides in the triangle. **SOH CAH TOA**



**Examples**

Find the unknown side in each triangle below.

49°  z

12m

9.7cm

x          63°

A wheelchair ramp is required to have an angle of elevation  (inclination) that is not greater than 8°.  Suppose a wheel chair ramp needs to reach an entranceway that is 4 feet off the ground.  What horizontal length does th wheel chair ramp need to have?

A helicopter spots a boat that needs rescuing.  The helicopter is flying at an elevation of 500m. The angle of depression to the boat is 15°.  How far does the helicopter need to fly so it is directly over top of the boat?

**Text page 184 #6, 7  and page 189 #1 – 2, 5, 7, 8, 12,**