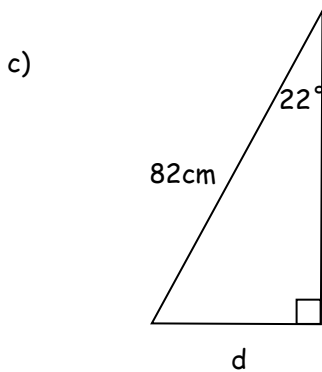
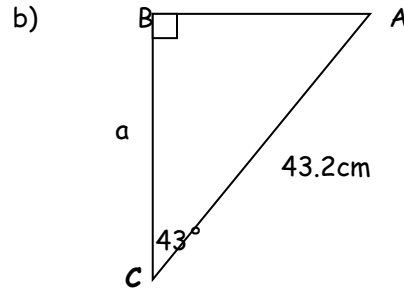
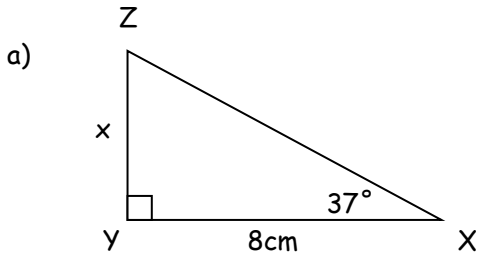


5.1 USE TRIGONOMETRY TO FIND LENGTHS

To find a side length of a right triangle you need to know:

- The length of the other 2 sides.
- The length of one other side and an angle other than the 90° angle.

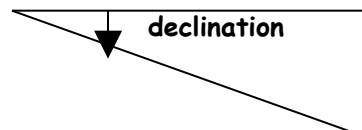
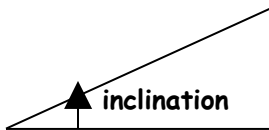
Examples: Determine the length of the unknown side.



Angle of Elevation/Angle of Depression

Angle of Elevation - the angle between the horizontal and the line of sight up to an object.

Angle of Depression - the angle between the horizontal and the line of sight down to an object.



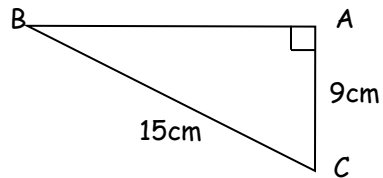
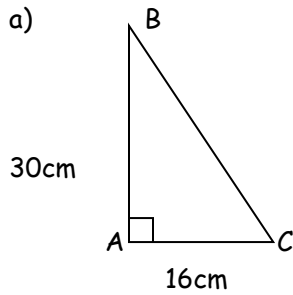
5.1 USE TRIGONOMETRY TO FIND ANGLES

To determine an angle in a right triangle, you need to know

- Two angles (the 90° and another)
- Two side lengths

Examples: Determine angle B in the following triangles.

a)



To **SOLVE** a triangle means to find **ALL** missing side lengths and **ALL** missing angles.

Examples:

1) Solve the following triangles.

- a) $\triangle ABC$ with $\angle B = 90^\circ$, $\angle C = 55^\circ$, and $a = 7\text{cm}$.

b) $\triangle PQR$ with $\angle Q = 90^\circ$, $p = 5\text{cm}$, and $r = 11\text{cm}$.

2. A road rises 22m over a distance of 100m along its surface. Determine the angle of inclination of the road.

3. Sasha looks up and sees a hot air balloon. The balloon has an altitude of 55m and the balloon is 25m away along the horizontal. Determine the angle of elevation from Sasha to the balloon.