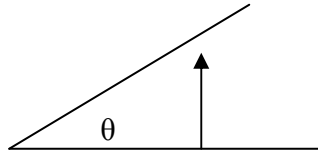


Angles of Elevation and Depression

Angles of Elevation

This is an angle always taken from the horizontal upwards. It is often used in trigonometry questions to describe the position of the angle.



The angle of elevation is the angle from the horizontal upwards

Example 1.

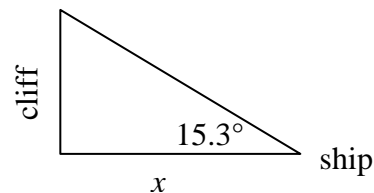
A ship (S) is out at sea. The angle of elevation from the ship to the top of a cliff is 15.3° . If the vertical height of the cliff is 680m, how far away from the foot of the cliff is the ship.

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan 15.3^\circ = \frac{680}{x}$$

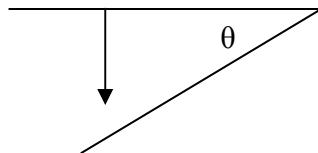
$$x = \frac{680}{\tan 15.3}$$

$$x = 2485.66m$$



Angles of Depression

This is an angle always taken from the horizontal downwards. It is also often used in trigonometry questions to describe the position of the angle.



The angle of depression is the angle from the horizontal downwards

Example 2.

A man (M) is standing on the top of a cliff. He is looking out to sea at a boat. The angle of depression from the man to the boat is 36.8° . If the boat is 1220m away from the foot of the cliff, how high is the cliff.

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan 36.8^\circ = \frac{x}{1220}$$

$$x = \tan 36.8 \times 1220$$

$$x = 921.68m$$

