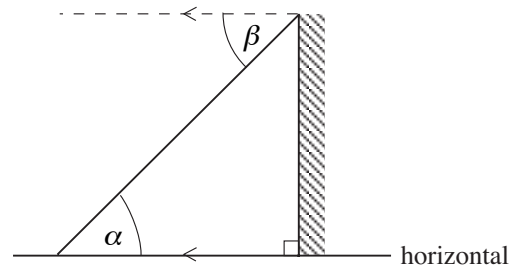


## Sine Rule and Cosine Rule

## Essential information

- the **angle of elevation** ( $\alpha$ ) is the angle made with the horizontal, as shown in the diagram (angle  $\beta$  is called the **angle of depression**).

Angle  $\alpha =$  angle  $\beta$  (alternate angles).



- for any triangle  $ABC$ , the sine rule states

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

and the cosine rule states

$$c^2 = a^2 + b^2 - 2ab \cos C,$$

and similarly,

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$b^2 = c^2 + a^2 - 2ca \cos B$$

