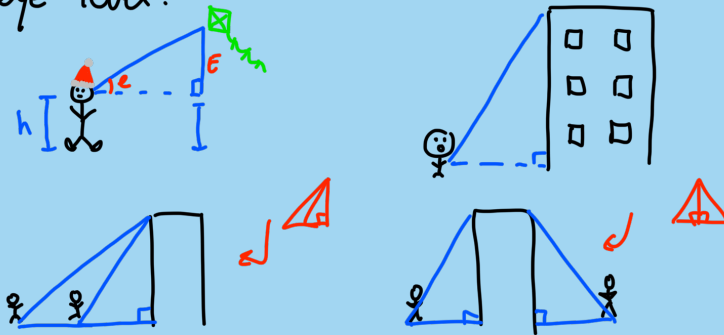# Word Problems

Angle of Elevation (incline)
↳ Angle between the horizontal (sight line) from eye to object <u>above</u> eye level.
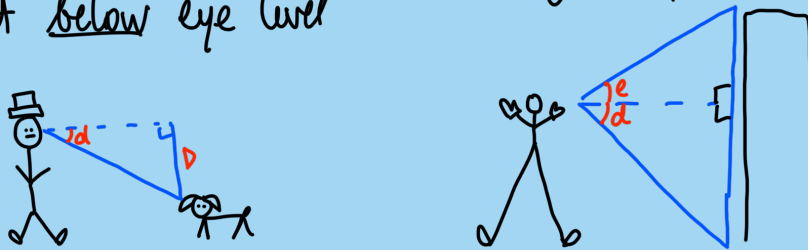
height given?
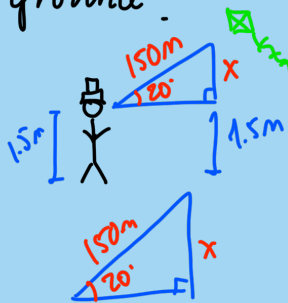↳ Add it
no height?
↳ nothing

Angle of Depression (descent)
↳ Angle between the horizontal (sight line) from eye to an object <u>below</u> eye level

eg. You are flying a kite and let out <u>150m</u> of string. You estimate the angle of elevation to the kite is <u>20°</u>. If you are <u>1.5m</u> tall, how high is the kite from the ground?

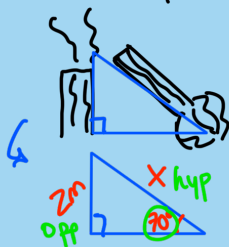let x represent the distance from your face to the kite vertically.

$$\sin 20° = \frac{x}{150}$$
$$150\sin 20° = x$$
$$\boxed{x \approx 51.3}$$

∴ The distance is <u>52.8m</u>

eg. A tree is splintered by lightning 2m up its trunk, so that the top part of the tree touches the ground. The angle the top of the tree forms with the ground is 70°. Before it was splintered, how tall was the tree?

let x represent the top part of the tree.

$$\sin 70° = \frac{2}{x}$$
$$x\sin 70° = 2$$
$$x = \frac{2}{\sin 70°}$$
$$\boxed{x \approx 2.1m}$$

∴ The height of the tree is <u>4.1 m</u>.