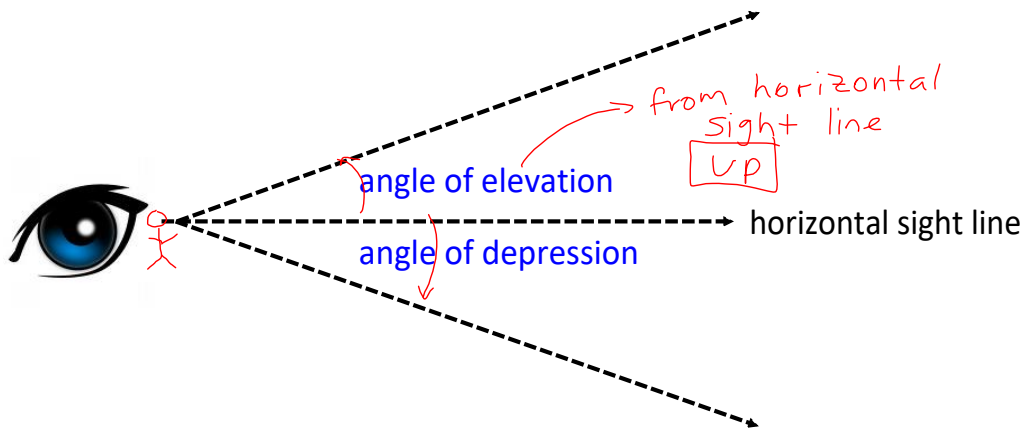


## 6.4 Problems: Primary Trig Ratios

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Ex. 1 A searchlight is mounted at the front of a search and rescue helicopter. The pilot is flying the helicopter 150 m above the ground and the beam hits the ground at  $70^\circ$  from the horizontal. The beam spreads out at an angle of  $5^\circ$ . How wide is the beam when it hits the ground?

$180 - 110 - 5 = 65^\circ$

$\tan 70 = \frac{150}{b}$

$b = \frac{150}{\tan 70}$

$b = 54.5$

$\tan 65 = \frac{150}{a}$

$a = \frac{150}{\tan 65}$

$a = 70$

$x = a - b = 70 - 54.5 = 15.5 \text{ m}$