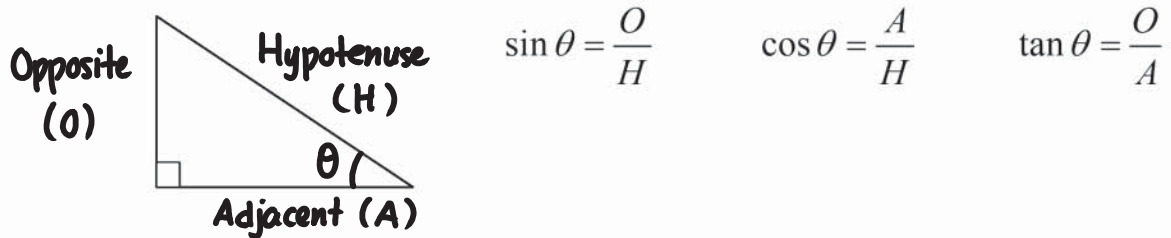
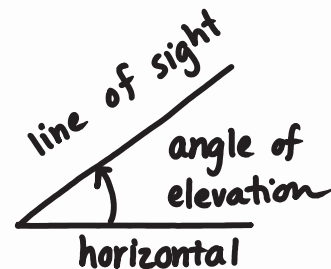
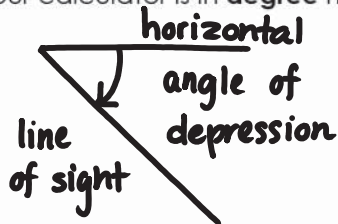


### C. Trigonometry

Trigonometry is the study of the relationship between side lengths and angles of triangles.

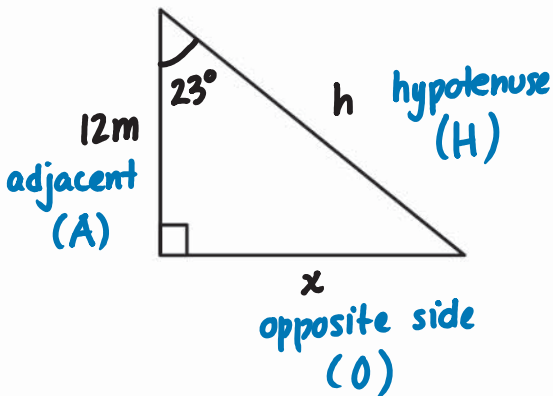


\* Make sure your calculator is in degree mode! \*



EXAMPLES:

a) Find the lengths of the missing sides (Express your answer with 3 sig. figs)



$$12 (\tan 23^\circ) = \frac{x}{12}$$

$$\begin{aligned} x &= 12 (\tan 23^\circ) \\ &= 12 (0.4243) \\ &= 5.0937 \end{aligned}$$

$$x = 5.09 \text{ m}$$

$$h (\cos 23^\circ) = \frac{12}{h}$$

$$\frac{h (\cos 23^\circ)}{\cos 23^\circ} = \frac{12}{\cos 23^\circ}$$

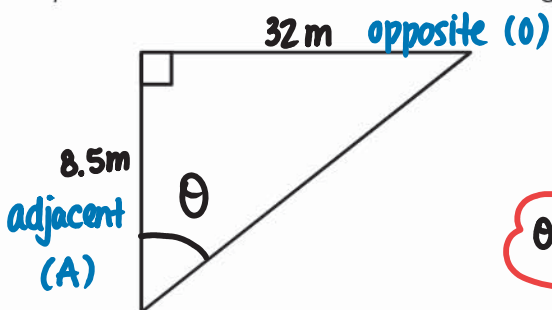
$$h = \frac{12}{\cos 23^\circ}$$

$$= \frac{12}{0.9205}$$

$$= 13.0363$$

$$h = 13.0 \text{ m}$$

b) Find the measure of the indicated angle.



$$\tan \theta = \frac{32}{8.5}$$

$$\theta = \tan^{-1} \left( \frac{32}{8.5} \right)$$

$$\theta = \tan^{-1} (3.7647)$$

$$\theta = 75.124^\circ$$

$$\theta = 75^\circ$$

## D. Solving Equations

Rearranging equations in terms of one variable. (In other words, we want to isolate the variable).

**Example:** Solve for the indicated variable:

a)  $24 = 3v_i + 9$

$$\begin{array}{r} 24 = 3v_i + 9 \\ -9 \qquad -9 \end{array}$$

$$\frac{15}{3} = \frac{3v_i}{3}$$

$$5 = v_i$$

b)  $4x = 5 - 6x$

$$\begin{array}{r} 4x = 5 - 6x \\ +6x \quad +6x \end{array}$$

$$\frac{10x}{10} = \frac{5}{10}$$

$$x = \frac{5}{10} = \frac{1}{2}$$

$$x = 0.5$$

c)  $36 + 6 - 5x^2 = 0$

$$42 - 5x^2 = 0$$

$$\begin{array}{r} +5x^2 \quad +5x^2 \end{array}$$

$$\frac{42}{5} = \frac{5x^2}{5}$$

$$\sqrt{8.4} = \sqrt{x^2}$$

$$\pm 2.898 = x$$

$$\pm 2.90 = x$$