

Mid-Chapter Review

1. What is the value of x , to one decimal place?

$$\text{a) } \sin 72^\circ = \frac{x}{28}$$

$$28 \times \sin 72^\circ = x$$

$$26.629... = x, \text{ or } 26.6$$

$$\text{b) } \cos 35^\circ = \frac{8}{x}$$

$$x \times \cos 35^\circ = 8$$

$$x = \frac{8}{\cos 35^\circ}$$

$$x = 9.766..., \text{ or } 9.8$$

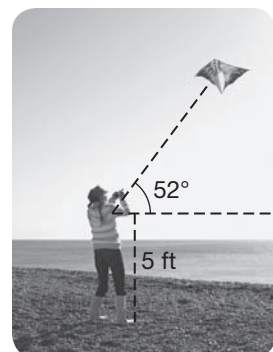
2. Aiko is flying a kite. She is using a string that is 95 ft long. How high above the ground is the kite?

$$\text{e.g., } \sin 52^\circ = \frac{h}{95}, \text{ where } h \text{ is the height above Aiko's hand}$$

$$95 \times \sin 52^\circ = h, \text{ or } h = 74.861... \text{ ft}$$

$$5 \text{ ft} + 74.861... \text{ ft} = 79.861... \text{ ft}$$

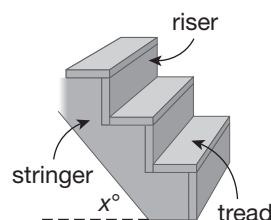
The kite is about 80 ft above the ground.



3. Yanek builds custom decks. The stairs for a customer have a riser of 160 mm and tread of 290 mm. What is the angle of elevation, x° , of the stringer, to the nearest degree?

$$\text{e.g., } \tan x^\circ = \frac{160}{290}$$

$$x^\circ = \tan^{-1}\left(\frac{160}{290}\right), \text{ or } 28.888...^\circ \text{ The angle of elevation is } 29^\circ.$$



4. An observer is on the Calgary Tower Observation Deck, 157.5 m above the ground. She estimates the angle of depression to a nearby building as 40° . The building is 61 m away from the Calgary Tower. How tall is the building?

$$\text{e.g., } \tan 40^\circ = \frac{h}{61}, \text{ where } h \text{ is the difference in height}$$

$$61 \times \tan 40^\circ = h$$

$$51.185... = h$$

$$\text{Height of building} = 157.5 \text{ m} - 51.185... \text{ m, or } 106.314... \text{ m}$$

The building is about 106 m tall.

