

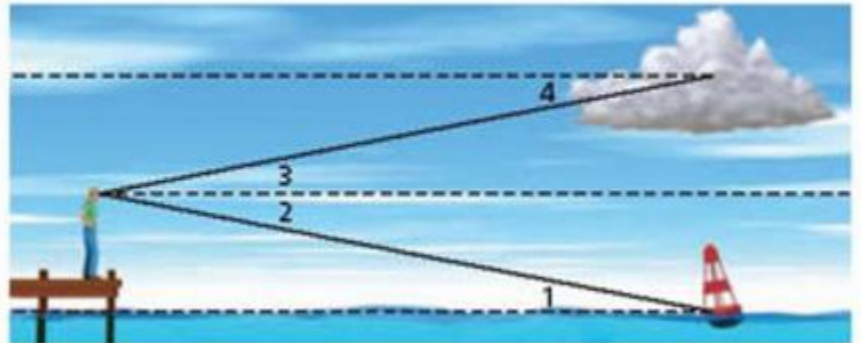
Name: *Key*

8.4 Book Work

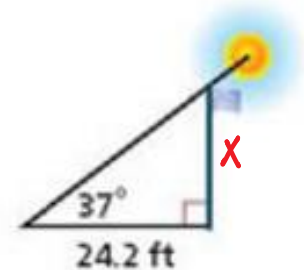
Pg. 565 #3-6, 7, 8, 15, 24

Classify each angle as an angle of elevation or angle of depression.

- 3.  $\angle 1$  *elevation*
- 4.  $\angle 2$  *depression*
- 5.  $\angle 3$  *elevation*
- 6.  $\angle 4$  *depression*



7. **Measurement** When the angle of elevation to the sun is  $37^\circ$ , a flagpole casts a shadow that is 24.2 ft long. What is the height of the flagpole to the nearest foot?

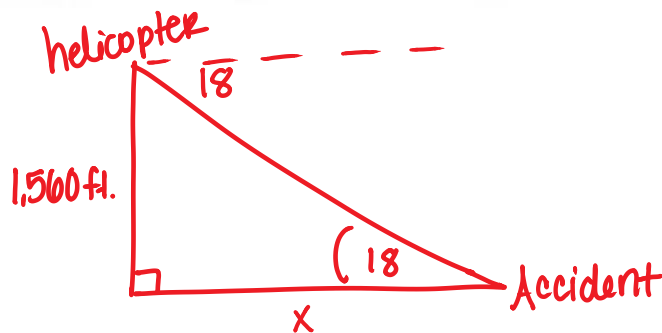


$$\tan 37 = \frac{x}{24.2}$$

$$24.2 \cdot \tan 37 = x$$

$$x = 18.24 \text{ ft.}$$

8. **Aviation** The pilot of a traffic helicopter sights an accident at an angle of depression of  $18^\circ$ . The helicopter's altitude is 1560 ft. What is the horizontal distance from the helicopter to the accident? Round to the nearest foot.

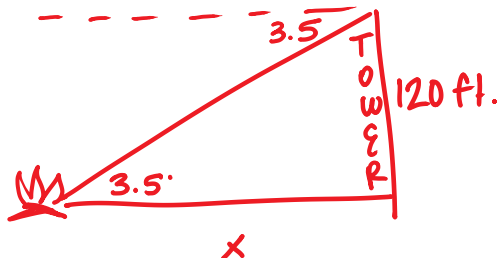


$$\tan 18 = \frac{1560}{x}$$

$$x \cdot \frac{\tan 18}{\tan 18} = \frac{1560}{\tan 18}$$

$$x = 4,801.19 \text{ ft.}$$

15. **Forestry** A forest ranger in a 120 ft observation tower sees a fire. The angle of depression to the fire is  $3.5^\circ$ . What is the horizontal distance between the tower and the fire? Round to the nearest foot.



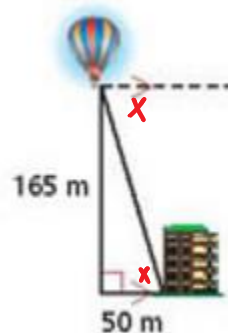
$$\tan 3.5 = \frac{120}{x}$$

$$x \cdot \tan 3.5 = 120$$

$$x = \frac{120}{\tan 3.5}$$

$$x = 1,961.98$$

24. An observer in a hot-air balloon sights a building that is 50 m from the balloon's launch point. The balloon has risen 165 m. What is the angle of depression from the balloon to the building? Round to the nearest degree.



$$\tan x = \frac{165}{50}$$

$$x = \tan^{-1} \left( \frac{165}{50} \right)$$

$$x = 73.14^\circ$$