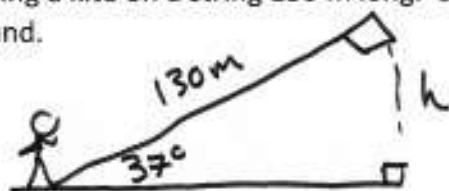


For each problem, first draw the diagram and then solve for the requested information.

(All answers to 2 decimal places, unless otherwise instructed.)

1. Sharon is flying a kite on a string 130 m long. Determine the height of the kite if the string is at an angle of 37° to the ground.



$$\sin 37^\circ = \frac{h}{130}$$

$$h = (\sin 37^\circ)(130)$$

$$h = 78.24 \text{ m}$$

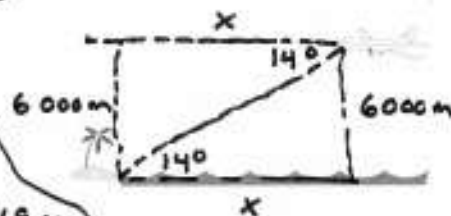
THE HEIGHT OF THE KITE IS 78.24 m.

2. An airplane is flying at an altitude of 6000 m over the ocean directly toward an island. When the angle of depression of the coastline from the airplane is 14° , how much farther does the airplane have to fly before it crosses the coast?

$$\tan 14^\circ = \frac{6000}{x} \quad x = \frac{6000}{\tan 14^\circ}$$

$$(\tan 14^\circ)(x) = 6000 \quad x = 24,064.69 \text{ m}$$

HORIZONTAL DISTANCE IS 24,064.69 m



3. A loading ramp is 25 m long with a height of 10 m. What is the horizontal distance of the ramp and what is the angle of incline that the ramp forms with the ground?

$$10^2 + x^2 = 25^2$$

$$x^2 = 525$$

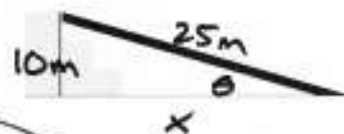
$$x = 22.91 \text{ m}$$

$$\sin \theta = \frac{10}{25}$$

$$\sin^{-1}(10/25) = \theta$$

$$\theta = 23.58^\circ$$

THE HORIZONTAL DISTANCE IS 22.91 m AND THE ANGLE OF INCLINE IS 23.58°



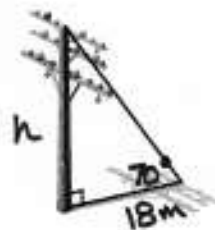
4. A telephone pole casts a shadow 18 m long when the sun's rays strike the ground at an angle of 70° . How tall is the pole?

$$\tan 70^\circ = \frac{h}{18}$$

$$h = (\tan 70^\circ)(18)$$

$$h = 49.45 \text{ m}$$

THE HEIGHT OF THE POLE IS 49.45 m

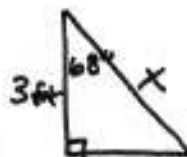


5. How long must a brace to a Satellite Dish be if it is attached to the antenna 3 ft above the ground and forms an angle of 68° with the antenna?

$$\cos 68^\circ = \frac{3}{x} \quad x = \frac{3}{\cos 68^\circ}$$

$$(\cos 68^\circ)(x) = 3 \quad x = 8.01 \text{ m}$$

THE BRACE IS 8.01 ft



6. Mike Patterson looks out the attic window of his home, which is 22 ft above the ground. At an angle of elevation of 35° he sees a bird sitting at the very top of the large high rise apartment building down the street. How tall is the high rise apartment building, if the two buildings are 75 ft apart?

$$\tan 35^\circ = \frac{x}{75}$$

$$x = (\tan 35^\circ)(75)$$

$$x = 52.52 \text{ ft}$$

$$\text{HEIGHT} = 22 + 52.52 = 74.52 \text{ ft}$$

THE HIGH RISE BUILDING IS 74.52 ft

