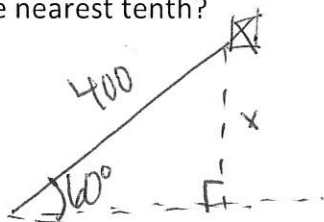


Name: Key Hour: _____

11.5 Trig Application Problems

1. The taut string of a kite makes an angle with the ground of 60° . The length of the string is 400 feet. What is the height of the kite, to the nearest tenth?

346.4 ft



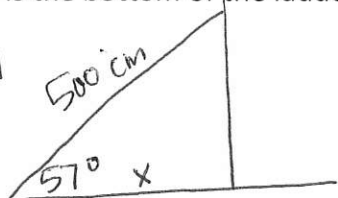
$$\sin 60 = \frac{x}{400}$$

$$400 \sin 60 = x$$

$$x = 346.4 \text{ ft}$$

2. A ladder, 500 cm long, leans against a building. If the angle between the ground and the ladder is 57° , how far from the wall is the bottom of the ladder? Found the answer to the nearest tenth.

272.3 cm



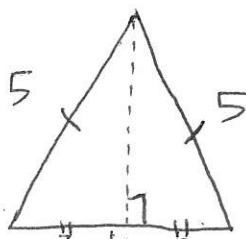
$$\cos 57 = \frac{x}{500}$$

$$500 \cos 57 = x$$

$$x = 272.3 \text{ cm}$$

3. An isosceles triangle has sides length 5,5,6. Find the measure, to the nearest degree, of each angle of the triangle. (Hint: draw the altitude)

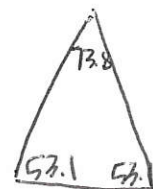
$53^\circ, 53^\circ, 74^\circ$



$$\cos x = \frac{3}{5}$$

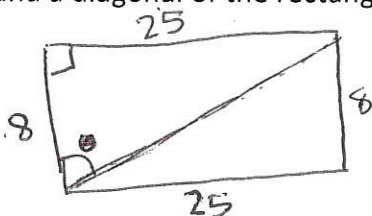
$$x = \cos^{-1} \frac{3}{5}$$

$$x = 53.1$$



4. The sides of a rectangle are 25 cm and 8 cm. What is the measure, to the nearest degree, of the angle formed by the short side and a diagonal of the rectangle?

72°



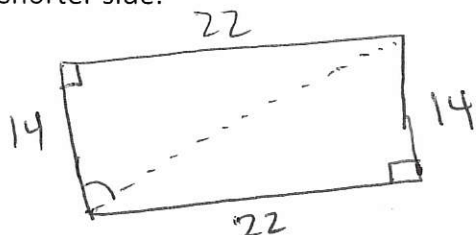
$$\tan \theta = \frac{25}{8}$$

$$\theta = \tan^{-1} \frac{25}{8}$$

$$\theta = 72.3^\circ$$

5. The lengths of a pair of adjacent sides of a rectangle are 14 and 22. Find, to the nearest degree, the angle a diagonal makes with the shorter side.

58°



$$\tan \theta = \frac{22}{14}$$

$$\theta = \tan^{-1} \frac{22}{14}$$

$$\theta = 57.5^\circ \rightarrow 58^\circ$$

6. A kite is flying 115 ft above the ground. The length of the string to the kite is 150 ft, measured from the ground. Find the angle, to the nearest degree, that the string makes with the ground.

50°

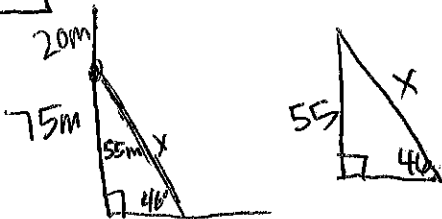


$$\sin \theta = \frac{115}{150}$$

$$\theta = \sin^{-1} \frac{115}{150} = 50.1^\circ$$

7. An observation tower is 75 m high. A support wire is attached to the tower 20 m from the top. If the support wire and the ground form an angle of 46° , what is the length of the support wire, to the nearest tenth?

76.5 m

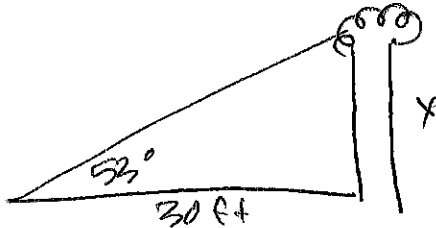


$$\sin 46 = \frac{55}{x}$$

$$x = \frac{55}{\sin 46} \quad x = 76.5$$

8. At a point 30 feet from the base of a tree, the angle formed with the ground looking to the top measures 53° . Find, to the nearest foot, the height of the tree.

40 ft



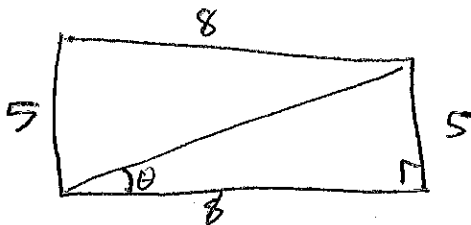
$$\tan 53 = \frac{x}{30}$$

$$30 \tan 53 = x$$

$$x = 39.8 \text{ ft}$$

9. The base of a rectangle measures 8 feet and the altitude measures 5 feet. Find to the nearest degree, the measure of the angle that the diagonal makes with the base.

32°

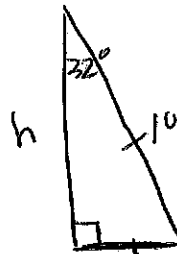
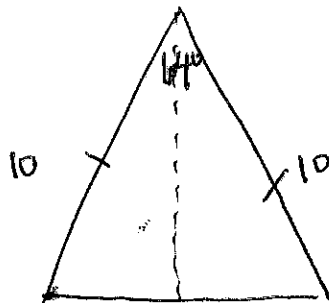


$$\tan \theta = \frac{5}{8}$$

$$\theta = \tan^{-1} \frac{5}{8} \quad \theta = 32.005$$

10. In an isosceles triangle the vertex angle measures 64° and each leg measures 10 inches, find, to the nearest tenth of an inch, the length of the altitude to the base.

8.5 in



$$\cos 32 = \frac{h}{10}$$

$$10 \cos 32 = h$$

$$h = 8.48$$