8-5 Angles of Elevation and Depression HW
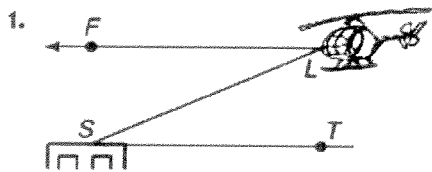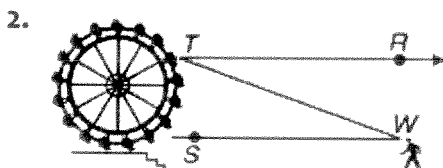
Name _____
Date _____ Block _____

Name the angle of angle of elevation and angle of depression in each figure. Use 3 letters.

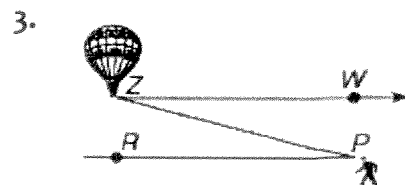1.

∠ of elevation: ∠TSL

∠ of depression: ∠FLS

2.

∠ of elevation: ∠SWT
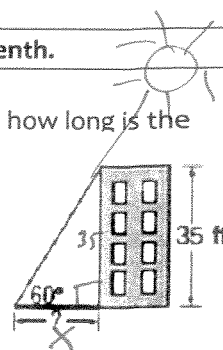
∠ of depression: ∠RTW

3.

∠ of elevation: ∠RPZ

∠ of depression: ∠WZP

Solve each word problem. Draw a picture or use the one given. Round all answers to the nearest tenth.

4. Suppose the sun casts a shadow off a 35-foot building. If the angle of elevation to the sun is 60°, how long is the shadow?

$$\tan 60 = \frac{35}{x} \qquad x = \frac{35}{\tan 60} \qquad x = 20.207$$
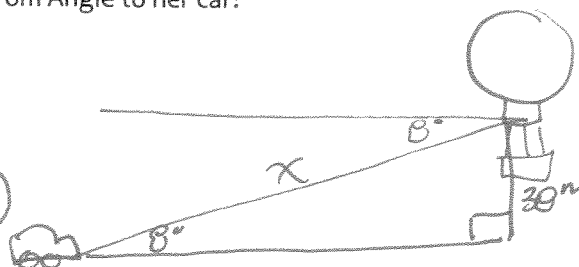
$\boxed{20.2 \text{ ft.}}$

5. From her position in a hot-air balloon, Angie can see her car parked in a field. If the angle of depression is 8° and Angie is 38 meters above the ground, what is the straight-line distance from Angie to her car?

Same as # 5 on the notes!

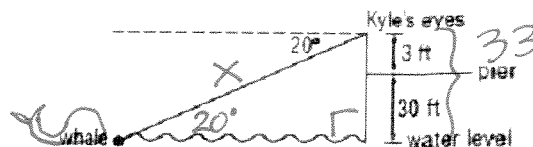$$\sin 8 = \frac{38}{x} \qquad x = \frac{38}{\sin 8}$$

273.04 $\boxed{273.0 \text{ m.}}$

6. Kyle is at the end of a pier 30 feet above the ocean. His eye level is 3 feet above the pier. He is using binoculars to watch a whale surface. If the angle of depression of the whale is 20°, how far is the whale from Kyle's binoculars?

$$\sin 20 = \frac{33}{x} \qquad x = \frac{33}{\sin 20} \qquad x = 96.4855$$

$\boxed{96.5 \text{ ft.}}$
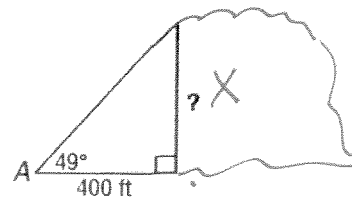
Kyle's eyes
3 ft 33
pier
30 ft
water level

7. The angle of elevation from point A to the top of a hill is 49°. If point A is 400 feet from the base of the hill, how high is the hill?

$$\tan 49 = \frac{x}{400} \qquad x = 400 \tan 49$$
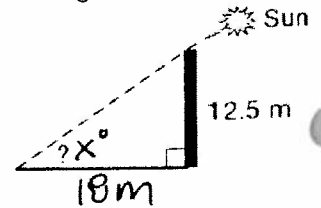
$$x = 460.147$$

$\boxed{460.1 \text{ ft.}}$

8. Find the angle of elevation of the Sun when a 12.5-meter-tall telephone pole casts an 18-meter-long shadow.

$$\tan x = \frac{12.5}{18} \qquad x = 34.777$$

$$\boxed{34.8°}$$
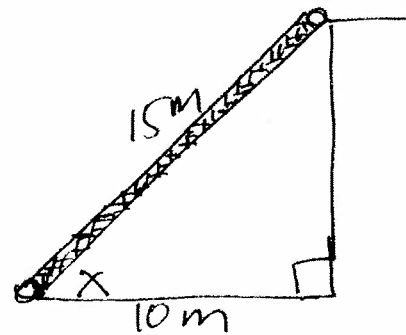
☀ Sun

12.5 m

?X°

18m

9. A 15 meter pole is leaning against a wall. The foot of the pole is 10 meters from the wall. Find the measure of the angle the pole makes with the ground.

$$\cos x = \frac{10}{15} \qquad x = 48.189$$

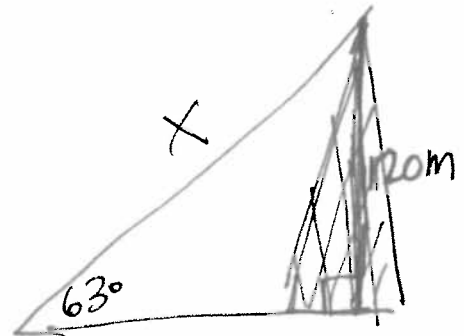$$\boxed{48.2°}$$

15m

X

10 m

10. A guy wire reaches from the top of a 120 meter television transmitter tower to the ground. The wire makes a 63° angle with the ground. Find the length of the guy wire.

$$\sin 63 = \frac{120}{x} \qquad x = \frac{120}{\sin 63} \qquad 134.679$$
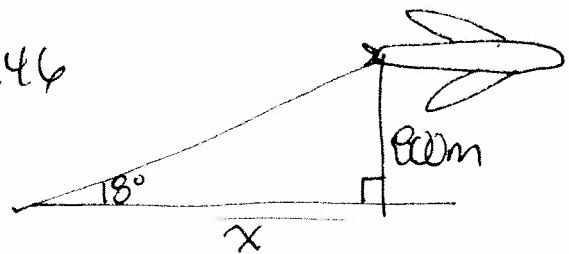
$$\boxed{134.7 m}$$

X

120m

63°

11. A small airplane climbs at an angle of 18° with the ground. Find the horizontal distance it has flown when it has reached an altitude of 800 meters.

$$\tan 18 = \frac{800}{x} \qquad x = \frac{800}{\tan 18} \qquad 2462.146$$

$$\boxed{2462.1 m}$$

18°

800m

X

12. Justice is flying a kite and has let out 80 meters of string. The angle of elevation with the ground is 40°. If the string is stretched straight, how high is the kite above the ground?

$$\sin 40 = \frac{x}{80} \qquad x = 80 \sin 40$$

$$x = 51.423$$

$$\boxed{51.4 m}$$

80m

40°

X