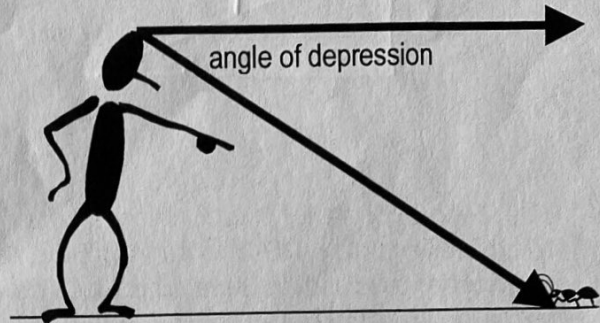
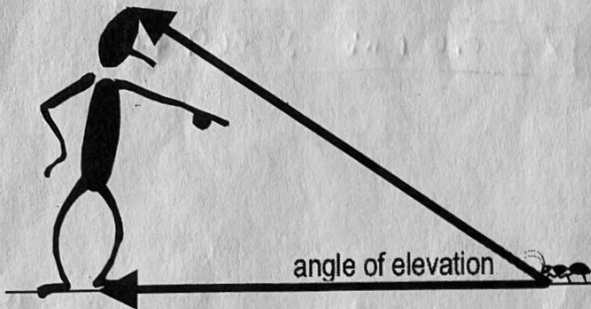


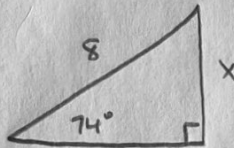
Right Triangle Trig Applications: Practice

Name Key

Period _____ Date _____



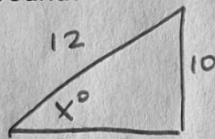
1. An 8-foot ladder leaning against a wall makes an angle of 74° with the ground. How high up the wall does the ladder go?



$$\sin 74 = \frac{x}{8}$$

$$x = 7.69 \text{ ft}$$

2. A 12-foot ladder goes 10 feet up a wall. What angle does the ladder make with the ground?



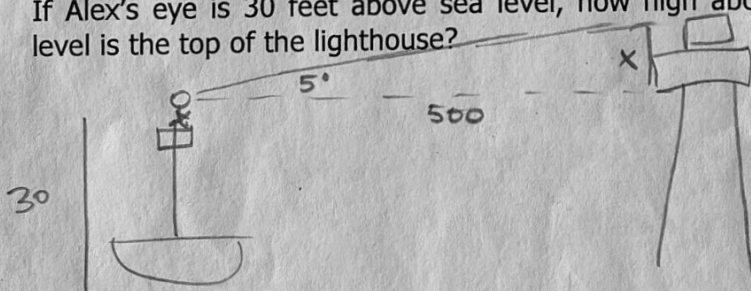
$$\sin x = \frac{10}{12}$$

$$\sin x = 0.833$$

$$x = 56.44^\circ$$

3. Alex is standing in the crow's nest of a ship, 500 feet away from a lighthouse. The angle of incline is 5° . How high above Alex is the top of the lighthouse?

If Alex's eye is 30 feet above sea level, how high above sea level is the top of the lighthouse?

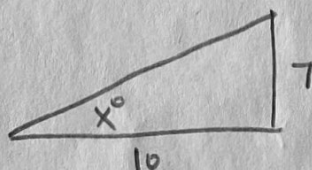


$$\tan 5^\circ = \frac{x}{500}$$

$$x = 43.74 \text{ ft.}$$

$$43.74 + 30 = 73.74 \text{ ft}$$

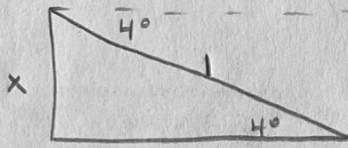
4. What is the angle of elevation of a staircase that rises 7 inches for every 10 inches of horizontal "run"?



$$\tan x = \frac{7}{10}$$

$$x = 34.99^\circ$$

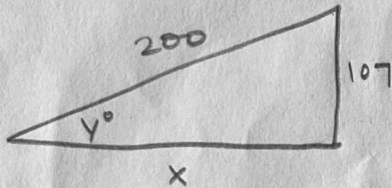
5. The angle of depression on I-24 in Mont Eagle, Tennessee is 4° . For every mile of road (diagonally), what is the change in height in miles? In feet?



$$\sin 4^\circ = \frac{x}{1}$$

$$x = 0.07 \text{ mi} \approx 369 \text{ ft}$$

6. The Georgia Scorcher travels over 200 feet of track (diagonally) to rise 107 feet during the initial climb. What is the horizontal distance traveled during this climb? What is the angle of elevation?



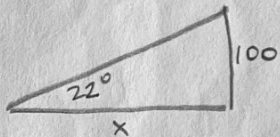
$$200^2 = 107^2 + x^2$$

$$x = 168.97 \text{ ft}$$

$$\sin y = \frac{107}{200}$$

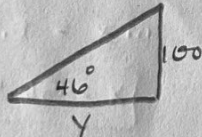
$$y = 32.34^\circ$$

7. From the top of a 100 ft. tall building, a man observes a car moving toward the building. If the angle of depression of the car changes from 22° to 46° during the period of observation, how far does the car travel?



$$\tan 22^\circ = \frac{100}{x}$$

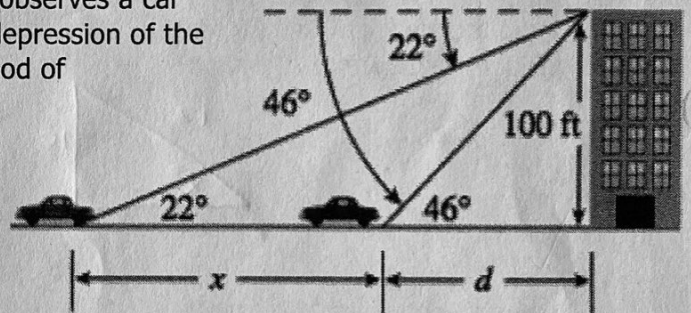
$$x = 247.5 \text{ ft}$$



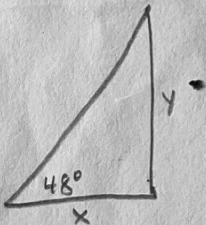
$$\tan 46^\circ = \frac{100}{y}$$

$$y = 96.57$$

$$247.5 - 96.57 = 151 \text{ ft.}$$

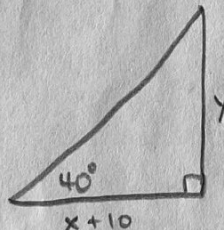


8. A large, helium filled balloon is moored at the beginning of a parade route. Two cables attached to the underside of the balloon make angles of 48° and 40° with the ground and are in the same plane as a perpendicular line from the balloon to the ground. If the cables are attached to the ground 10 ft from each other, how high above the ground is the balloon?



$$\tan 48^\circ = \frac{y}{x}$$

$$x(\tan 48^\circ) = y$$



$$\tan 40^\circ = \frac{y}{x+10}$$

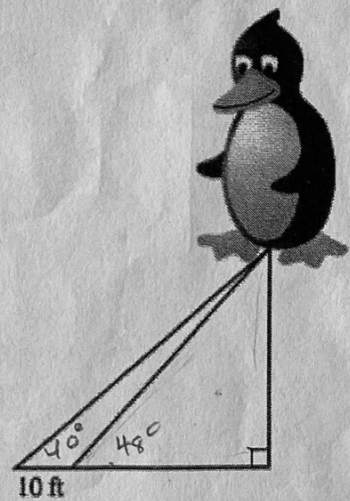
$$x+10(\tan 40^\circ) = y$$

$$x(\tan 48^\circ) = x+10(\tan 40^\circ)$$

$$1.11x = .839x + 8.39$$

$$.271x = 8.39$$

$$x = 30.95$$



$$\tan 48^\circ = \frac{y}{30.95}$$

$$y = 34.37 \text{ ft}$$