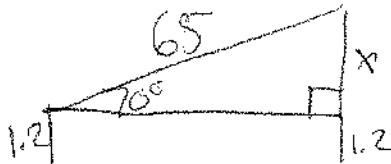


Name Key Date _____

Angle of Elevation & Depression Trig Worksheet

*Draw and label a picture for each problem

1. Brian's kite is flying above a field at the end of 65 m of string. If the angle of elevation to the kite measures 70° , and Brian is holding the kite 1.2 m off the ground. How high above the ground is the kite flying?



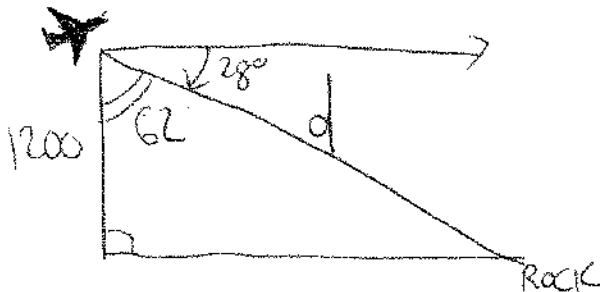
$$\sin 70 = \frac{x}{65}$$

$$x = 65 \sin 70$$

$$x = 61.68 + 1.2$$

$$x = 62.28$$

2. From an airplane at an altitude (height) of 1200 m, the angle of depression to a rock on the ground measures 28° . Find the distance from the plane to the rock.

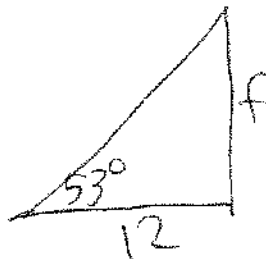


$$\cos 62 = \frac{1200}{d}$$

$$d = \frac{1200}{\cos 62}$$

$$d = 2,556.1 \text{ ft}$$

3. From a point on the ground 12 ft from the base of a flagpole, the angle of elevation of the top of the pole measures 53° . How tall is the flagpole?

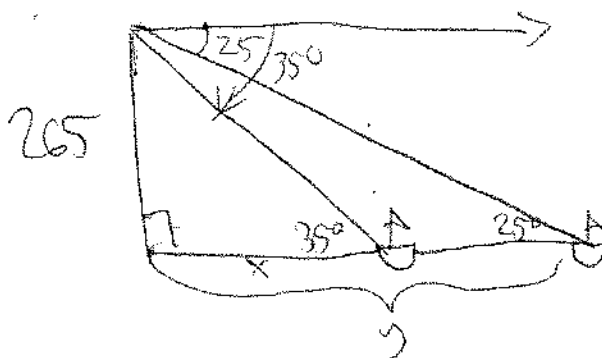


$$\tan 53 = \frac{f}{12}$$

$$12 \tan 53 = f$$

$$f = 15.9 \text{ ft}$$

4. From a plane flying due east at 265 m above sea level, the angles of depression of two ships sailing due east measure 35° and 25° . How far apart are the ships?



$$\tan 35 = \frac{265}{x}$$

$$x = \frac{265}{\tan 35}$$

$$x = 378.5$$

$$\tan 25 = \frac{265}{y}$$

$$y = \frac{265}{\tan 25}$$

$$y = 568.3$$

$$189.8$$

Angle of Elevation & Depression Worksheet (Cont.)

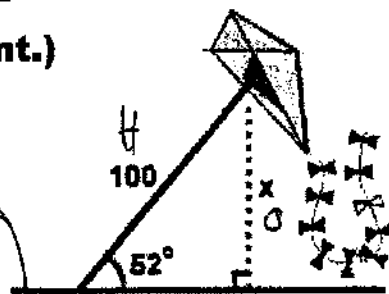
Find all values to the nearest tenth.

5. A man flies a kite with a 100 foot string. The angle of elevation of the string is 52° . How high off the ground is the kite?

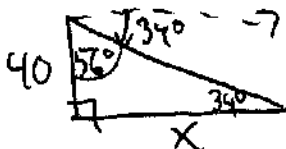
$$\sin 52 = \frac{x}{100}$$

$$100 \sin 52 = x$$

$$78.8 \text{ ft}$$



6. From the top of a vertical cliff 40 m high, the angle of depression of an object that is level with the base of the cliff is 34° . How far is the object from the base of the cliff?



$$\tan 34 = \frac{x}{40}$$

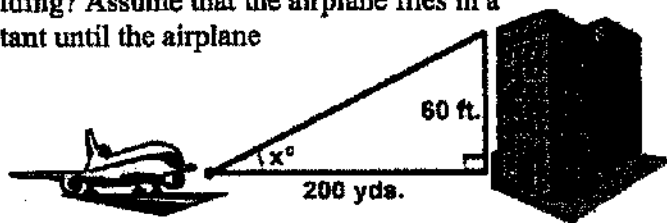
$$x = 59.3 \text{ m}$$

7. An airplane takes off 200 yards in front of a 60 foot building. At what angle of elevation must the plane take off in order to avoid crashing into the building? Assume that the airplane flies in a straight line and the angle of elevation remains constant until the airplane flies over the building.

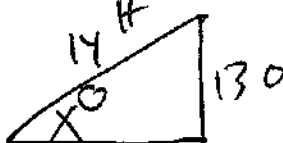
$$\tan x = \frac{60}{200}$$

$$\tan^{-1} \left(\frac{60}{200} \right)$$

$$x = 16.7^\circ$$



8. A 14 foot ladder is used to scale a 13 foot wall. At what angle of elevation must the ladder be situated in order to reach the top of the wall?



$$\sin x = \frac{13}{14}$$

$$\sin^{-1} \left(\frac{13}{14} \right)$$

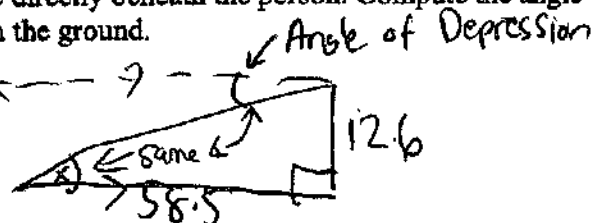
$$x = 68.2^\circ$$

9. A person stands at the window of a building so that his eyes are 12.6 m above the level ground. An object is on the ground 58.5 m away from the building on a line directly beneath the person. Compute the angle of depression of the person's line of sight to the object on the ground.

$$\tan x = \frac{12.6}{58.5}$$

$$\tan^{-1} \left(\frac{12.6}{58.5} \right)$$

$$x = 12.2^\circ$$

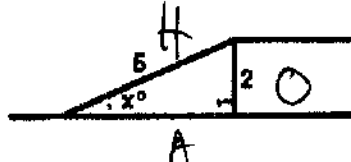


10. A ramp is needed to allow vehicles to climb a 2 foot wall. The angle of elevation in order for the vehicles to safely go up must be 30° or less, and the longest ramp available is 5 feet long. Can this ramp be used safely?

$$\sin x = \frac{2}{5}$$

$$\sin^{-1} \left(\frac{2}{5} \right)$$

$$x = 23.58^\circ$$



$$x = 23.58^\circ < 30^\circ \text{ so, Yes!}$$