

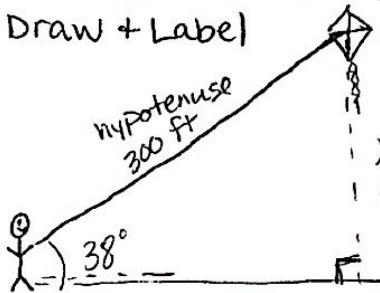
Name _____

Key

Trig Word Problems Worksheet

1. A boy flying a kite lets out 300 feet of string which makes an angle of 38° with the ground. Assuming that the string is straight, how high above the ground is the kite?

1. Draw + Label



2. What do you need?

Distance from kite to the ground.

3. Work it out.

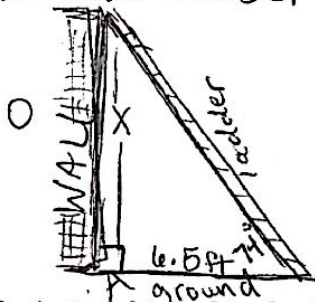
$$\frac{\sin 38^\circ}{1} = \frac{x}{300}$$

$$x = 300 \cdot \sin 38$$

$$* \text{ height} = 184.7 \text{ ft}$$

2. A ladder leaning against the wall makes an angle of 74° with the ground. If the foot of the ladder is 6.5 feet from the wall, how high on the wall is the ladder?

1. Draw + Label



2. What do you need?

how high is the wall?

3. Work it out.

$$\tan \theta = \frac{O}{A}$$

$$\tan 74^\circ = \frac{x}{6.5}$$

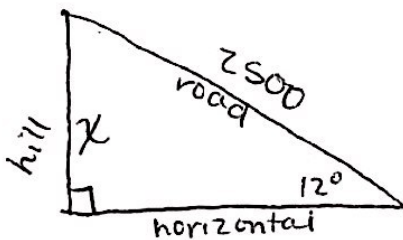
$$6.5 \tan 74 = x$$

$$22.668 \approx x$$

feet

3. A straight road to the top of a hill is 2500 feet long and makes an angle of 12° with the horizontal. Find the height of the hill.

1. Draw + Label



2. What do you need?

height of the hill

3. Work it out.

$$\sin 12 = \frac{x}{2500}$$

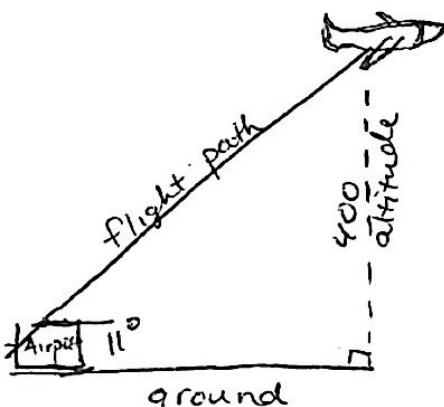
$$2500 \sin 12 = x$$

$$519.779 \approx x$$

feet

4. An airplane climbs at an angle of 11° with the ground. Find the ground distance it has traveled when it has attained an altitude of 400 feet.

1. Draw + Label



2. What do you need?

altitude of the plane

3. Work it out.

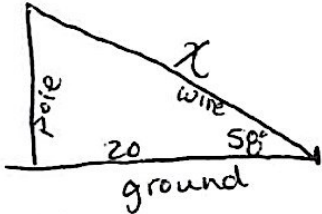
$$\tan 11^\circ = \frac{400}{x}$$

$$x = \frac{400}{\tan 11}$$

$$x \approx 2057.822 \text{ ft.}$$

5. A wire attached to the top of a pole reaches a stake in the ground 20 feet from the foot of the pole and makes an angle of 58° with the ground. Find the length of the wire.

1. Draw & Label



2. What do you need?

length of the wire

3. Work it out.

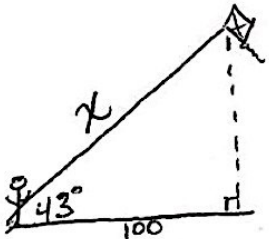
$$\cos 58 = \frac{20}{x}$$

$$x = \frac{20}{\cos 58}$$

$$x \approx 37.742 \text{ feet}$$

6. Henry is flying a kite. The kite string makes an angle of 43° with the ground. If Henry is standing 100 feet from a point on the ground directly below the kite, find the length of the kite string.

1. Draw & Label



2. What do you need?

length of kite string

3. Work it out.

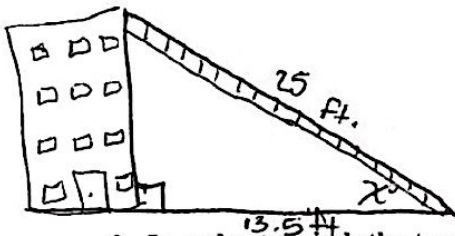
$$\cos 43 = \frac{100}{x}$$

$$x = \frac{100}{\cos 43}$$

$$x \approx 136.733 \text{ ft.}$$

7. A 25 foot ladder leans against a building. The ladder's base is 13.5 feet from the building. Find the angle which the ladder makes with the ground.

1. Draw & Label



2. What do you need?

the angle x°

3. Work it out.

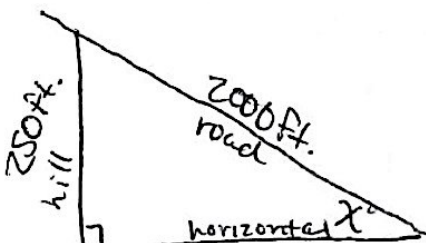
$$\cos x = \frac{13.5}{25}$$

$$x = \cos^{-1}\left(\frac{13.5}{25}\right)$$

$$x \approx 57.316^\circ$$

8. In order to reach the top of a hill which is 250 feet high, one must travel 2000 feet straight up a road which leads to the top. Find the number of degrees contained in the angle which the road makes with the horizontal.

1. Draw & Label



2. What do you need?

the angle x°

3. Work it out.

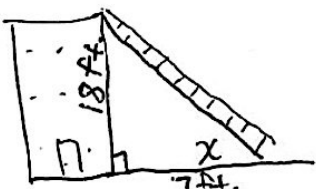
$$\sin x^\circ = \frac{250}{2000}$$

$$x = \sin^{-1}\left(\frac{250}{2000}\right)$$

$$x \approx 7.181^\circ$$

9. A ladder leans against a building. The top of the ladder reaches a point on the building which is 18 feet above the ground. The foot of the ladder is 7 feet from the building. Find the measure of the angle which the ladder makes with the level ground.

1. Draw & Label



2. What do you need?

the angle x°

3. Work it out.

$$\tan x = \frac{18}{7}$$

$$x = \tan^{-1}\left(\frac{18}{7}\right)$$

$$x \approx 68.749^\circ$$