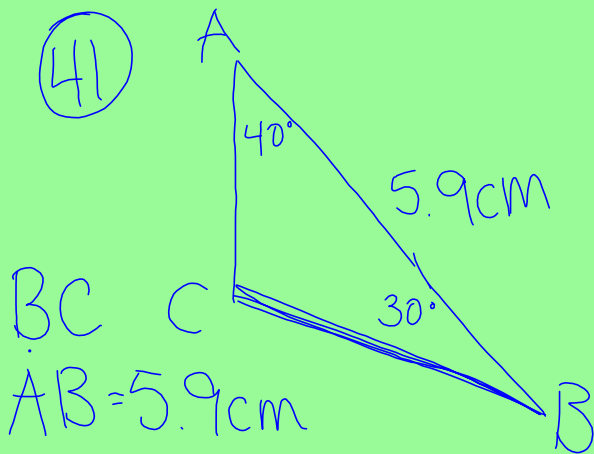
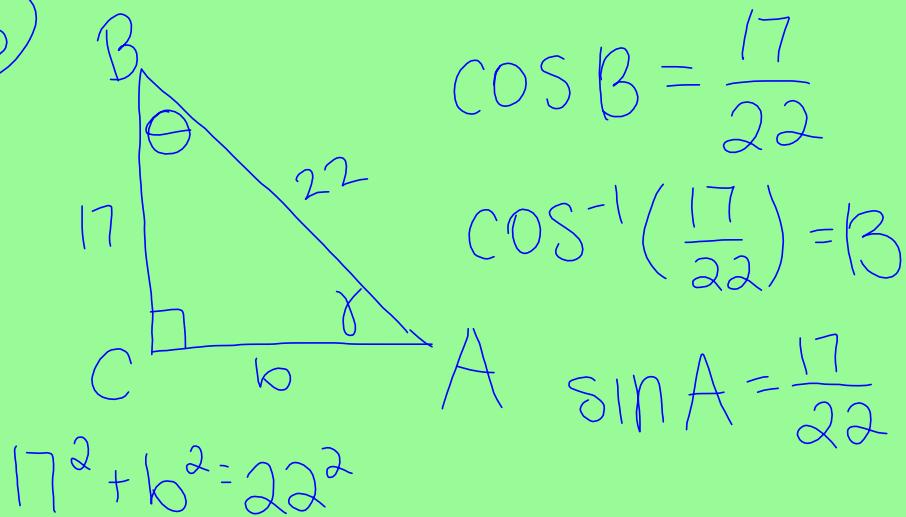


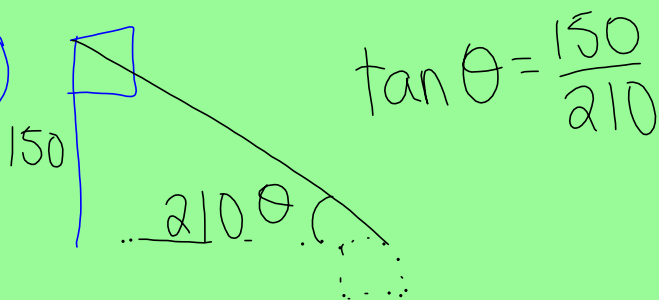
(41)



(23)



(41)

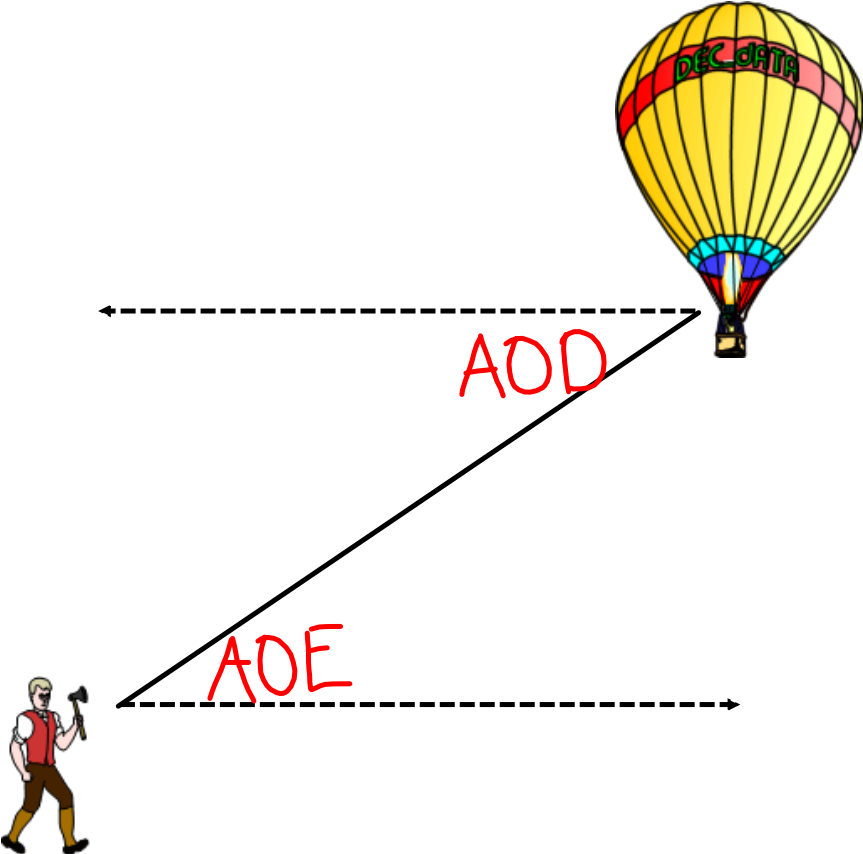


Angles of Elevation and Depression

Students will use basic trigonometry to solve for missing information in right triangles.

Lesson objectives

Teachers' notes

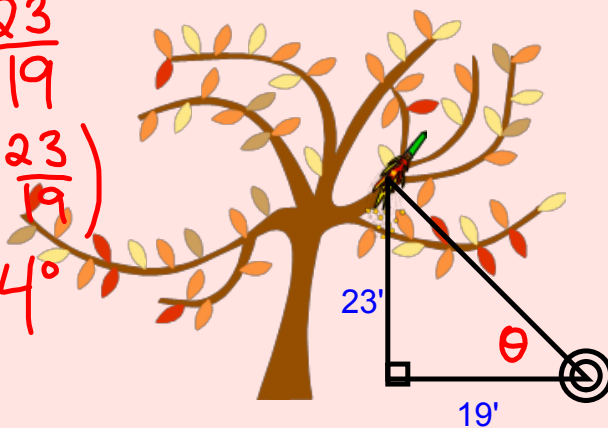


- 1) Dillon spotted his model rocket from a launch stuck in a tree. He knows the base of the tree is 19 ft from the launch site. The rocket is 23 feet up from the ground. He needs to calculate the angle of elevation so he can make adjustments for future launches. Draw a picture use trigonometry to find the angle.

$$\tan \theta = \frac{23}{19}$$

$$\theta = \tan^{-1}\left(\frac{23}{19}\right)$$

$$\theta = 50.44^\circ$$



click to reveal

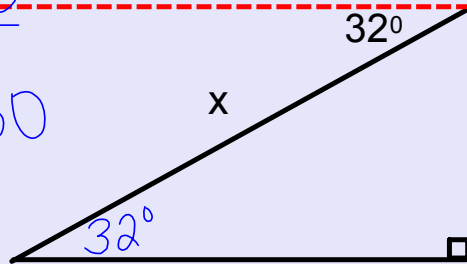
Pull

2) The balloon boy can see his dad at a 32° angle of depression. He is 150 ft above the ground and wants to know how far he is from his dad at home.....really. How far is he from his dad?

SH

$$\sin 32 = \frac{150}{x}$$

$$x \cdot \sin 32 = 150$$



150 ft

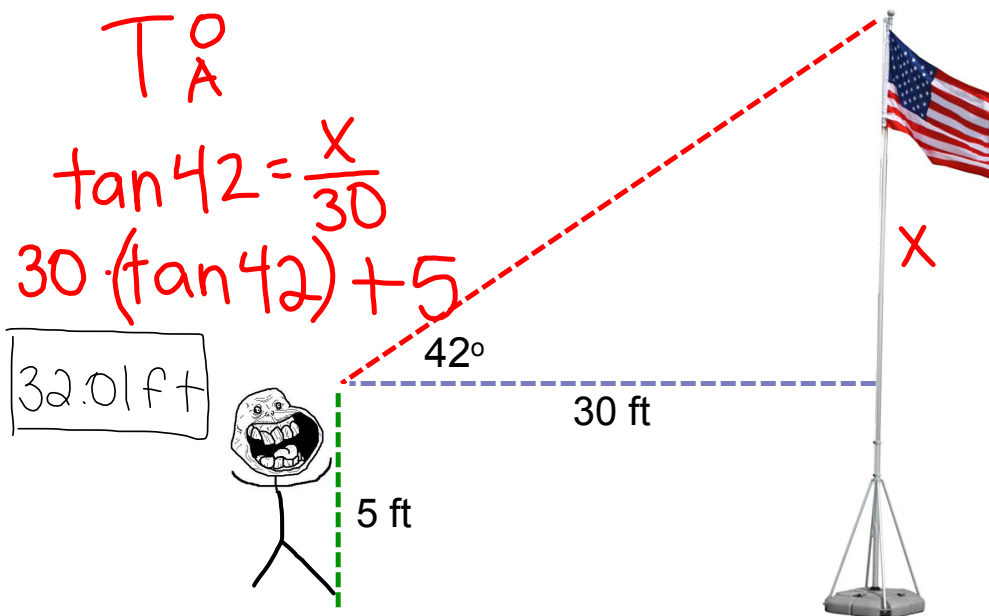
Pull

$$x = \frac{150}{\sin 32}$$

$$x = 283.06 \text{ ft}$$

click to reveal

3) A person standing 30 ft from a flagpole can see the top of the pole at a 42° angle of elevation. The person's eye level is 5 ft from the ground. Find the height of the flagpole to the nearest foot.



click to reveal

HW

Worksheet - Word Problems using Trig

NEXT TWO SLIDES ARE EXTRA
WORD PROBLEMS FOR WARM
UPS OR WHATEVER

HONORS GEOMETRY - WORD PROBLEMS

NAME: _____

8.4 Angle of Elevation and Depression

Directions: In your notebook, draw a diagram. Write a trigonometric equation. Then solve. Round answers to two decimal places.

1. 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 a hill, how high is the hill?
2. Find the angle of elevation to the sun when a 12.5-meter-tall telephone pole casts an 18-meter-long shadow.
3. The angle of depression from a balloon on a 75-foot string to a person on the ground is 36° . How high is the balloon?
4. A person whose eyes are 5 feet above the ground is standing on the runway of an airport 100 feet from the control tower. That person observes an air traffic controller at the window of the 132-foot tower. What is the angle of elevation to the air traffic controller?
5. A ski run is 1000 yards long with a vertical drop of 208 yards. Find the angle of depression from the top of the ski run to the bottom.
6. A ladder leaning against a building makes an angle of 78° with the ground. The foot of the ladder is 5 feet from the building. How long is the ladder?
7. 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?
8. From the top of a 120-foot-high tower, an air traffic controller observes an airplane on the runway at an angle of depression of 19° . How far from the base of the tower is the airplane?
9. The angle of depression from the top of a sheer cliff to point A on the ground is 35° . If point A is 280 feet from the base of the cliff, how tall is the cliff?
10. The town of Belmont restricts the height of flagpoles to 25 feet on any property. Lindsay wants to determine whether her school is in compliance with the regulation. Her eye level is 5.5 feet from the ground and she stands 36 feet from the flagpole. If the angle of elevation is about 25° , what is the height of the flagpole?

Kelli wanted to measure the distance across a pond. She knows the height of a tree on the other side is 27 ft and her angle of elevation is 18 degrees from her tripod to the top of the tree. Kelli's tripod is 3 ft tall. Draw a triangle and use trigonometry to find the distance across the pond.

A small, vertical, light green button with rounded ends and the word "Pull" written vertically inside.

click to reveal

