Station 1:

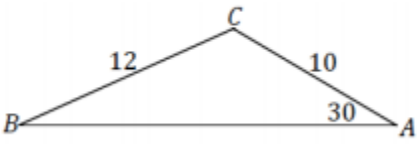
1.) From a point on the ground 25 feet from the foot of a tree, the angle of elevation of the top of the tree is 32º. Find to the *nearest foot,* the height of the tree.

2.) A lookout spots a fire from a 32 meter tower. The angle of depression from the tower to the fire is 13 degrees. To the nearest meter, how far is the fire from the base of the tower?

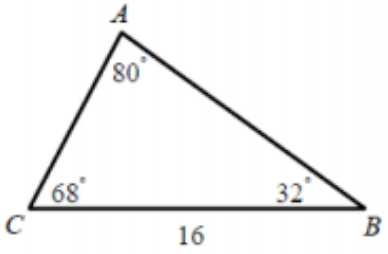
3.) To find the height of a pole, a surveyor moves 80 feet away from the base of the pole and then, with a transit 4 feet tall, measures the angle of elevation to the top of the pole to be $57°$. What is the height of the pole? Round answer to the nearest foot.

Station 2:

1.) In $\triangle ABC$, $m\angle A = 30$, $a = 12$, and $b = 10$. Find $\sin\angle B$. Include a diagram in your answer.

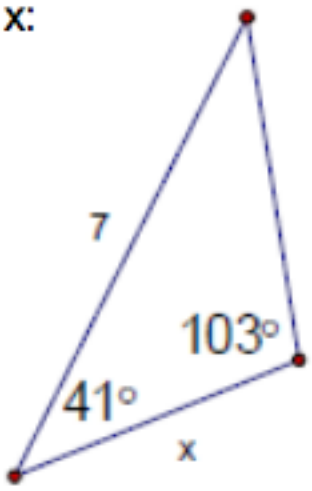


2. In triangle ABC shown below, $BC = 16$, $m\angle A = 80^\circ$, $m\angle B = 32^\circ$, and $m\angle C = 68^\circ$. Determine the lengths of $\overline{AB}$ and $\overline{AC}$ to the nearest *tenth*.



3.

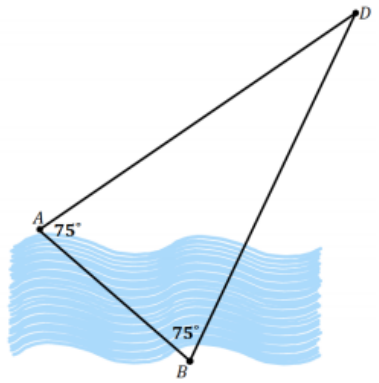
Solve for x:



Station 3:

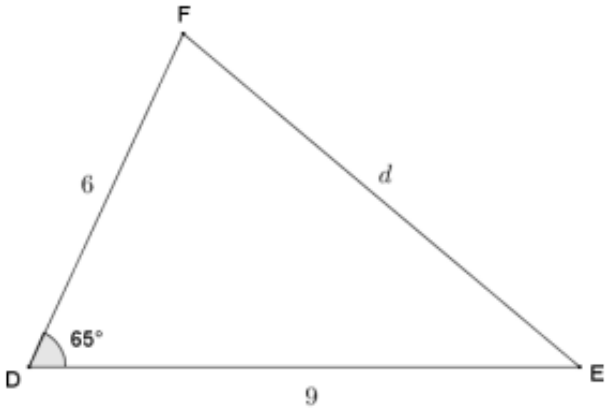
1.

Our friend the surveyor from yesterday is doing some further work. He has already found the distance between points A and B (132 m). Now he wants to locate a point D that is equidistant from both A and B and on the same side of the river as A. He has his assistant mark the point D so that the angles $\angle ABD$ and $\angle BAD$ both measure 75°. What is the distance between D and A to the nearest meter?



2.

Given $\triangle DEF$, use the law of cosines to find the length of the side marked d to the nearest tenth.

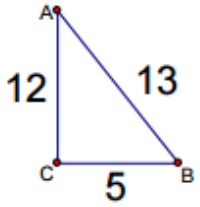


3.

3. Given triangle ABC, $AC = 6$, $AB = 8$, and $\angle A = 78°$. Draw a diagram of triangle ABC, and use the law of cosines to find the length of $\overline{BC}$.

Station 4:

1.



a) What is the relationship between m∠A and m∠B? _____

b) What is the cos A? _____ What is the sine B? _____

c) What is the sin A? _____ What is the cos B? _____

2.

If x and (x + 20) are the measures of two acute angles and sin x = cos (x + 20), find x.

3.

Find the value of θ that makes each statement true.

a. $\sin\theta = \cos(\theta + 38)$

b. $\cos\theta = \sin(\theta - 30)$

c. $\sin\theta = \cos(3\theta + 20)$

d. $\sin\left(\frac{\theta}{3} + 10\right) = \cos\theta$

Station 5:

1. A soccer field is a rectangle 80 meters wide and 110 meters long. The coach asks players to run from one corner to the corner diagonally across the field. How far do the players run? Round your answer to the nearest whole meter.

2. Determine if each of the following sides lengths form an acute, obtuse or right triangle:

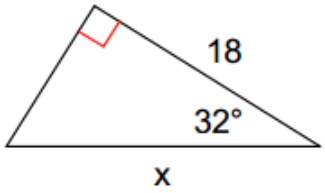
{5, 10, 12} {8, 15, 17} {10, 11, 13}

3.

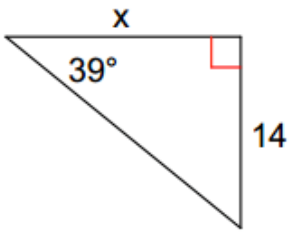
A 13 feet ladder is placed 5 feet away from a wall. The distance from the ground straight up to the top of the wall is 13 feet Will the ladder the top of the wall?

Station 6:

1. Solve for x:



2. Solve for x:



3.

Adam and Brian are standing some distance apart on the same side of a building 50 m tall. From where Adam stands, the angle of elevation of the top of the building is 30°. From where Brian stands, the angle is 60°. What is the distance x between Adam and Brian to the nearest tenth of a meter?