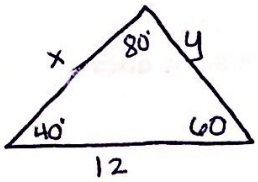
Name_____

Applications of Triangles

Solve the following problems. Show all work. Draw a picture to get started!

1. A post is supported by two wires (one on each side going in opposite directions) creating an angle of 80° between the wires. The ends of the wires are 12m apart on the ground with one wire forming an angle of 40° with the ground. Find the lengths of the wires.



$x = 10.55m$

$y = 7.83m$

2. Yogi bear is out walking with Boo Boo looking for a picnic basket and Boo Boo sights a bee hive up in a tree at an angle of elevation of 36^0. They walk 120 meters closer to get a better look and then look up at an angle of elevation of 51^0. How far are Yogi and Boo Boo from the bottom of the tree from their current spot?

$x = 171.50M$

3. 3 friends are camping in the woods, Bert, Ernie and Elmo. They each have their own tent and the tents are set up in a Triangle. Bert and Ernie are 10m apart. The angle formed at Bert is 30°. The angle formed at Elmo is 105°. How far apart are Ernie and Elmo?

$x = 5.176\ M$

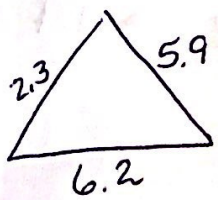
4. The dimensions of a triangular garden are 30 feet, 55 feet, and 60 feet. What is the area of the garden?

$A = 820.989\ ft^2$

5. To estimate the length of a lake, Caleb starts at one end of the lake and walks 95m. He then turns and walks on a new path, which is 120° to the direction he was first walking in, and walks 87m more until he arrives at the other end of the lake. Approximately how long is the lake?

$x = 91.26\ M$

6. A bicycle race follows a triangular course. The 3 legs of the race are, in order, 2.3 km, 5.9 km, and 6.2 km. Find the angle between the starting leg and the finishing leg.



$A = 71.77$

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7. Rachel and Erika are golfing on a beautiful summer day. The third hole is 325 yards from the tee. On that hold, Rachel hit her drive 17^0 to the left of the hole, 310 yards away. How far is Rachel's ball from the third hole?

$x = 95.024$ yds

8. A 4m flag pole is not standing up straight. There is a wire attached to the top of the pole and anchored in the ground. The wire is 4.17m long. The wire makes a 68° angle with the ground. What angle does the flag pole make with the wire?

$36.85°$ or $7.15°$

9. Airplane A is flying directly toward the airport which is 20 miles away. The pilot notices airplane B 45 degrees to her right. Airplane B is also flying directly toward the airport. The pilot of airplane B calculates that airplane A is 50 degrees to his left. Based on the given information, how far is airplane B from the airport?

$x = 18.46$ mi

10. From the top of a canyon, the angle of depression to the far side of the river is 58 degrees, and the angle of depression to the near side of the river is 74 degrees. The depth of the canyon is 191 m. What is the width of the river at the bottom of the canyon? Round to the nearest tenth of a meter.

$x = 64.6$ M

11. A ship travels due west for 87 miles. It then travels in a northern direction for 78 miles and ends up 155 miles from its original position. How many degrees did it turn when it changed direction?

$x = 40.16°$

12. Two scuba divers are 20m apart below the surface of the water. They both spot a shark that is below them. The angle of depression from diver 1 to the shark is 47° and the angle of depression from diver 2 to the shark 40°. How far are each of the divers from the shark?

Diver 1 → 12.87M

Diver 2 → 14.65M

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