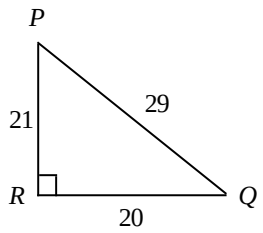
PRACTICE - TRIGONOMETRY **Name** _____

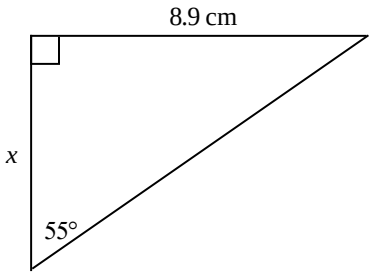
1. Write the tangent, sine, and cosine ratios for $\angle Q$. The figure is not drawn to scale.



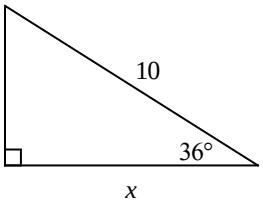
Tan Q = ? Sin Q = ? Cos Q = ?

Find the value of x. Round lengths to the nearest tenth and angles to the nearest degree. You must set up equations and show your work! The figures are not drawn to scale.

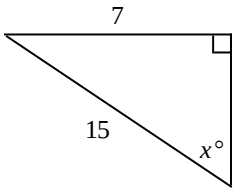
2.



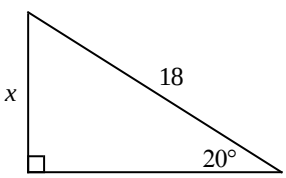
3.



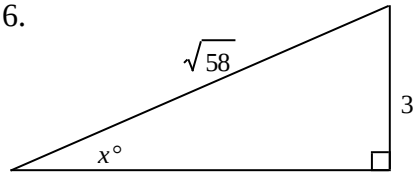
4.



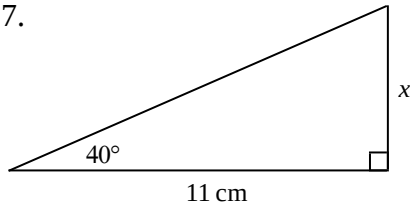
5.



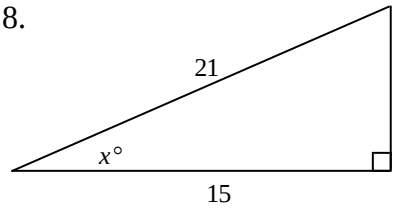
6.



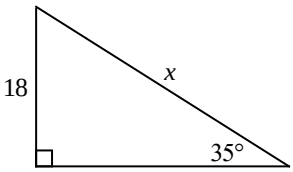
7.



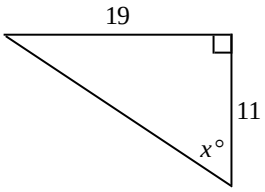
8.



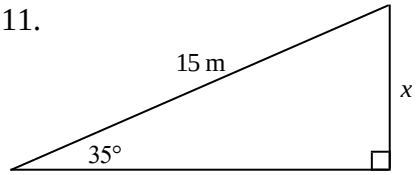
9.



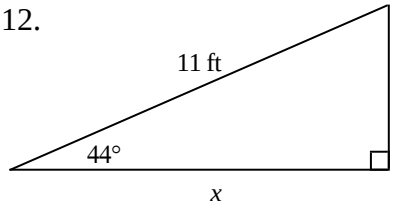
10.



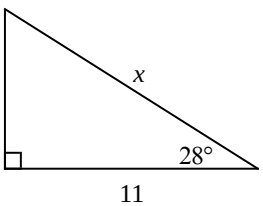
11.



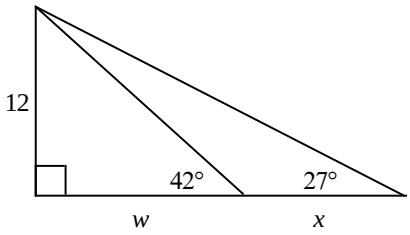
12.



13.

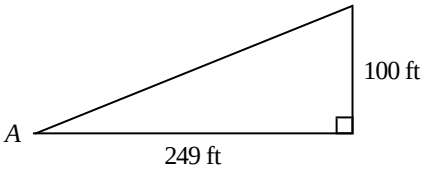


14. Find the value of w, then x.

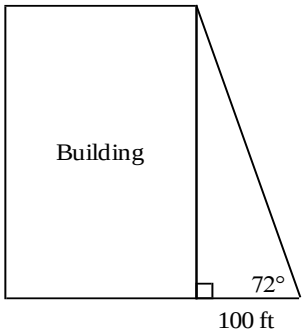


Find the requested information. Unless there is one already, you must draw a picture that accurately represents the given situation. You must also set up an equation and show all of your work!

15. A large totem pole in the state of Washington is 100 feet tall. At a particular time of day, the totem pole casts a 249-foot-long shadow. Find the measure of $\angle A$ to the nearest degree.



16. The students in Mr. Collin's class used a surveyor's measuring device to find the angle from their location to the top of a building. They also measured their distance from the bottom of the building. The diagram shows the angle measure and the distance. To the nearest foot, find the height of the building.



17. A slide 4.1 meters long makes an angle of 35° with the ground. To the nearest tenth of a meter, how far above the ground is the top of the slide?

18. Viola drives 170 meters up a hill that makes an angle of 6° with the horizontal. To the nearest tenth of a meter, what horizontal distance has she covered?

19. Find the angle of elevation from the ground to the top of a tree when a tree that is 10 yards tall casts a shadow 14 yards long. Round to the nearest degree.

20. To find the height of a pole, a surveyor moves 140 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 44°. To the nearest foot, what is the height of the pole?

21. To approach the runway, a small plane must begin a 9° descent starting from a height of 1125 feet above the ground. To the nearest tenth of a mile, what is the line-of-sight distance from the plane to the runway at the start of this approach?

22. An airplane over the Pacific sights a boat at an angle of depression of 5°. At this time, the horizontal distance from the airplane to the boat is 4629 meters. What is the height of the plane to the nearest meter?

23. A forest ranger spots a fire from a 21-foot tower. The angle of depression from the tower to the fire is 12°. To the nearest foot, how far is the fire from the base of the tower?

24. A highway makes an angle of 16° with the horizontal. This angle is maintained for a horizontal distance of 23 miles. To the nearest hundredth of a mile, how high does the highway rise in this 23-mile section?

25. The diagram below shows the locations of John and Mark (who are both on the ground) and Bob (who is on top of a building).

a. Thoroughly describe $\angle 4$ as it relates to the situation.
b. Thoroughly describe $\angle 3$ as it relates to the situation.