

FST
5-1 Practice

Name _____

Date _____ **A#3**

Goal: Use sine, cosine and tangent to find missing side lengths of a right triangle.

Steps to Solve Trigonometry Word Problems:

- a. Draw a picture. You may need to erase to make it close to scale.
- b. Label the given parts and what you are trying to find.
- c. Set up the trig ratios and use the appropriate one(s) to solve.

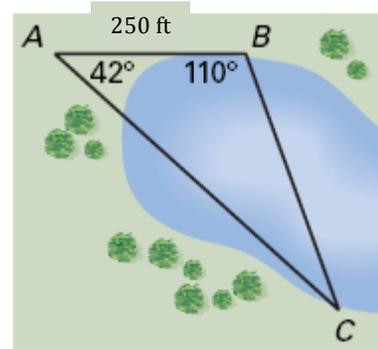


Example 1: From the top of a tower, the angle of depression to a stake on the ground in 60° . The top of the tower is 80 feet above the ground. How far is the stake from the foot of the tower?

Example 2: A ladder leaning against a house makes an angle of 72° with the ground. The foot of the ladder is 7 feet from the foot of the house. How long is the ladder?

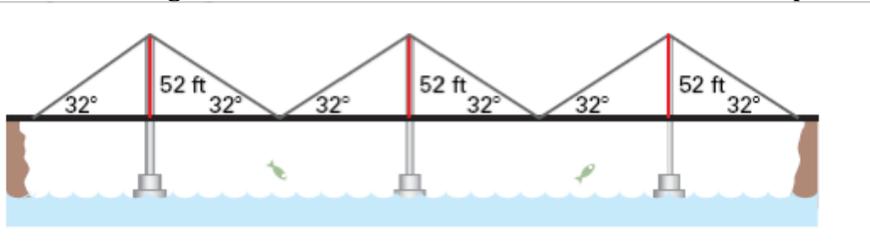
Example 3: You are a block away from a skyscraper that is 780 feet tall. Your friend is between the skyscraper and yourself. The angle of elevation from your position to the top of the skyscraper is 42° . The angle of elevation from your friend's position to the top of the skyscraper is 71° . To the nearest foot, how far you are you from your friend.

Example 4: You are standing at point B along the shore of a pond. At point A is a rock that you know is 250 feet from you. Using the diagram, if your friend is standing at point C , how far would you have to swim to get to her? (*Hint: draw the altitude from B*)

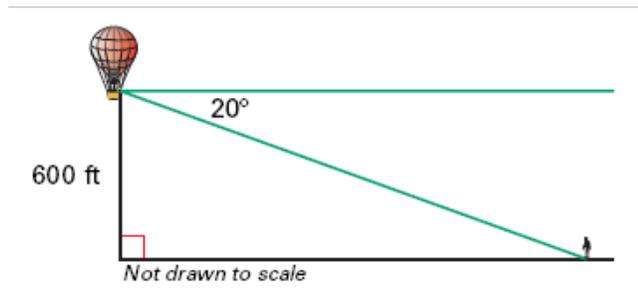


Practice

1. Use the diagram below to find the distance across the suspension bridge.

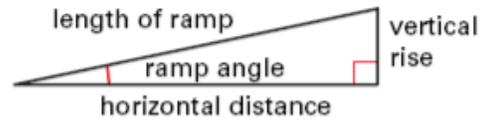


2. You are in a hot air balloon that is 600 feet above the ground where you can see your friend. If the angle of depression to your friend is 20° , how far is he from the point on the ground below the hot air balloon?

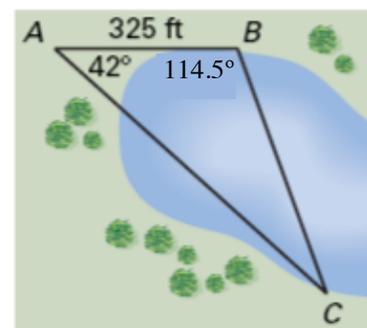


In Exercises 3 and 4, use the following information:

Ramps The Uniform Federal Accessibility Standards specify that the ramp angle used for a wheelchair ramp must be less than or equal to 4.78° , in order to provide ease of access.

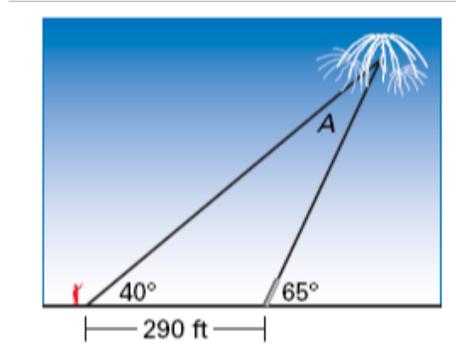


3. The length of one ramp is 16 feet. The vertical rise is 14 inches. Estimate the ramp's horizontal distance and its ramp angle. Does this ram meet the Uniform Federal Accessibility Standards?
4. You want to build a ramp with a vertical rise of 6 inches. You want to minimize the horizontal distance taken up by the ramp but still meet the Uniform Federal Accessibility Standards. Draw a sketch showing the approximate dimensions of your ramp.
5. You are designing a ramp where the horizontal distance is twice the vertical rise. What will be the ramp angle to the nearest tenth of a degree?
6. A surveyor needs to find the distance BC across a lake as part of a project to build a bridge. The distance from point A to point B is 325 feet. The measurement of angle A is 42° and the measurement of angle B is 114.5° . What is the distance BC across the lake to the nearest foot?



Use the following information to answer questions 7 through 10.

You are watching a fireworks display where you are standing 290 feet behind the launch pad. The launch tubes are aimed directly away from you at an angle of 65° with the ground. The angle for you to see the fireworks is 40° .



7. To the nearest foot, what is the horizontal distance from the launch pad to the point above where the fireworks explode?

8. To the nearest foot, what is the height of the fireworks when they explode?

9. What is the measure of angle A ?

10. How far away are you from where the fireworks explode?

11. A tree casts a shadow 21 m long. The angle of elevation of the sun is 51° . What is the height of the tree?

12. An airplane climbs at an angle of 18° with the ground. Find the ground distance the plane travels as it moves 2500 m through the air. Give your answer to the nearest 100 m.