You must show all set up and work to earn full points. Remember to label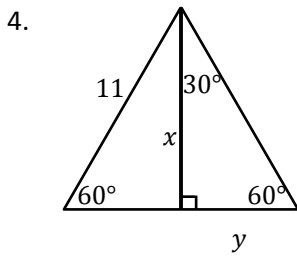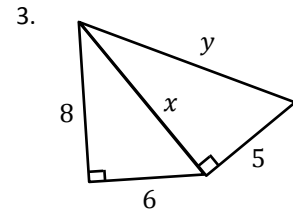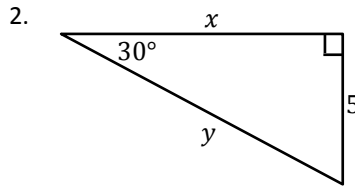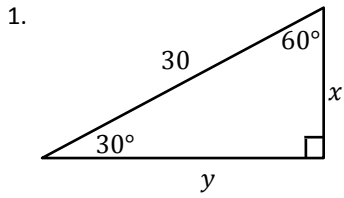 units when necessary. Read the directions and questions carefully. Leave all answers in the form of a simplified radical unless otherwise stated. **SIMPLIFY ALL RADICALS AND FRACTIONS!**

SPECIAL RIGHT TRIANGLES, PYTHAGOREAN THEOREM, AND TRIGONOMETRY

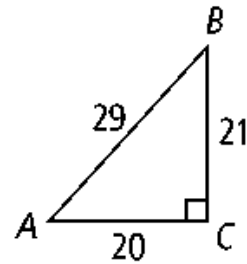## Find the value of each variable. Express in simplest radical form.

1.

2.

3.

4.

5.

6.

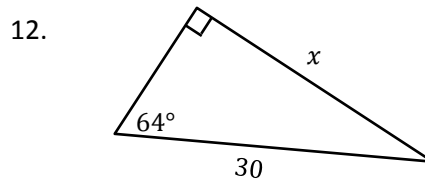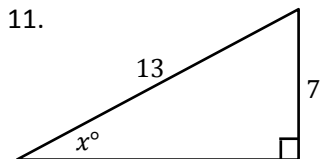## Write each ratio.
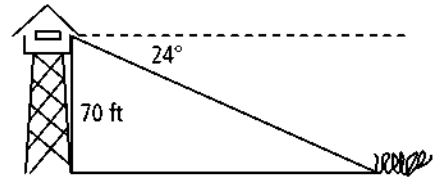
7. sin A

8. cos A

9. tan A
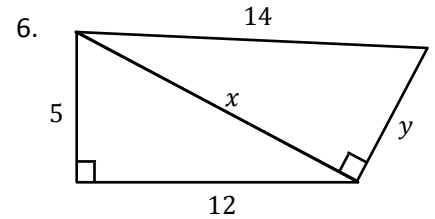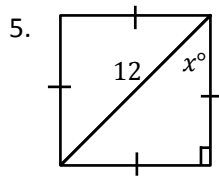
10. sin B

Find the value of x to four decimal places.

11.

12.

13. A fire ranger stands at an observation window 70 ft above the ground. She sees a fire in the distance. She takes a reading of the angle of depression and finds it to be 24°. To the **nearest tenth of a foot**, how far away from the base of the tower is the fire?

14. Raul is 75-ft from the world's tallest totem pole in Alert Bay, Canada. It is 173-ft tall. If Raul's eyes are 5-ft from the ground, what is the angle of elevation for his line of sight to the top of the totem pole? *Round to the nearest tenth.*

16. What is the difference between $sin\ x$ and $\sin^{-1}(x)$?

17. Simplify $\sqrt{96}$

18. Simplify $\dfrac{4}{\sqrt{14}}$