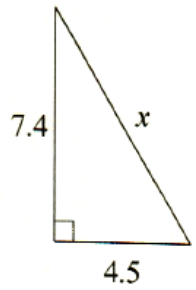
Name: _____ Period: _____

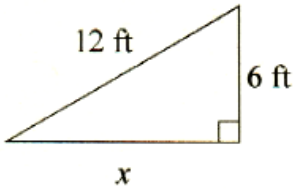
SM2H 8.1 Pythagorean Theorem/Trigonometric Ratios

Using the Pythagorean Theorem, find the missing side length. Leave answers in simplified radical form. If answers begin in decimals, answers should be left as decimal. Round to the nearest hundredths.

1.



2.



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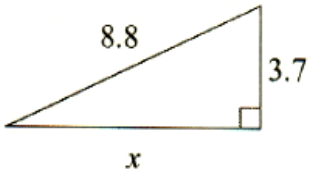
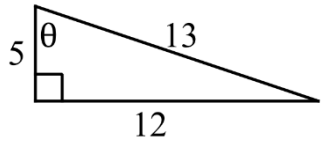


Find the exact values of $sin\theta, cos\theta, tan\theta, csc\theta, sec\theta, cot\theta$. Put a <u>STAR next to angle θ.</u> Label your sides as opposite, adjacent, and hypotenuse.

4.



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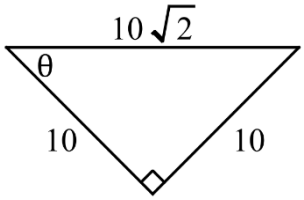

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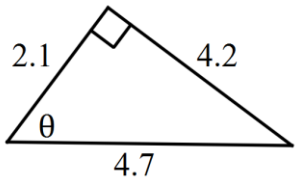
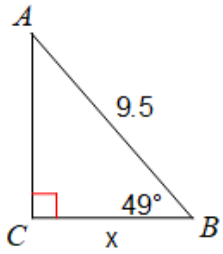
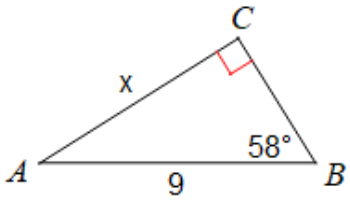


$\sin\theta =$	$\csc\theta =$	$\sin\theta =$	$\csc\theta =$	$\sin\theta =$	$\csc\theta =$
$\cos\theta =$	$\sec\theta =$	$\cos\theta =$	$\sec\theta =$	$\cos\theta =$	$\sec\theta =$
$\tan\theta =$	$\cot\theta =$	$\tan\theta =$	$\cot\theta =$	$\tan\theta =$	$\cot\theta =$

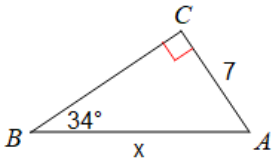
Identify which trigonometric ratio is needed to solve for missing side. Write the correct equation, then solve. Round to the nearest tenths.

7. 

Equation: x=

8. 

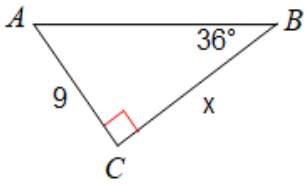
Equation: x=

9. 

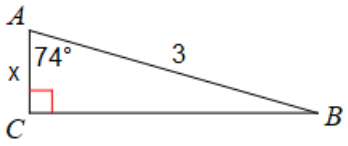
Equation: x=

10. 

Equation: x=

11. 

Equation: x=

12. 

Equation: x=

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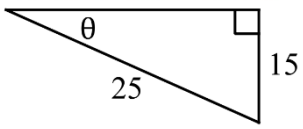
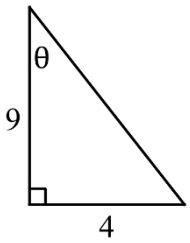
13. 

$\sin\theta =$ $\csc\theta =$

$\cos\theta =$ $\sec\theta =$

$\tan\theta =$ $\cot\theta =$

14. 

$\sin\theta =$ $\csc\theta =$

$\cos\theta =$ $\sec\theta =$

$\tan\theta =$ $\cot\theta =$

Find the value of each trigonometric ratio to the nearest ten-thousandth.

15. $\sin 58° =$

16. $\cos 71° =$

17. $\cot 86° =$

18. $\tan 87° =$

19. $\sin 29° =$

20. $\cos 38° =$

21. $\sec 10° =$

22. $\csc 6° =$

23. $\tan 45° =$

Find the value of the trigonometric function indicated, given the following information.

24. Find $cot\theta$ if $sin\theta = \frac{11}{14}$

25. Find $csc\theta$ if $cos\theta = \frac{4\sqrt{3}}{7}$

26. Find $tan\theta$ if $cos\theta = \frac{12}{13}$

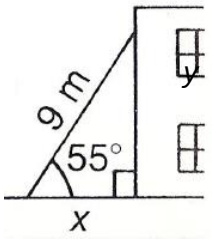
27. Find $cos\theta$ if $sin\theta = \frac{4}{5}$

28. Find $sin\theta$ if $cot\theta = \frac{3}{8}$

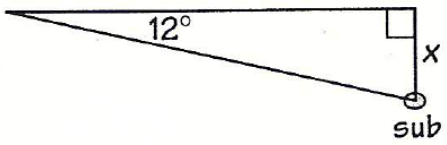
29. Find $sec\theta$ if $tan\theta = \sqrt{3}$

For each story problem: Write the correct trigonometric equation. Then find the requested value. Round answers to the nearest hundredths.

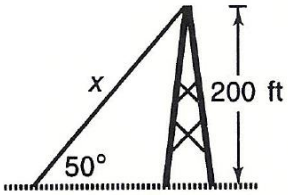
30. As it leans against a building, a 9-meter ladder makes an angle of 55° with the ground.
    a. How far is the bottom of the ladder from the base of the building?
    b. How far up the building does the ladder reach?



31. A submarine dives at an angle of 12° to the surface of the water. When the submarine has traveled 3700 feet, how deep is it?

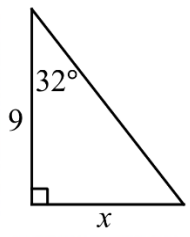


32. A guy wire (or cable) from the top of a 200-ft telephone tower makes a 50° angle with the ground. How long is the guy wire?



Identify which trigonometric ratio is needed to solve for missing side. Write the correct equation, then solve. Round to the nearest tenths.

33.



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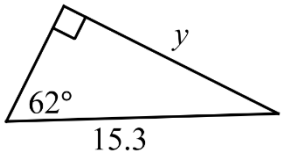

35.