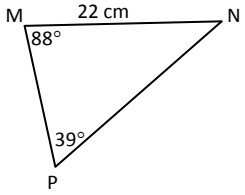
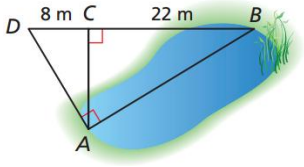
Geometry
Unit 4 Review

Name:_____
Row#_____Period_____

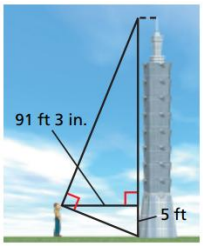
1. Use the law of sines to determine the length of *NP*. Round your answer to the nearest tenth.



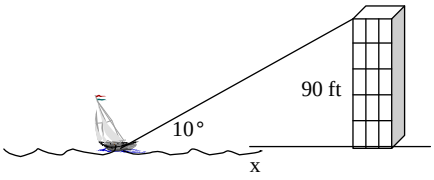
2. A land developer needs to determine the distance across a pond on a piece of property. What is the length across the pond to the nearest tenth of a meter?



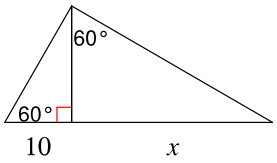
3. Andrew wants to determine the height of a tower. Andrew measures the distance he is standing away from the tower, 91 feet 3 inches. What is the height of the tower rounded to the nearest foot?



4. The angle of elevation from a boat to the top of a 90 ft tall building is 10°. How far is the boat from the base of the building?



5. Determine the value of *x*:

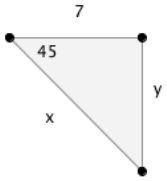


6. Given: *sin A* = $\frac{4}{5}$

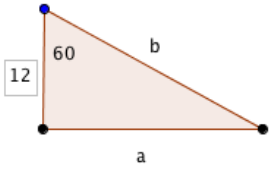
What is Cos *A* and Tan *A*?

*Cos A:*_____ *Tan A=*_____

7. Determine the value of *x* and *y*:



8. Determine the value of *a* and *b*:

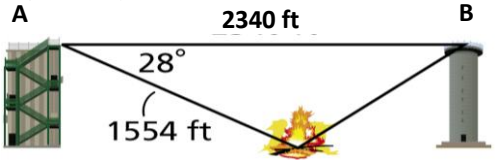


9. A great white shark swims 22 feet below sea level. If the angle of depression of a boat to the shark is 20°, find the horizontal distance between the boat and the shark.

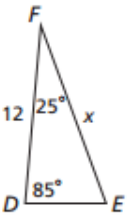
10. Use a special right triangle to write the following trigonometric ratios. You must show work for credit.

sin (60°) **tan (30°)** **cos (45°)**

11. Two towers are 2340 feet apart. An observer in tower *A* sees a fire 1554 ft away at an angle of depression of 28°. To the nearest foot, how far is the fire from an observer in tower *B*? To the nearest degree, what is the angle of depression to the fire from tower *B*? (Hint – use both the law of sines and cosines)



12. Two students were asked to determine the value of *x* in the triangle below. Which student is incorrect? Explain what their error was.



Student A

$$\frac{sin85}{x} = \frac{sin25}{12}$$
$$12sin85 = xsin25$$
$$x = \frac{12sin85}{sin25} \approx 28.3$$

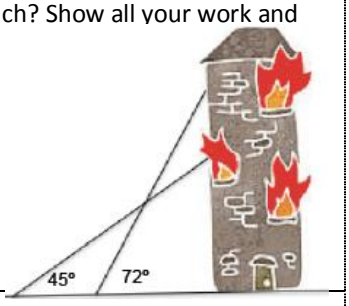
Student B

$$\frac{sin85}{x} = \frac{sin70}{12}$$
$$12sin85 = xsin70$$
$$x = \frac{12sin85}{sin70} \approx 12.7$$

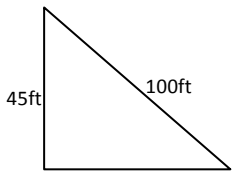
13. Which of the following sets of numbers **DO NOT** make a right triangle. Explain why using math.

8, 11, 13 5.8, 15.6, 9.3 25, 24, 7

14. A fire fighter determined that a safe angle to prop her ladder must be between 45° and 72°. If the ladder has a fixed length of 100 feet long, what is the range of heights that the ladder will reach? Show all your work and round your answers to the nearest foot.



15. Maya is training to be an Amazon Jungle tour guide. As part of her training, she must climb a 100 foot rope that is secured45 feet up in a tree. To the nearest foot, what is the horizontal distance Maya traveled?



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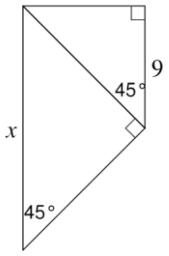
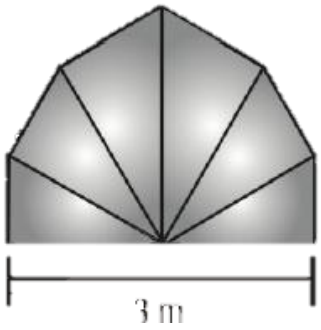
16. A 10-foot ladder is leaning against a building at an angle of elevation of 70°. How high does the ladder reach?

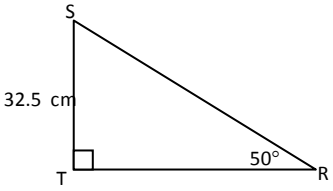
17. Determine the value of *x*:



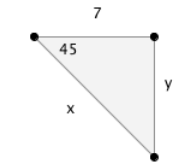
18. A large stained glass window is constructed from six 30° − 60° − 90° triangles as shown in the figure below. The window is symmetric about the vertical line in its center. What is the height of the window? Show all your work. Note: You do not need to simplify your answer.

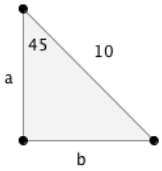


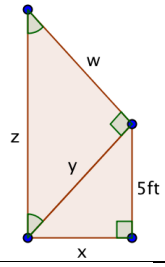
19. Find the unknown measures of the triangle below. Round lengths to the nearest hundredth, and angle measures to the nearest degree.

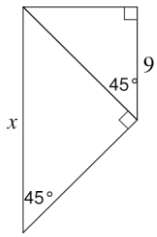


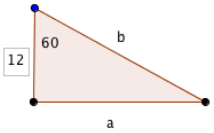
Solve for each variable

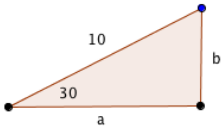


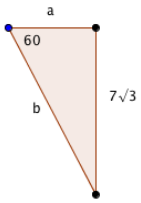


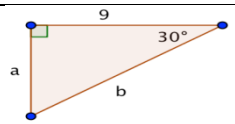


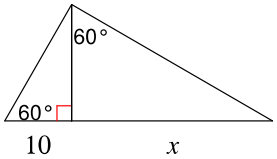






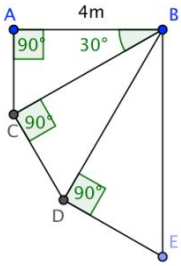




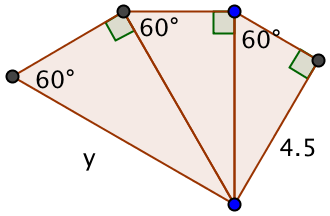


X=_____

Robin is designing a new wing to the bat cave because Batman won't let him park his motorcycle next to the Batmobile. What is the length (BE) of Robin's design?

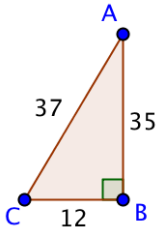


BE=_____



Y=_____

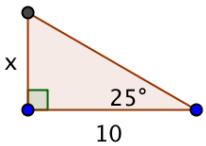
Solve each of the following:



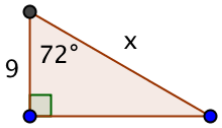
Sin A: _____

Cos A: _____

Solve for x



Solve for x



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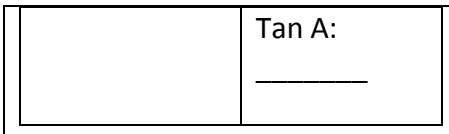 Sin C _____ Cos C _____ Tan C _____		
Jane is in a boat. The angle of elevation from her boat to the top of a 300 ft tall lighthouse is 37°. How far away from the boat is she?	You are on top of a 100 ft. building. You spot a tornado in the distance and you are looking down at an angle of 12°. What is the distance the base of the building and the tornado?	A contractor is climbing a tower with a ladder which must be propped between 50^{o} and 60^{o} to be considered safe. If the ladder has a fixed length of 30 feet, what is the range of heights that the ladder will reach?