Unit 7 Lesson 3 Notes Solve for Missing Angle **Name:** _____

In previous lessons we learned how to use sine, cosine, and tangent to find the lengths of the sides of a right triangle. In each of those problems we were given the angle measure. What if we need to determine the angle measure given the side length? As with solving an algebraic equation, we need to be able to "undo" or find the inverse of a trig function in order to find the angles instead of the sides.

$sin^{-1}(x)$ is read as the arcsine. This "undoes" sin so that you are able to find x. What does the x represent? the angle measure

$cos^{-1}(x)$ is read as the arc cosine. This "undoes" cos so that you are able to find x. What does the x represent? the angle measure.

$tan^{-1}(x)$ is read as the arctangent. This "undoes" tan so that you are able to find x. What does the x represent? the angle measure.

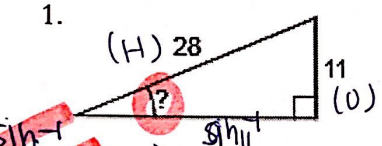
Examples: Solve for x. Round your answer to the nearest tenth.

1. $\sin(x) = \frac{1}{2}$ $\quad X = \sin^{-1}(1/2)$ $\quad X = 30°$

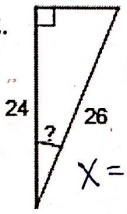
2. $\cos(x) = 1$ $\quad X = \cos^{-1}(1)$ $\quad X = 0°$

3. $\tan(x) = \frac{3}{2}$ $\quad X = \tan^{-1}(3/2)$ $\quad X = 56.3°$

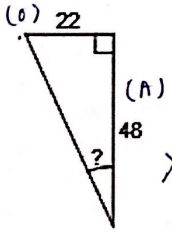
Solve for the missing angle. Round to the nearest tenth.

1. 

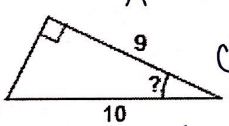
$\sin(x) = \frac{11}{28}$ $\quad X = \sin^{-1}(11/28)$ $\quad X = 23.1°$

2. 

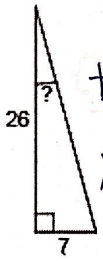
$\cos(x) = \frac{24}{26}$ $\quad X = \cos^{-1}(24/26)$ $\quad X = 22.6°$

3. 

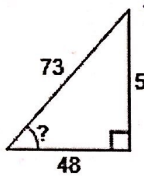
$\tan(x) = \frac{22}{48}$ $\quad X = \tan^{-1}(22/48)$ $\quad X = 24.6°$

4. 

$\cos(x) = \frac{9}{10}$ $\quad X = \cos^{-1}(9/10)$ $\quad X = 25.8°$

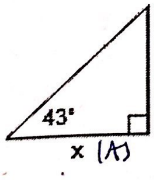
5. 

$\tan(x) = \frac{7}{26}$ $\quad X = \tan^{-1}(7/26)$ $\quad X = 15.1°$

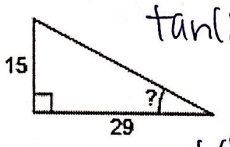
6. 

Setup May Vary
$\tan(x) = \frac{55}{48}$ $\quad X = \tan^{-1}(55/48)$ $\quad X = 48.9°$

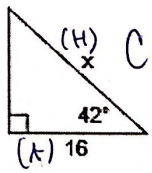
Solve for the missing side or angle.

7. 

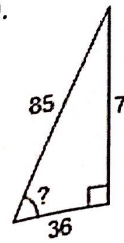
(O) $\tan(43) = \frac{11}{x}$ $\quad X = \frac{11}{\tan(43)}$ $\quad X = 11.8$

8. 

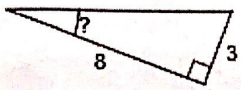
$\tan(x) = \frac{15}{29}$ $\quad X = \tan^{-1}(15/29)$ $\quad X = 27.3°$

9. 

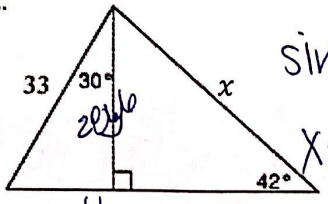
$\cos(42) = \frac{16}{x}$ $\quad X = \frac{16}{\cos(42)}$ $\quad X = 21.5$

10. 

$\tan(x) = \frac{77}{36}$ $\quad X = \tan^{-1}(77/36)$ $\quad X = 64.9°$

11. 

$\tan(x) = 3/8$ $\quad X = \tan^{-1}(3/8)$ $\quad X = 20.6°$

12. 

$\cos(30) = \frac{y}{33}$ $\quad y = 33 \cdot \cos(30) = 28.6$

$\sin(42) = \frac{28.6}{x}$ $\quad X = \frac{28.6}{\sin(42)}$ $\quad X = 42.7$

Right Triangle Trig Math Lib