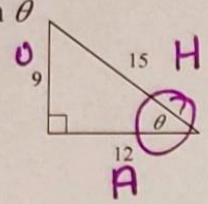
Honors Pre-calculus Name _____

Law of Sin and Law of Cos Study Guide

Date _____ Period ____

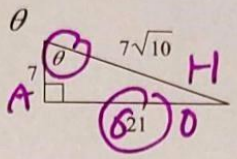
Find the value of the trig function indicated. SOH CAH TOA

1) $\sin\theta$



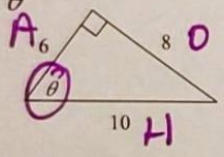
$\sin\theta = \frac{9}{15}$

2) $\tan\theta$



$\tan\theta = \frac{21}{7}$

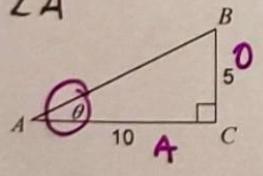
3) $\cos\theta$



$\cos\theta = \frac{6}{10}$

Find the measure of each angle indicated. Round to the nearest tenth. Be sure to show your equations.

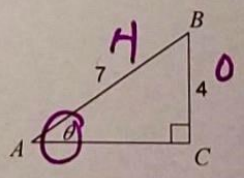
4) $\angle A$



$\theta = \tan^{-1}(5/10)$

$\angle A = 26.6°$

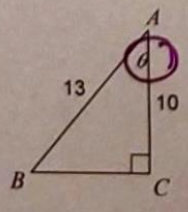
5)



$\theta = \sin^{-1}\left(\frac{4}{7}\right)$

$\angle A = 34.8°$

6)

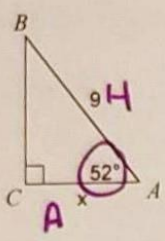


$\theta = \cos^{-1}\left(\frac{10}{13}\right)$

$\angle A = 39.7°$

Find the measure of each side indicated. Round to the nearest tenth. Be sure to show your equations.

7)

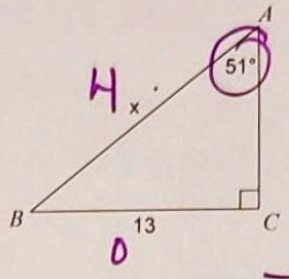


$\frac{\cos 52}{1} = \frac{x}{9}$

$x = 9\cos 52$

$x = 5.5$

8)

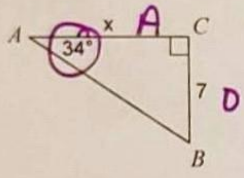


$\sin 51 = \frac{13}{x}$

$x = 13/\sin 51$

$x = 16.7$

9)



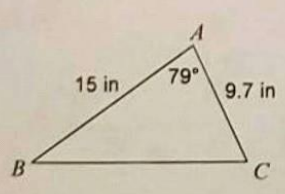
$\tan 34 = \frac{7}{x}$

$x = 7/\tan 34$

$x = 10.4$

Find the area of each triangle to the nearest tenth. Be sure to show your equations.

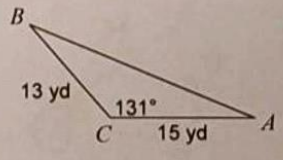
10)



$A = 1/2(15)(9.7)\sin 79$

$A = 71.4 in^2$

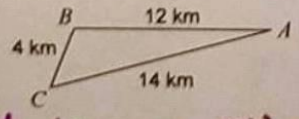
11)



$A = \frac{1}{2}(13)(15)\sin 131$

$A = 73.6 yd^2$

12)

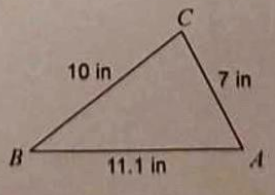


$s = 1/2(12+4+14) = 15$

$\sqrt{15(15-4)(15-12)(15-14)}$

$A = 22.2 km^2$

13)



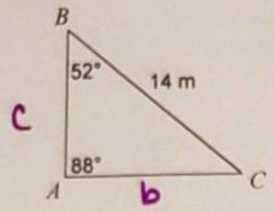
$s = \frac{1}{2}(10+7+11.1) = 14.1$

$\sqrt{14.1(14.1-10)(14.1-7)(14.1-11.1)}$

$A = 35.1 in^2$

Solve each triangle. Round the angles to the nearest degree and sides to the nearest tenth. Be sure to show your equations.

14)



A = 88° a = 14

B = 52° b = 11

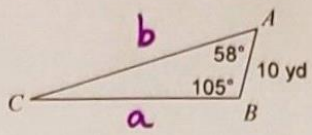
C = 40° c = 9

$\angle C = 180 - (52 + 88) = 40°$

$\frac{\sin 88}{14} = \frac{\sin 40}{c} = \frac{\sin 52}{b}$

$b = \frac{14 \sin 52}{\sin 88}$ $c = \frac{14 \sin 40}{\sin 88}$

15)



A = 58° a = 29

B = 105° b = 33

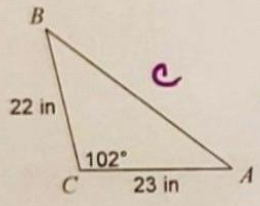
C = 17° c = 10

$\angle C = 180 - (105 + 58) = 17$

$\frac{\sin 58}{a} = \frac{\sin 105}{b} = \frac{\sin 17}{10}$

$a = \frac{10 \sin 58}{\sin 17}$ $b = \frac{10 \sin 105}{\sin 17}$

16)



A = 38° a = 22

B = 40° b = 23

C = 102° c = 35

$c = \sqrt{22^2 + 23^2 - 2(22)(23)\cos 102}$

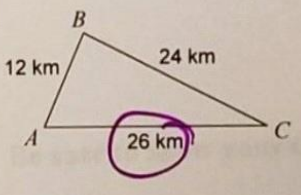
$c = 35$

$\frac{\sin B}{23} = \frac{\sin 102}{35} = \frac{\sin A}{22}$

$B = \sin^{-1}\left(\frac{23 \sin 102}{35}\right)$

$\angle A = 180 - (102 + 40) = 38$

17)



A = 67° a = 24

B = 86° b = 26

C = 27° c = 12

$B = \cos^{-1}\left(\frac{12^2 + 24^2 - 26^2}{2(12)(24)}\right)$

$B = 85.6 = 86°$

$\frac{\sin A}{24} = \frac{\sin 86}{26} = \frac{\sin C}{12}$

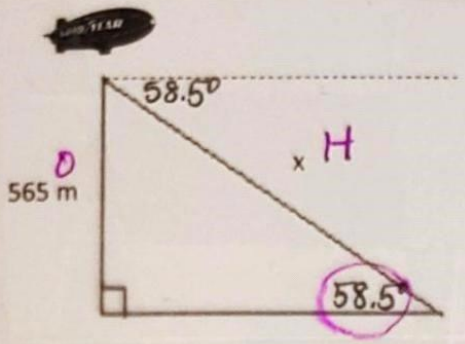
$A = \sin^{-1}\left(\frac{24 \sin 86}{26}\right)$

$A = 67°$

$\angle C = 180 - (86 + 67)$

Solve for the missing part of the triangle. Be sure to set up your equations. Round the angles to the nearest degree and sides to the nearest tenth.

18) The Goodyear Blimp is 565 m above the ground during a Super Bowl game. The angle of depression of the north goal line from the blimp is 58.5°. How far is the observer in the blimp from the goal line.

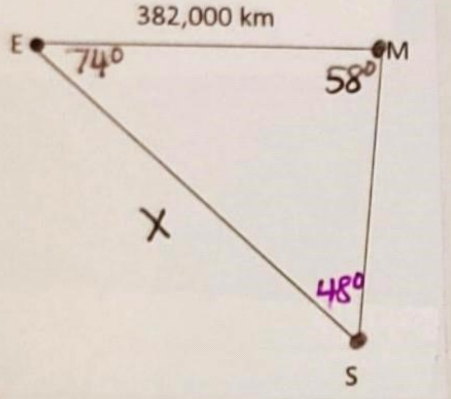


$\sin 58.5 = \frac{565}{x}$

$x = 565 / \sin 58.5$

$x = 662.6\text{ m}$

19) On a space flight, astronant Neil Armstrong reports that the angle formed by his lines of sight to the earth and to the moon was 58°. At the same time, the observer on the earth reports that the angle formed by her lines of sight to the spaceship and to the moon is 74°. If the moon is 382,000 km from the earth, how far is the spaceship from the tracking station?

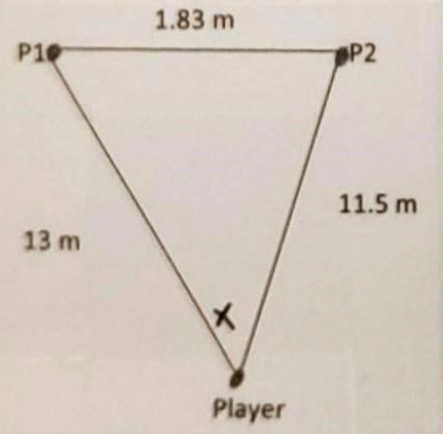


$\frac{\sin 58}{x} = \frac{\sin 48}{382{,}000}$

$x = \frac{382{,}000 \sin 58}{\sin 48}$

$x = 435{,}923.6\text{ km}$

20) A hockey net is 1.83m wide. A player shoots from a point where the puck is 13m from one goal post and 11.5m from the other. Within what angle must he make his shot to score?



$x = \cos^{-1}\left(\frac{13^2 + 11.5^2 - 1.83^2}{2(13)(11.5)}\right)$

$x = 4.9°$

or

$x = 5°$