Secondary Math 3H

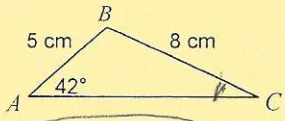
Name Answer Key

Homework 5-1: Law of Sines

Date _____ Period ____

Find each measurement indicated. Round your answers to the nearest tenth.

1) Find $m\angle C$



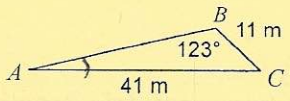
$\frac{\sin C}{5} = \frac{\sin 42}{8}$

$\sin C = \frac{5\sin 42}{8}$

$C = \sin^{-1}\left(\frac{5\sin 42}{8}\right)$

$m\angle C = 25°$

2) Find $m\angle A$



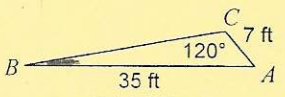
$\frac{\sin A}{11} = \frac{\sin 123}{41}$

$\sin A = \frac{11\sin 123}{41}$

$A = \sin^{-1}\left(\frac{11\sin 123}{41}\right)$

$m\angle A = 13$

3) Find $m\angle B$



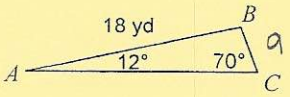
$\frac{\sin B}{7} = \frac{\sin 120}{35}$

$\sin B = \frac{7\sin 120}{35}$

$B = \sin^{-1}\left(\frac{7\sin 120}{35}\right)$

$m\angle B = 10°$

4) Find BC



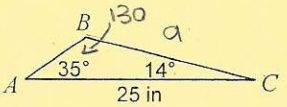
$\frac{\sin 12}{a} = \frac{\sin 70}{18}$

$\frac{18\sin 12}{\sin 70} = \frac{a\sin 70}{\sin 70}$

$4.0 = a$

$BC = 4.0\text{ yd}$

5) Find BC



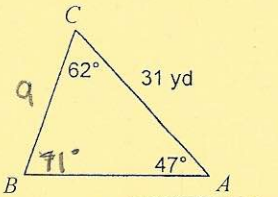
$\frac{\sin 36}{a} = \frac{\sin 130}{25}$

$a = \frac{25\sin 36}{\sin 130}$

$a = 19.2$

$BC = 19.2\text{ in}$

6) Find BC



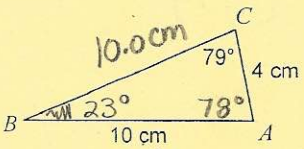
$\frac{\sin 47}{a} = \frac{\sin 71}{31}$

$a = \frac{31\sin 47}{\sin 71}$

$BC = 24.0\text{ yd}$

Solve each triangle. Round your answers to the nearest tenth.

7)



$\frac{\sin 79}{10} = \frac{\sin B}{4}$

$\frac{4\sin 79}{10} = \sin\beta$

$\sin^{-1}\left(\frac{4\sin 79}{10}\right) = B$

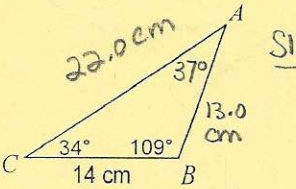
$23° = B$

$\frac{\sin 78}{a} = \frac{\sin 79}{10}$

$a = \frac{10\sin 78}{\sin 79}$

$a = 10.0\text{cm}$

8)



$\frac{\sin 37}{14} = \frac{\sin 34}{c}$

$c = \frac{14\sin 34}{\sin 37}$

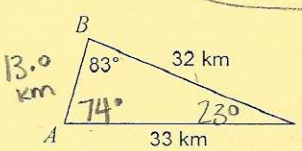
$c = 13.0\text{ cm}$

$\frac{\sin 109}{b} = \frac{\sin 37}{14}$

$b = \frac{14\sin 109}{\sin 37}$

$b = 22.0$

9)



$\frac{\sin A}{32} = \frac{\sin 83}{33}$

$\sin A = \frac{32\sin 83}{33}$

$A = \sin^{-1}\left(\frac{32\sin 83}{33}\right)$

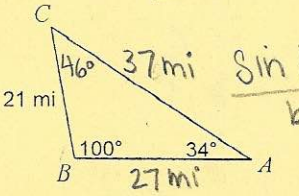
$A = 74°$

$\frac{\sin 23}{c} = \frac{\sin 83}{33}$

$c = \frac{33\sin 23}{\sin 83}$

$c = 13.0$

10)



$\frac{\sin 100}{b} = \frac{\sin 34}{21}$

$b = \frac{21\sin 100}{\sin 34}$

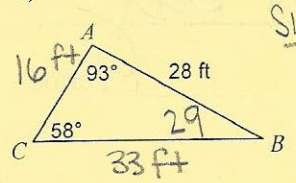
$b = 37.0$

$\frac{\sin 46}{c} = \frac{\sin 34}{21}$

$c = \frac{21\sin 46}{\sin 34}$

$c = 27$

11)



$\frac{\sin 93}{9} = \frac{\sin 58}{28}$

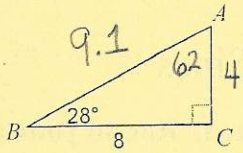
$a = \frac{28 \sin 93}{\sin 58}$

$a = 33.0$

$\frac{\sin 29}{b} = \frac{\sin 58}{28}$

$b = 28 \sin 29 / \sin 58$

12)



$\frac{\sin 62}{8} = \frac{\sin 28}{b}$

$b = \frac{8 \sin 28}{\sin 62}$

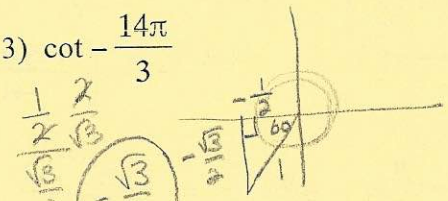
$b = 4.3$

$\frac{\sin 62}{8} = \frac{\sin 90}{c}$

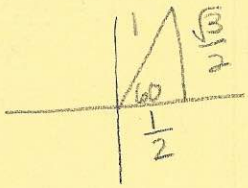
$C = \frac{8 \sin 90}{\sin 62} = 9.1$

Find the exact value of each trigonometric function.

13) $\cot -\frac{14\pi}{3}$

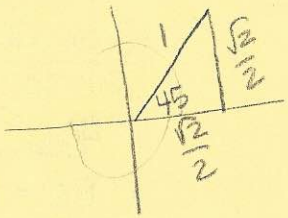


14) $\tan \frac{\pi}{3}$



$\sqrt{3}$

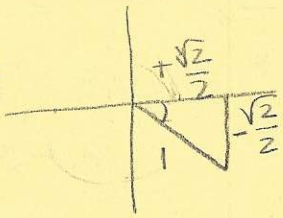
15) $\sec -\frac{7\pi}{4}$



$\frac{1}{\cos}$

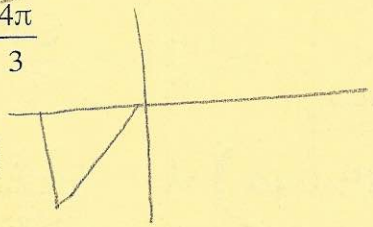
$\sqrt{2}$

16) $\cos \frac{23\pi}{4}$



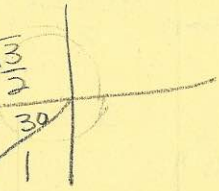
$\frac{\sqrt{2}}{2}$

17) $\cot \frac{4\pi}{3}$



$\frac{\sqrt{3}}{3}$

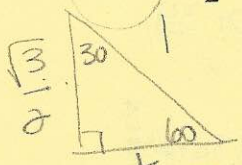
18) $\cos -870°$

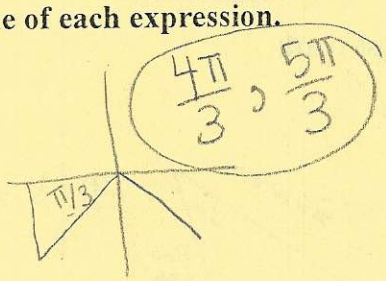


$-\frac{\sqrt{3}}{2}$

Find the exact value of each expression.

19) $\sin^{-1} -\frac{\sqrt{3}}{2}$





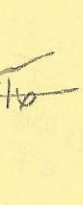
$\frac{4\pi}{3}, \frac{5\pi}{3}$

20) $\tan^{-1} 0$

$0, \pi, 2\pi$

$\tan = \frac{\sin}{\cos} = \frac{0}{1}$ (1, 0)

21) $\tan^{-1} \frac{\sqrt{3}}{3}$



$\frac{\pi}{6}$ & $\frac{7\pi}{6}$

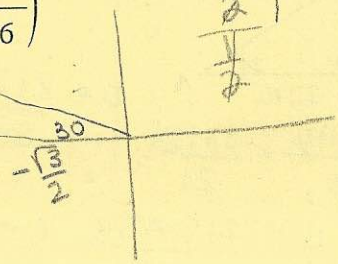
22) $\tan^{-1}(\sec 0)$

$\tan^{-1}\left(\frac{1}{\cos 0}\right) = \tan^{-1}(1)$

$= \frac{\pi}{4}$ or $\frac{5\pi}{4}$

23) $\tan^{-1}\left(\cot \frac{5\pi}{6}\right)$

$\tan^{-1}(-\sqrt{3})$



$\frac{2\pi}{3}$ $\frac{5\pi}{3}$

24) $\cos^{-1}\left(\csc \frac{\pi}{2}\right)$

$\cos^{-1}\left(\frac{1}{\sin \pi/2}\right)$

$\cos^{-1}(1) = 0, 2\pi$