Secondary Math III
Unit 11 Review

Name:_____
Period:_____

Find the exact value.

1. $\sin^{-1}\left(\frac{1}{2}\right)$

$\pi/6,\ 5\pi/6$
$30°,\ 150°$

2. $\tan^{-1}\left(\sqrt{3}\right)$

$\pi/3,\ 4\pi/3$
$60°,\ 240°$

3. $\sin\left(\tan^{-1}\frac{\sqrt{3}}{3}\right)$

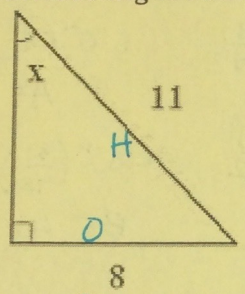
$\frac{1}{2},$

4. $\cos^{-1}\left(\sin\frac{\pi}{3}\right)$

$\frac{\pi}{6},\ 11\pi/6$
$30°,\ 330°$

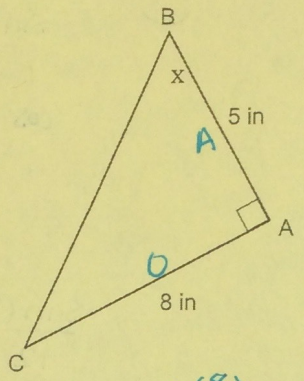
Use inverse trig to find the missing angle.

5.



$\sin^{-1}\left(\frac{8}{11}\right) = x$

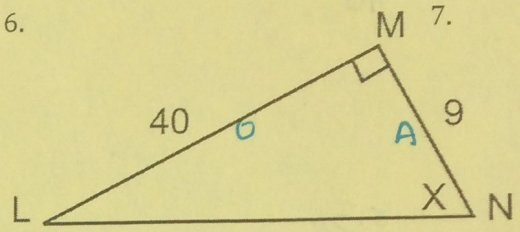
$\boxed{x = 47°}$



$\tan^{-1}\left(\frac{8}{5}\right) = x$

$\boxed{x = 58°}$

6.



$\tan^{-1}(40/9) = x$

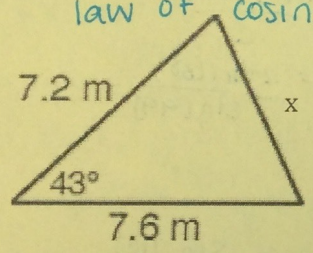
$\boxed{x = 77°}$

7.

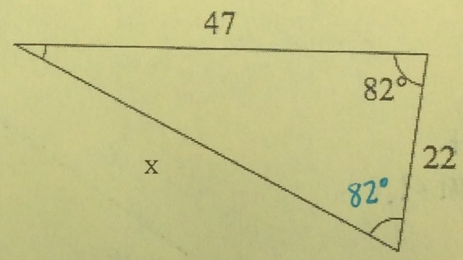
Using the law of sines, find the missing side of the triangle:

law of cosines

8.



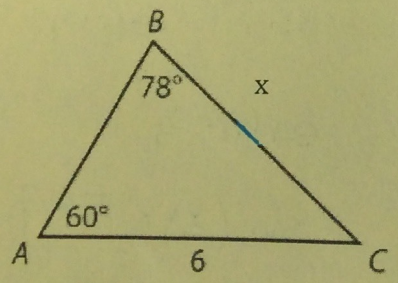
9.



$\frac{\sin(82)}{47} = \frac{\sin(82)}{x}$

$\boxed{x = 82}$

10.



$x \cdot \frac{\sin(78)}{6} = \frac{\sin(60)}{x}$

$6 \cdot \frac{x \cdot \sin(78)}{6} = \sin(60) \cdot 6$

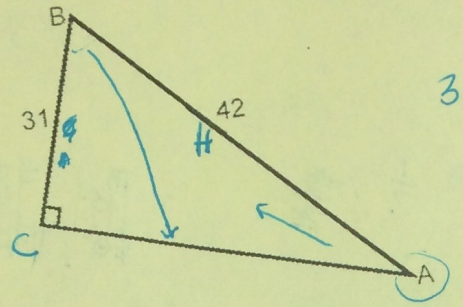
$\frac{x \cdot \sin(78)}{\sin(78)} = \frac{6 \cdot \sin(60)}{\sin(78)}$

$x = \frac{6\sin(60)}{\sin(78)} = \boxed{5.3}$

Solve the following triangles (find ALL angles and sides)

11.

$a =$ 31
$b =$ 28.3
$c =$ 42
$A =$ 48°
$B =$ 42°
$C =$ 90



$31^2 + b^2 = 42^2$

$\sqrt{b^2} = \sqrt{42^2 - 31^2}$ $\quad b = 28.3$

$\sin A = \frac{31}{42}$ $\quad \sin^{-1}\left(\frac{31}{42}\right) = A$

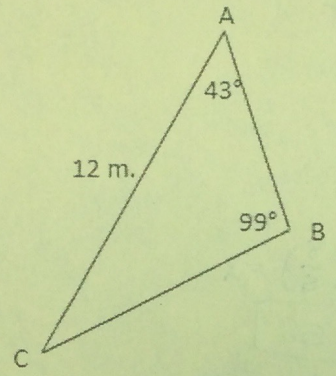
$A = 48°$

$\cos B = \frac{31}{42}$ $\quad \cos^{-1}\left(\frac{31}{42}\right) = B$

$B = 42°$

12.

$a =$ 8.3
$b =$ 12
$c =$ 7.5
$A =$ 43°
$B =$ 99°
$C =$ 38°



$180 - 43 - 99 = 38$

$\frac{\sin(99)}{12} = \frac{\sin(43)}{a}$

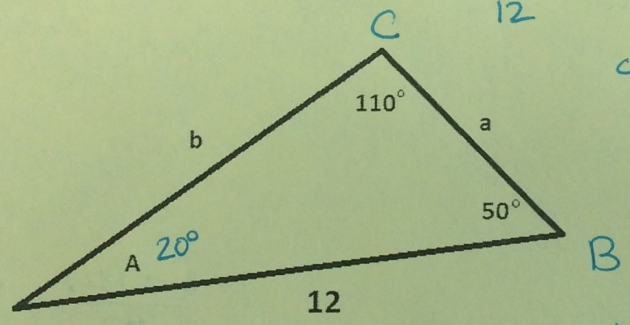
$a = \frac{12 \sin(43)}{\sin(99)} = 8.3$

$\frac{\sin(99)}{12} = \frac{\sin(38)}{c}$

$c = \frac{12 \sin(38)}{\sin(99)} = 7.5$

13.

$a =$ 4.4
$b =$ 9.8
$c =$ 12
$A =$ 20°
$B =$ 50°
$C =$ 110

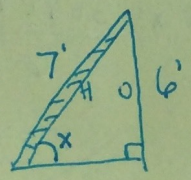


$\frac{\sin(110)}{12} = \frac{\sin(50)}{b}$

$b = \frac{12 \cdot \sin(50)}{\sin(110)} = 9.8$

$a = \frac{12 \cdot \sin(20)}{\sin(110)} = 4.4$

14. Jerry is hanging a poster for the upcoming spring dance. He has a ladder that is 7 feet long, and wants to hang the poster up on the wall at 6 feet high. What angle does the ladder need to make with the ground for the poster to be 6 feet high?



$\sin(x) = \frac{6}{7}$

$\sin^{-1}\left(\frac{6}{7}\right) = \boxed{59°}$