Name_____

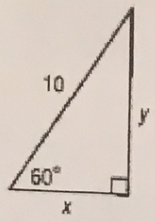
Geo w/Trig Final Exam Review

Unit 7: Right Triangles & Trig

Chapter 8

1. Find the missing segment(s) in each special right triangle. *Leave answers as a simplified radical.*

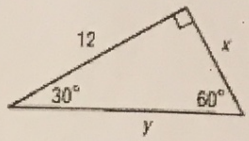
a)



30 60 90
1 $\sqrt{3}$ 2
x y 10

x = 5 y = $5\sqrt{3}$

b)



30 60 90
1 $\sqrt{3}$ 2
x 12 y

$\frac{1}{x} = \frac{\sqrt{3}}{12}$

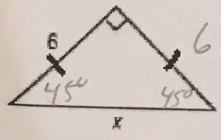
$12 = x\sqrt{3}$

$x = \frac{12}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$x = \frac{12\sqrt{3}}{3} = 4\sqrt{3}$

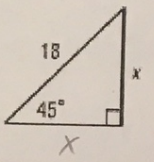
x = $4\sqrt{3}$ y = $8\sqrt{3}$

c)



x = $6\sqrt{2}$

d)



45 45 90
1 1 $\sqrt{2}$
x x 18

$\frac{1}{x} = \frac{\sqrt{2}}{18}$

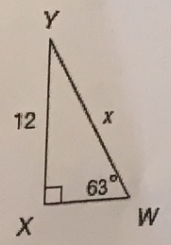
$18 = x\sqrt{2}$

$x = \frac{18}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{18\sqrt{2}}{2} = 9\sqrt{2}$

x = $9\sqrt{2}$

2. Find the missing angle measurements or side lengths. *Round to the nearest hundredth.*

a)



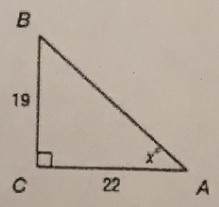
$\frac{\sin(63)}{1} = \frac{12}{x}$

$x\sin(63) = 12$

$x = \frac{12}{\sin(63)}$

x = 13.47

b)



$\tan(x) = \frac{19}{22}$

$\tan^{-1}\left(\frac{19}{22}\right) = x$

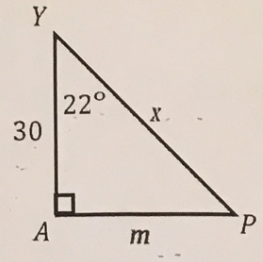
$x \approx 40.82°$

x = 40.82°

SOH-CAH-TOA

3. Solve each rigth triangle. *Round to the nearest hundredth if necessary.*

a)



$m\angle P = 180 - 22 - 90$

$m\angle P = 68°$

$\cos(22) = \frac{30}{x}$

$x \cos 22 = 30$

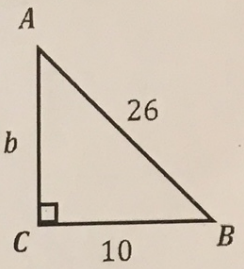
$x = \frac{30}{\cos 22} \approx 32.36$

$\tan(22) = \frac{m}{30}$

$m = 30 \tan(22)$

$m \approx 12.12$

b)



$b = 24$

(Pythagorean Triple)

$\cos(B) = \frac{10}{26}$

$\cos^{-1}(\frac{10}{26}) = m\angle B$

$m\angle B \approx 67.38°$

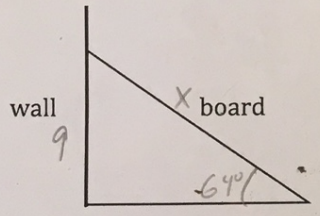
$\sin A = \frac{10}{26}$

$\sin^{-1}(\frac{10}{26}) = m\angle A$

$m\angle A = 22.62°$

4. First use the given information to label the diagram. *Round your answer to the nearest tenth.*

a) A wooden board is leaning against a wall. The board is touching the wall at a spot that is 9 feet off the ground. The angle of elevation between the board and the ground is 64°. Find the length of the board.



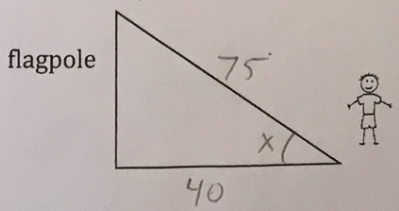
$\sin(64) = \frac{9}{x}$

$x \sin(64) = 9$

$x = \frac{9}{\sin(64)} \approx 10.01$

Length of the board: 10.0 ft

b) A boy is looking up from ground level to the top of a flagpole. He is 40 feet from the base of the pole, but his direct distance to the top of the pole is 75 feet. Find the angle of elevation to the top of the pole.



$\cos(x) = \frac{40}{75}$

$\cos^{-1}(\frac{40}{75}) = x$

$x \approx 57.77$

Angle of elevation: 57.8°

5. Determine if the side lengths can form a triangle. If they do, classify the triangle as acute, obtuse or right.

15 in, 17 in, 9 in

$9 + 15 > 17$

$24 > 17$ ✓

yes, it is a $\triangle$

$17^2 \_ 9^2 + 15^2$

$289 \_ 81 + 225$

$289 < 306$

Acute