3.1 - 3.6 Practice Quiz

Lesson 3.1 - Degrees/Minutes Seconds

1) Convert the following angle measure from decimal degrees to degrees/ minutes seconds:

54.89°

$54^\circ\ 53'\ 48''$

2) Convert the following angle measure from degrees/minutes/seconds to decimal degrees (round 3 decimal places)

78° 52' 48"

78.88°

3) Add the following angle measures:

48° 47' 52" and 27° 39' 46"

$76^\circ\ 27'\ 38''$

4) Subtract the following angle measures:

73° 18' 36" and 41° 29' 55"

$31^\circ\ 48'\ 41''$

5) Determine the compliment AND supplement of the following angle:

78° 52' 48"

Compliment

$90^\circ - (78^\circ 52' 48'') = 11^\circ\ 7'\ 12''$

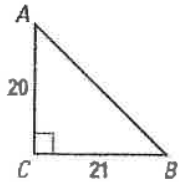
Supplement

$180 - (78^\circ 52' 48'') = 101^\circ\ 7'\ 12''$

Lesson 3.3 - 3.6 - Basic Right Triangle Trigonometry (SOH CAH TOA)

Solve the following right triangles for all missing sides and angles: (round 1 decimal place where necessary)

22.

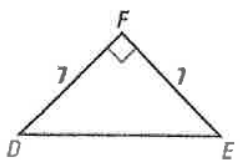


$AB = 29$

$\measuredangle A = 46.40^\circ$

$\measuredangle B = 43.60^\circ$

23.

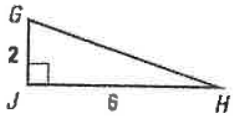


$DE = 7\sqrt{2}$ or 9.40

$\measuredangle D = 45^\circ$

$\measuredangle E = 45^\circ$

24.



$GH = 6.3$

$\measuredangle G = 71.6^\circ$

$\measuredangle H = 18.4^\circ$

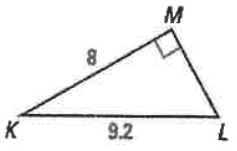
3.1 - 3.6 Practice Quiz

Lesson 3.3 - 3.6 - Basic Right Triangle Trigonometry (SOH CAH TOA)

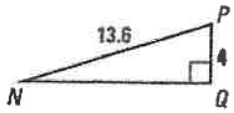
Solve the following right triangles for all missing sides and angles: (round 1 decimal place where necessary)

4.5
$m\angle = 90°$
$\angle K = 29.6°$
$\angle L = 60.4°$

25.

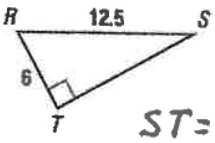


26.



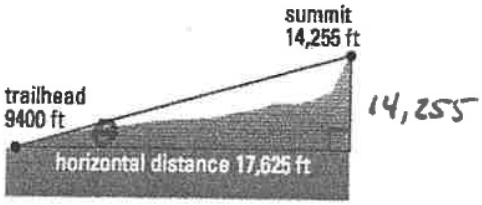
$QN = 13$
$\angle N = 17.1°$
$\angle P = 72.9°$

27.



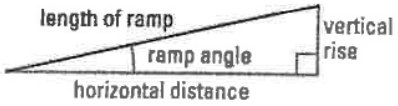
$ST = 10.97$
$\angle R = 61.3°$
$\angle S = 28.7$

38. **HIKING** You are hiking up a mountain peak. You begin hiking at a trailhead whose elevation is about 9400 feet. The trail ends near the summit at 14,255 feet. The horizontal distance between these two points is about 17,625 feet. Estimate the angle of elevation from the trailhead to the summit.



$\tan^{-1}\left(\frac{14,255}{17625}\right) = \theta = 38.97°$

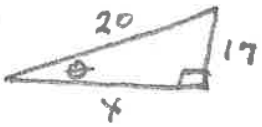
RAMPS In Exercises 39–41, use the information about wheelchair ramps. The Uniform Federal Accessibility Standards specify that the ramp angle used for a wheelchair ramp must be less than or equal to 4.76°.



39. The length of one ramp is 20 feet. The vertical rise is 17 inches. Estimate the ramp's horizontal distance and its ramp angle.

40. You want to build a ramp with a vertical rise of 8 inches. You want to minimize the horizontal distance taken up by the ramp. Draw a sketch showing the approximate dimensions of your ramp.

9)

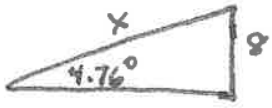


not in spec

$\theta = \sin^{-1}\left(\frac{17}{20}\right) = 58.21°$ = ramp angle

$x^2 + 17^2 = 20^2$ $x = 10.53$ ft = horiz distance

40)



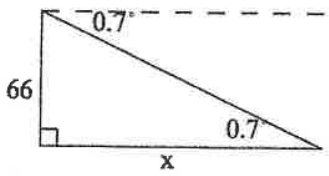
$\sin 4.76 = \frac{8}{x}$

$x = \frac{8}{\sin 4.76} = 96.4$ ft ramp

3.1 - 3.6 Practice Quiz

Lesson 3.3 - 3.6 - Basic Right Triangle Trigonometry (SOH CAH TOA) Please draw a diagram for these problems

EXAMPLE: An observer in a lighthouse is 66 feet above the surface of the water. The observer sees a ship and finds the angle of depression to be 0.7°. Estimate the distance from the ship to the base of the lighthouse in miles. (there are 5,280 feet in one mile, round your answer TWO decimal places)



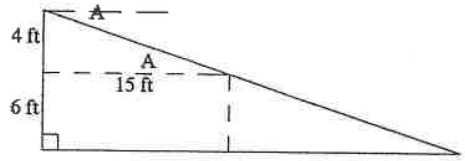
$$\tan 0.7^\circ = \frac{66}{x}$$

$$x \tan 0.7^\circ = 66$$

$$x = \frac{66}{\tan 0.7^\circ} = 5401.90 \text{ feet}$$

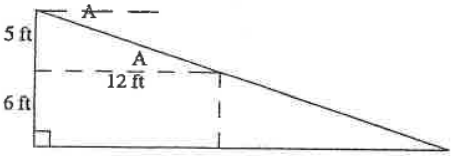
$$\frac{5401.90\ ft}{1} \cdot \frac{1\ mile}{5280\ ft} = 1.02\ miles$$

EXAMPLE: The eyes of a basketball player are 6 ft above the floor. The player is at the free-throw line, which is 15 ft from the center of the basket rim. What is the angle of elevation from the player's eyes to the center of the rim if the rim is 10ft above the floor? (round your answer TWO decimal places)



We need to find angle A which is the angle of depression. This is the same as the angle A inside the triangle. When looking at the angle A inside the triangle we see that the opposite side is 4ft and the adjacent is 15 feet. We can set up the following equation: $\tan A = \frac{4}{15}$. This can also be written as $\tan A = 0.2667$. In order to find A we need the inverse tangent: $A = \tan^{-1} 0.2667 = 14.93^\circ$. Therefore the angle of depression should be 14.93°.

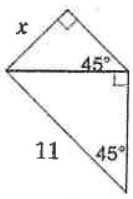
EXAMPLE: A security camera in a neighborhood bank is mounted on a wall 11 ft above the floor. What angle of depression should be used if the camera is to be directed to a spot 6 ft above the floor and 12 ft from the wall? (round your answer TWO decimal places)



We need to find angle A which is the angle of depression. This is the same as the angle A inside the triangle. When looking at the angle A inside the triangle we see that the opposite side is 5ft and the adjacent is 12 feet. We can set up the following equation: $\tan A = \frac{5}{12}$. This can also be written as $\tan A = 0.4167$. In order to find A we need the inverse tangent: $A = \tan^{-1} 0.4167 = 22.62^\circ$. Therefore the angle of depression should be 22.62°

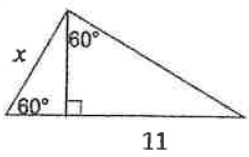
Lesson 3.7 - Special Right Triangles - Solve for the variable(s) indicated, leave your answer in simplest radical form

17)



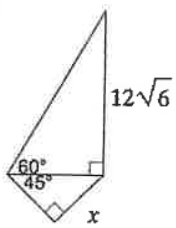
$x = \frac{11}{2}$

19)



$x = \frac{22}{3}$

20)



$x = 12$