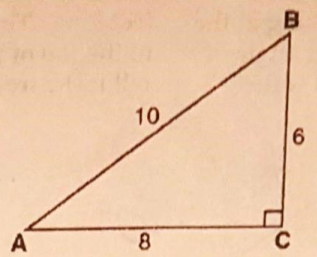
GSE Geometry Unit 3 Right Triangle Trigonometry Study guide

1) Given the triangle at the right, find the trig ratios.

a) sin A = 3/5
b) cos A = 4/5
c) tan A = 3/4

d) sin B = 4/5
e) cos B = 3/5
f) tan B = 4/3



2. Suppose you know that Sin B = cos A, what could you say about the values of the trigonometric ratios?

Ratios are same

3) Given the trigonometric ratio, find the ratio that is complementary to angle x

a) Given $\sin(x) = \frac{60}{61}$, $\cos(90° - x) =$ 60/61.

b) Given $\cos(x) = \frac{9}{41}$, $\sin(90° - x) =$ 9/41.

c) Given $\tan(x) = \frac{28}{45}$, $\tan(90° - x) =$ 45/28.

4) Fill in the blank.

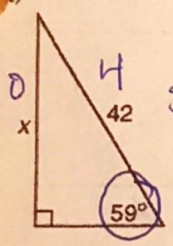
a) sin 74° = cos 16°
b) cos 14° = sin 76°.

5) Find the value of angle A.

a) Sin A = 0.6691 A = 42°
b) Cos A = 0.3746 A = 68°
c) Tan A = 0.4663 A = 25°

6) Given the triangles below, Find the missing side. Be sure to set your equation. Remember to circle the referenced angle and label the sides.

a)

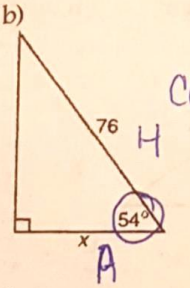


$\sin 59 = \frac{x}{42}$

$42 \sin 59$

$x = 36$

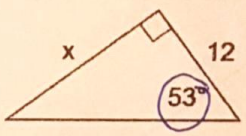
b)



$\cos 54 = \frac{x}{78}$

$x = 45$

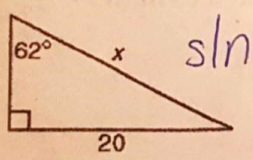
c)



$\tan 53 = \frac{x}{12}$

$x = 16$

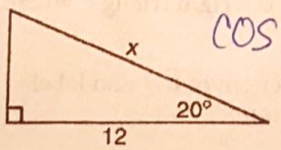
d)



$\sin 62 = \frac{20}{x}$

$x = 23$

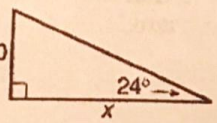
e)



$\cos 20 = \frac{12}{x}$

$x = 13$

f)

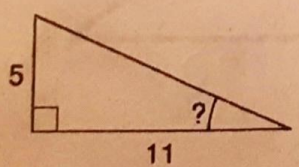


$\tan 24 = \frac{60}{x}$

$x = 135$

7) Given the triangles below, find the missing Angle. Be sure to set your equation. Remember to circle the referenced angle and label the sides.

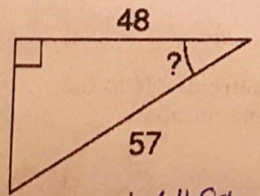
a)



$\tan^{-1}(5/11)$

$24°$

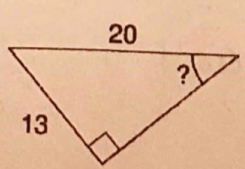
b)



$\cos^{-1}(48/57)$

$33°$

c)

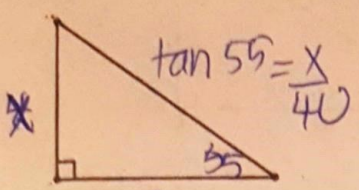


$\sin^{-1}(13/20)$

$41°$

8) Given the situations below, draw a diagram and solve for the missing piece. Be sure to set up your equation. Round angles to the nearest degree (whole number) and sides to nearest hundredth (2 decimal places)

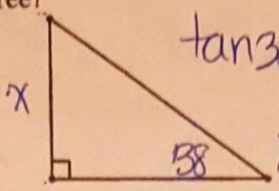
a) A surveyor is standing 40 feet from a building and is looking at the top of the building with an angle of elevation of 55°. How tall is the building?



X=57.13

X = 40 tan 55

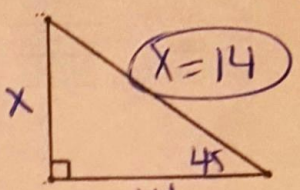
b) A tree casts a shadow that is 42 feet long. The angle of elevation to the top of the tree is 38°. How tall is the tree?



X = 42 tan 38

X = 32.81

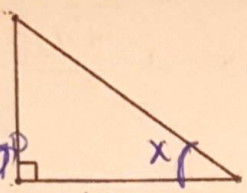
c) A pole casts a shadow that is 14 ft long. The angle of elevation is 45°. What is the length of the pole?



tan 45 = X/14

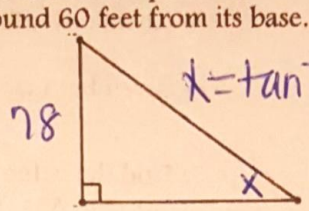
X = 14 tan 45

d) Find the angle of elevation if you are standing 400 ft away from a building that is 950 ft tall.



tan⁻¹(950/400) = 67.17

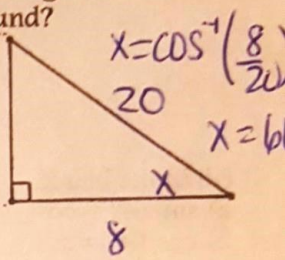
e) A radio tower is 78 feet tall. Find the angle of elevation to the top of the tower at a point on level ground 60 feet from its base.



X = tan⁻¹(78/60)

X = 52.43

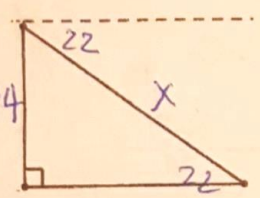
f) A 20-foot ladder leans against a wall so that the base of the ladder is 8 feet from the base of the building. What angle does the ladder make with the ground?



X = cos⁻¹(8/20)

X = 6

g) The top of a waterslide is 14 ft above the ground. The angle of depression from the top of the water slide to the ground is 22°. How long is the slide?

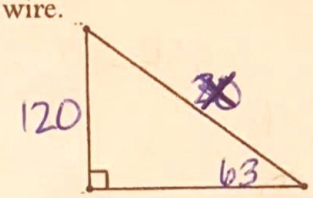


sin 22 = 14/X

X = 14/sin 22

X = 37.37

h) A guy wire reaches from the top of a 120 m television transmitter tower to the ground. The wire makes a 63° angle with the ground. Find the length of the guy wire.

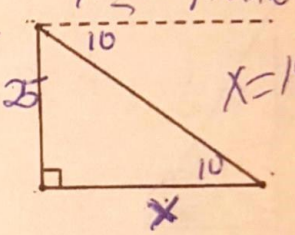


sin 63 = 120/X

X = 120/sin63

X = 134.68

i) A lighthouse operator is 25 m above sea level. He spots a sailboat in the distance. The angle of depression of the sighting is 10°. How far is the boat from the base of the lighthouse?



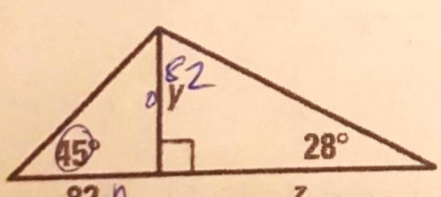
tan 10 = 25/X

X = 25/tan 10

X = 141

9) Use the diagram below to find the missing pieces of the right triangle.

a)



Find y: tan 45 = y/82

y = 82 tan 45

y = 82

Find z:

tan 28 = 82/z

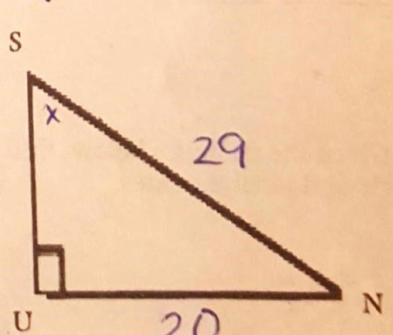
z = 82/tan 28

z = 154.22

10) △ *SUN* is a right triangle where ∠*SUN* = 90°, and the sin (*N*) = 21/29.

a) Find the length of $\overline{UN}$ and label the diagram.

√(29² − 21²) = 20



b) Find the measure of ∠*S* to the nearest whole number.

S = tan⁻¹(20/21) S = 44°

c) Find the measure of ∠*N* to the nearest whole number.

N = tan⁻¹(21/20) N = 46°