Using the value of one trigonometric function to find the values of the others

1) Draw and label a triangle to illustrate the situation.

2) Find the length of the missing side by using the Pythagorean Theorem.

3) Give the values of the requested functions by using **SOH-CAH-TOA**

4) Give the measure of the angle to the nearest tenth of a degree by using the lengths of the sides and using inverse functions ($\sin^{-1}$, $\cos^{-1}$, or $\tan^{-1}$) to figure out the angle measure.

Examples:
1) Draw and label a triangle to illustrate the situation. 2) Find the length of the missing side. 3) Give the values of the requested functions. 4) Give the measure of the angle to the nearest tenth of a degree.

a) Given $\sin\theta = \dfrac{4}{5}$, find $\tan\theta$, $\cos\theta$, and the measure of θ.

b) Given $\tan\theta = \dfrac{12}{5}$, find $\sin\theta$, $\cos\theta$, and the measure of θ.

c) Given $\cos\theta = \dfrac{7}{25}$, find $\tan\theta$, $\sin\theta$, and the measure of θ.

STEPS to find the missing side of a right triangle if you know an angle and one other side

1) **Label each side using hyp (hypotenuse), opp (opposite side), adj (adjacent side)**

2) **Decide if you need sin, cos, or tan by using SOH-CAH-TOA**

3) **Use SOH-CAH-TOA to write an equation with the missing variable**

4) **Solve the proportion using cross multiplication**

Examples: Write an equation involving sine, cosine, or tangent that can be used to find the missing length. Then solve the equation. Round your answers to the nearest tenth.

a)

16
29°
x

b)

x
64° 14

c)

18
58°
x

d)

x
65° 12

e)

71°
16 x

f)

26°
12 x

g)

x

10   56°

h)

62°

17

x

i)

20

18°

x

j)

15

57°   x

k)

43°   15

x

l)

38°

19

x