

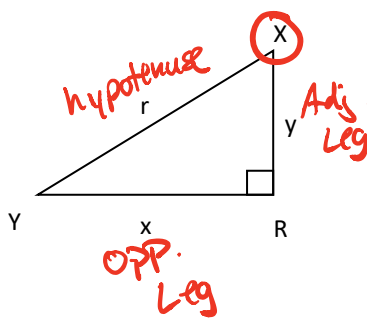
Trigonometry – Sine, Cosine, and Tangent

Notes Section 9.1

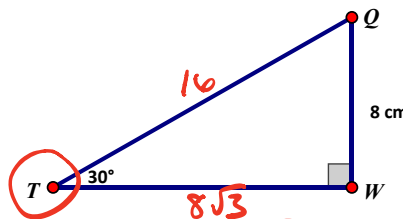
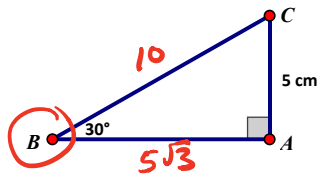
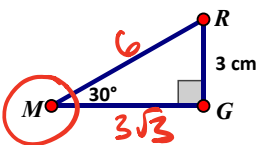
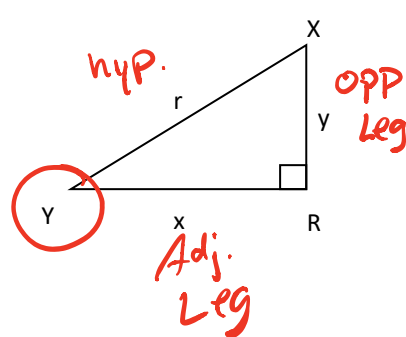
Name _____

A reference angle must be an acute angle in a right triangle.

Reference $\angle X$



Reference $\angle Y$



These three ratios have special names.

$$\frac{\text{Opposite Leg}}{\text{Hypotenuse}} = \frac{3}{6} = \frac{1}{2}$$

$$\frac{\text{Opposite Leg}}{\text{Hypotenuse}} = \frac{5}{10} = \frac{1}{2}$$

$$\frac{\text{Opposite Leg}}{\text{Hypotenuse}} = \frac{8}{16} = \frac{1}{2}$$

$$\text{Sine}(\text{meT}) = \frac{\text{Opposite Leg}}{\text{Hypotenuse}}$$

$$\frac{\text{Adjacent Leg}}{\text{Hypotenuse}} = \frac{3\sqrt{3}}{6} = \frac{\sqrt{3}}{2}$$

$$\frac{\text{Adjacent Leg}}{\text{Hypotenuse}} = \frac{5\sqrt{3}}{10} = \frac{\sqrt{3}}{2}$$

$$\frac{\text{Adjacent Leg}}{\text{Hypotenuse}} = \frac{8\sqrt{3}}{16} = \frac{\sqrt{3}}{2}$$

$$\text{Cosine}(\text{meT}) = \frac{\text{Adjacent Leg}}{\text{Hypotenuse}}$$

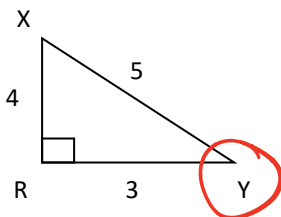
$$\frac{\text{Opposite Leg}}{\text{Adjacent Leg}} = \frac{3}{3\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\frac{\text{Opposite Leg}}{\text{Adjacent Leg}} = \frac{5}{5\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\frac{\text{Opposite Leg}}{\text{Adjacent Leg}} = \frac{8}{8\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\text{Tangent}(\text{meT}) = \frac{\text{Opposite Leg}}{\text{Adjacent Leg}}$$

Write a trigonometric function that corresponds to each pair of numbers and the given angle.



#1) 3, 5, $\angle X$

$$\text{Sin}(\text{meX}) = \frac{3}{5}$$

#4) 3, 5, $\angle Y$

$$\text{Cos}(\text{meY}) = \frac{3}{5}$$

#2) 3, 4, $\angle X$

$$\text{tan}(\text{meX}) = \frac{3}{4}$$

#5) 3, 4, $\angle Y$

$$\text{tan}(\text{meY}) = \frac{4}{3}$$

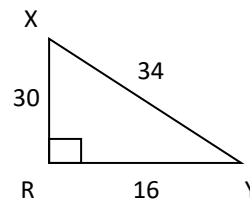
#3) 4, 5, $\angle X$

$$\text{Cos}(\text{meX}) = \frac{4}{5}$$

#6) 4, 5, $\angle Y$

$$\text{Sin}(\text{meY}) = \frac{4}{5}$$

Write an equation using the indicated trig ratio.



#7) $\text{sin}(\text{meX}) = \frac{16}{34}$

#10) $\text{sin}(\text{meY}) = \frac{30}{34}$

#8) $\text{cos}(\text{meX}) = \frac{30}{34}$

#11) $\text{cos}(\text{meY}) = \frac{16}{34}$

#9) $\text{tan}(\text{meX}) = \frac{16}{30}$

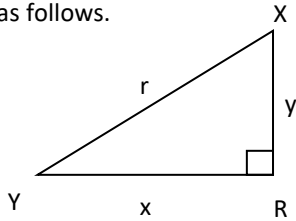
#12) $\text{tan}(\text{meY}) = \frac{30}{16}$

Trigonometry – Sine, Cosine, and Tangent

Notes Section 9.1

Name _____

Trigonometric Functions in a Right Triangle: For an acute reference angle Y in right triangle XYR, the trigonometric functions are as follows.



$$\sin(m\angle Y) = \frac{\text{Opposite Leg}}{\text{Hypotenuse}} = \frac{y}{r}$$

$$\cos(m\angle Y) = \frac{\text{Adjacent Leg}}{\text{Hypotenuse}} = \frac{x}{r}$$

$$\tan(m\angle Y) = \frac{\text{Opposite Leg}}{\text{Adjacent Leg}} = \frac{y}{x}$$

sin = sine
cos = cosine
tan = tangent

SOH-CAH-TOA

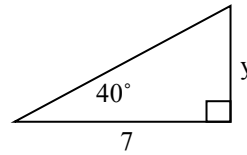
Attached by: *Multi trig*
 $r \sin A = y$

to unattach: *Divide trig⁻¹*

Operation	Inverse
+	-
-	+
•	÷
÷	•
x^2	\sqrt{x}
sin	\sin^{-1}
cos	\cos^{-1}
tan	\tan^{-1}

Find the missing value. Round measures of segments to the nearest tenth and angle measures to the nearest degree.

#13)

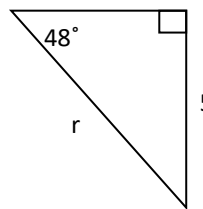


$$7 \cdot \tan(40^\circ) = \frac{y}{7} \cdot 7$$

$$7 \cdot \tan(40^\circ) = y$$

$$5.9 \approx y$$

#14)



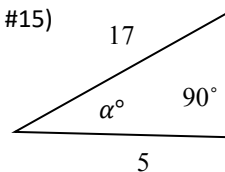
$$r \cdot \sin(48^\circ) = \frac{5}{r} \cdot r$$

$$r \cdot \sin(48^\circ) = 5$$

$$r = \frac{5}{\sin(48^\circ)}$$

$$r \approx 6.7$$

#15)

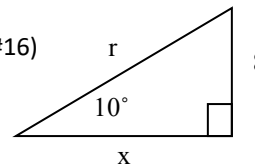


$$\cos^{-1} \left[\cos(\alpha) \right] = \cos^{-1} \left(\frac{5}{17} \right)$$

$$\alpha = \cos^{-1} \left(\frac{5}{17} \right)$$

$$\alpha \approx 73^\circ$$

#16)



$$r \cdot \sin(10^\circ) = \frac{8}{r} \cdot r$$

$$r \sin(10^\circ) = 8$$

$$r = \frac{8}{\sin(10^\circ)}$$

$$r \approx 46.1$$

$$x \cdot \tan(10^\circ) = \frac{8}{x} \cdot x$$

$$x \tan(10^\circ) = 8$$

$$x = \frac{8}{\tan(10^\circ)}$$

$$x \approx 45.4$$