

# 8-4 Trigonometric Review

Name Master E  
Date \_\_\_\_\_ Block \_\_\_\_\_

**Objective #1: Find the sine, cosine of tangent of an angle in ratio or decimal form.**

1-6: Use the diagrams at the right to find the trigonometric ratio.

1.  $\sin A = \frac{a}{c}$

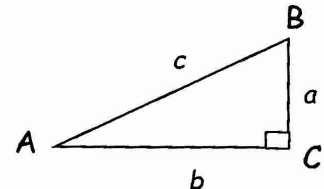
4.  $\sin B = \frac{b}{c}$

2.  $\cos A = \frac{b}{c}$

5.  $\cos B = \frac{a}{c}$

3.  $\tan A = \frac{a}{b}$

6.  $\tan B = \frac{b}{a}$



7-12: Find the sine, the cosine and tangent of the acute angles of the triangle. Express each answer as a ratio and then as a decimal rounded to four places.

7.  $\sin M = \frac{10}{\sqrt{296}} \approx .5812$

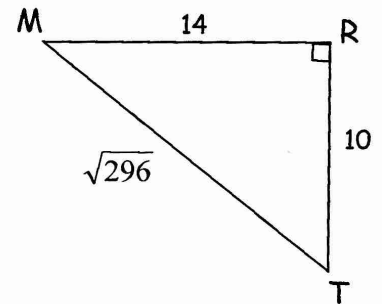
10.  $\sin T = \frac{14}{\sqrt{296}} \approx .8137$

8.  $\cos M = \frac{14}{\sqrt{296}} \approx .8137$

11.  $\cos T = \frac{10}{\sqrt{296}} \approx .5812$

9.  $\tan M = \frac{10}{14} \approx .7143$

12.  $\tan T = \frac{14}{10} \approx 1.400$

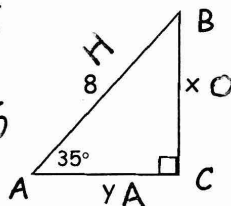


**Objective #2: Find the value of the missing sides using trigonometry to the nearest tenth.**

13.  $x = 4.6$   $y = 6.6$

$\sin 35 = \frac{x}{8} \Rightarrow x = 8 \sin 35$

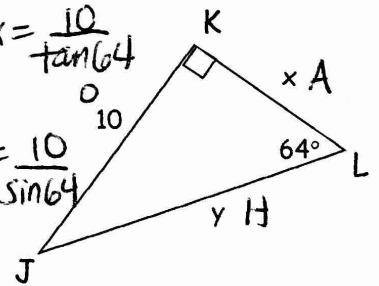
$\cos 35 = \frac{y}{8} \Rightarrow y = 8 \cos 35$



14.  $x = 4.9$   $y = 11.1$

$\tan 64 = \frac{10}{x} \Rightarrow x = \frac{10}{\tan 64}$

$\sin 64 = \frac{10}{y} \Rightarrow y = \frac{10}{\sin 64}$

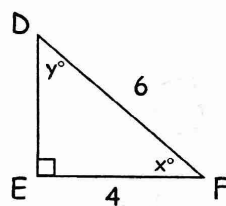


**Objective #3: Find the value of each angle using trigonometry. Round to the nearest degree**

15.  $x \approx 48^\circ$   $y \approx 42^\circ$

$\cos x = \frac{4}{6} \Rightarrow x = \cos^{-1}(\frac{4}{6})$

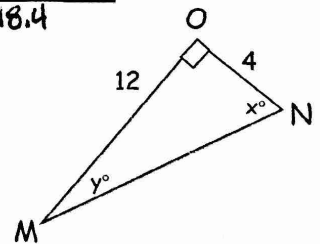
$\sin y = \frac{4}{6} \Rightarrow y = \sin^{-1}(\frac{4}{6})$



16.  $x \approx 72^\circ$   $y \approx 18^\circ$

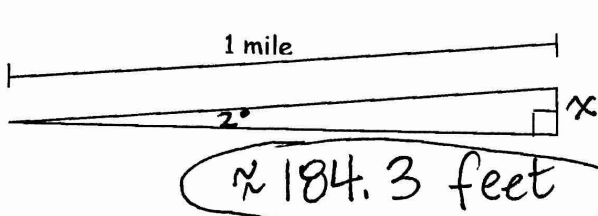
$\tan x = \frac{12}{4}$

$\tan y = \frac{4}{12}$



**Objective #4: Solve a real-life problem using trigonometry. (Label each photo and solve.)**

17. A train is traveling up a slight grade with an angle of inclination (with the ground) of only  $2^\circ$ . After traveling 1 mile what is the vertical change in feet? *Hint: 1 mile = 5280 feet*



$$\sin 2 = \frac{x}{1 \text{ mi}}$$

$$x = \sin 2 \text{ miles}$$

$$1 \text{ mile} = 5280 \text{ ft.}$$

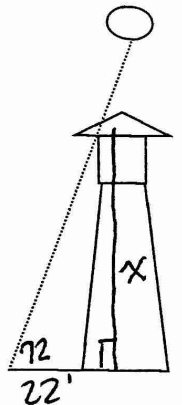
$$x = (\sin 2)(5280)$$

18. At 2 p.m. the shadow of a lighthouse is 22 feet long and the angle that the shadow makes with the ground is  $72^\circ$ . Find the height of the lighthouse.

$$\tan 72 = \frac{x}{22}$$

$$x = 22 \cdot \tan 72$$

$$x \approx 67.7 \text{ feet}$$



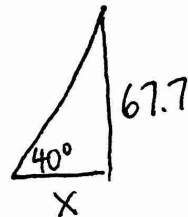
19. At 4 p.m. the angle the shadow makes with the ground is  $40^\circ$ . Find the length of the shadow cast by the lighthouse.

$$\tan 40 = \frac{67.7}{x}$$

$$x \tan 40 = 67.7$$

$$x = \frac{67.7}{\tan 40}$$

$$x \approx 80.7 \text{ feet}$$



20. At 6 p.m. will the length of the shadow be longer or shorter than it was at 4 p.m.? Explain your answer.

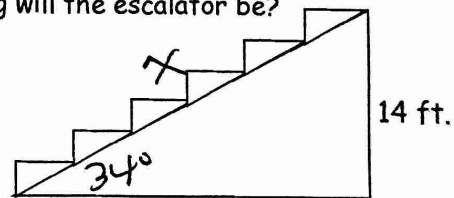
Longer because the sun will be going down, which will make the angle smaller & the shadow longer!

21. A new store is being built. An escalator is planned. It will make an angle of  $34^\circ$  with the floor. If the vertical distance between floors of the building is 14 feet, how long will the escalator be?

$$\sin 34 = \frac{14}{x}$$

$$x = \frac{14}{\sin 34}$$

$$x \approx 25.0 \text{ feet}$$

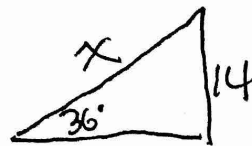


22. If the angle made with the floor is changed to  $36^\circ$ , will the length of the escalator increase or decrease? Explain your answer.

$$\sin 36 = \frac{14}{x}$$

$$x = \frac{14}{\sin 36}$$

$$x \approx 23.8 \text{ feet}$$



It will decrease because the angle increasing will make the number of steps decrease.