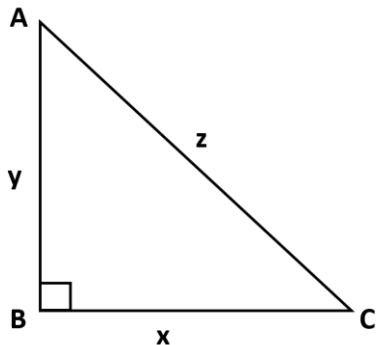


# Trigonometric Ratios

Objective 1: Using the Sine, Cosine, and Tangent Ratios to Determine Side Lengths in Right Triangles



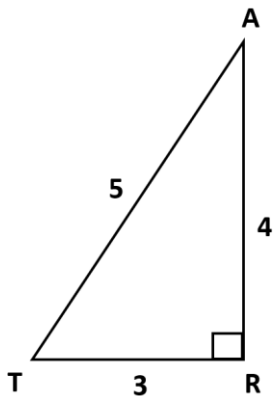
Let  $\triangle ABC$  be a right triangle with acute  $\angle A$ . Then

**Sine**  $\angle A =$

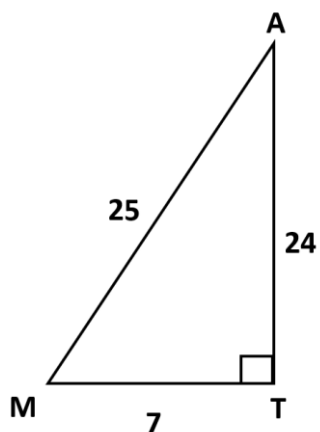
**Cosine**  $\angle A =$

**Tangent**  $\angle A =$

**Example:** What are the sine, cosine, and tangent ratios for  $\angle T$ ?



What are the sine, cosine, and tangent ratios for  $\angle M$ ?

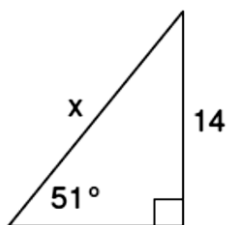


**Example:** Use a calculator to find the following, rounded to four decimal places.

- a.  $\sin 35^\circ$
- b.  $\cos 52^\circ$
- c.  $\tan 28^\circ$

**Example:** Find  $x$ . Round answer to two decimal places.

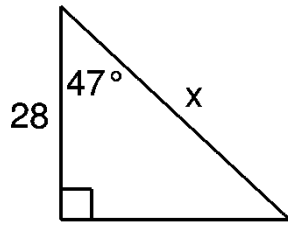
a.



b.

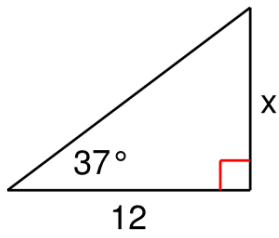


c.

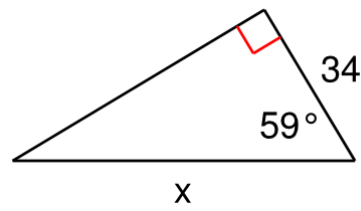


Find  $x$ . Round answer to two decimal places.

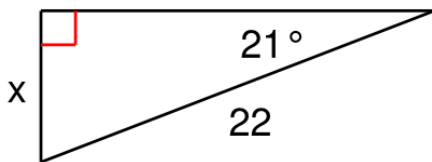
1.



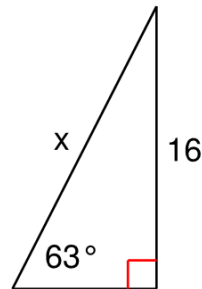
2.



3.



4.



## Objective 2: Using the Sine, Cosine, and Tangent Ratios to Determine Angle Measures in Right Triangles

If we know the sine, cosine, or tangent ratio for an angle, we can use an inverse ( $\sin^{-1}$ ,  $\cos^{-1}$ , or  $\tan^{-1}$ ) to find the measure of the angle.

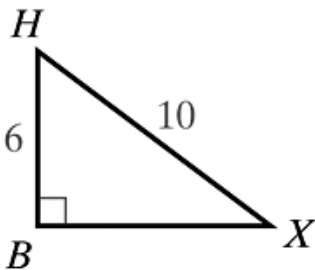
**Example:** Use a calculator to approximate the measure of  $\angle A$  to the nearest whole degree.

a.  $\cos A = 0.6052$

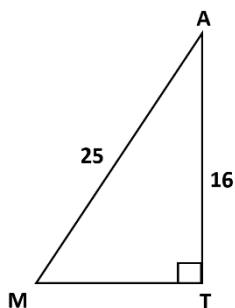
b.  $\sin A = 0.2318$

c.  $\tan A = 0.8325$

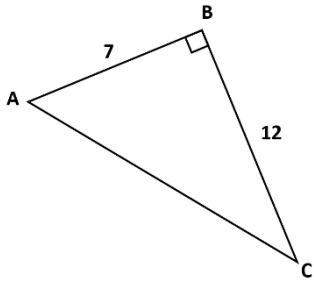
**Example:** Find the measure of angle H, rounded to the nearest degree.



**Example:** Find the measure of angle M, rounded to the nearest degree.

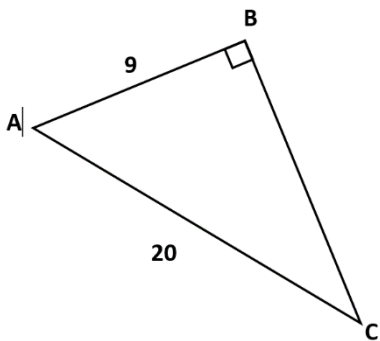


**Example:** Find the measure of angle A, rounded to the nearest degree.

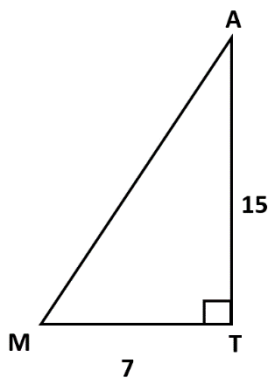


Find the measure of angle A, rounded to the nearest degree.

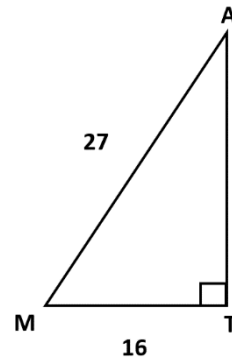
1.



2.



3.



4.

