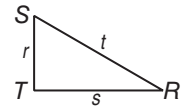


8-4 Study Guide and Intervention

Trigonometry

Trigonometric Ratios The ratio of the lengths of two sides of a right triangle is called a **trigonometric ratio**. The three most common ratios are **sine**, **cosine**, and **tangent**, which are abbreviated *sin*, *cos*, and *tan*, respectively.

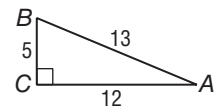


$$\begin{aligned} \sin R &= \frac{\text{leg opposite } \angle R}{\text{hypotenuse}} \\ &= \frac{r}{t} \end{aligned}$$

$$\begin{aligned} \cos R &= \frac{\text{leg adjacent to } \angle R}{\text{hypotenuse}} \\ &= \frac{s}{t} \end{aligned}$$

$$\begin{aligned} \tan R &= \frac{\text{leg opposite } \angle R}{\text{leg adjacent to } \angle R} \\ &= \frac{r}{s} \end{aligned}$$

Example Find $\sin A$, $\cos A$, and $\tan A$. Express each ratio as a fraction and a decimal to the nearest hundredth.



$$\begin{aligned} \sin A &= \frac{\text{opposite leg}}{\text{hypotenuse}} \\ &= \frac{BC}{BA} \\ &= \frac{5}{13} \\ &\approx 0.39 \end{aligned}$$

$$\begin{aligned} \cos A &= \frac{\text{adjacent leg}}{\text{hypotenuse}} \\ &= \frac{AC}{AB} \\ &= \frac{12}{13} \\ &\approx 0.92 \end{aligned}$$

$$\begin{aligned} \tan A &= \frac{\text{opposite leg}}{\text{adjacent leg}} \\ &= \frac{BC}{AC} \\ &= \frac{5}{12} \\ &\approx 0.42 \end{aligned}$$

Exercises

Find $\sin J$, $\cos J$, $\tan J$, $\sin L$, $\cos L$, and $\tan L$. Express each ratio as a fraction and as a decimal to the nearest hundredth.

