Chapter 8: Right Triangles & Trigonometry

SECTION 2: TRIGONOMETRY RATIOS

Megan Frantz Okemos High School Math Instructor

I Can

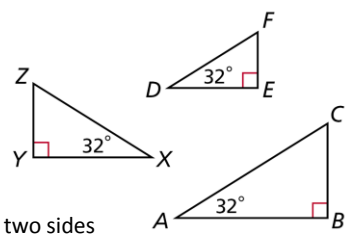
- Find the sine, cosine and tangent of acute angles
- Use trig ratios to solve problems

Background

REMEMBER: If two right angles have one other angle in common, they are similar.

$\Delta ABC \sim \Delta DEF \sim \Delta XYZ$

$$\frac{BC}{AC} = \frac{EF}{DF} = \frac{YZ}{XZ}$$

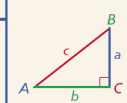


These are *trigonometric ratios*.

A **trigonometric ratio** is a ratio of two sides of a right triangle.

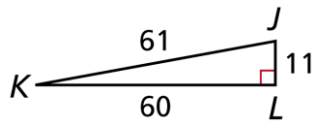
Trig Ratios

Trigonometric Ratios

DEFINITION	SYMBOLS	DIAGRAM
The **sine** of an angle is the ratio of the length of the leg opposite the angle to the length of the hypotenuse.	$\sin A = \frac{\text{opposite leg}}{\text{hypotenuse}} = \frac{a}{c}$ $\sin B = \frac{\text{opposite leg}}{\text{hypotenuse}} = \frac{b}{c}$	
The **cosine** of an angle is the ratio of the length of the leg adjacent to the angle to the length of the hypotenuse.	$\cos A = \frac{\text{adjacent leg}}{\text{hypotenuse}} = \frac{b}{c}$ $\cos B = \frac{\text{adjacent leg}}{\text{hypotenuse}} = \frac{a}{c}$	
The **tangent** of an angle is the ratio of the length of the leg opposite the angle to the length of the leg adjacent to the angle.	$\tan A = \frac{\text{opposite leg}}{\text{adjacent leg}} = \frac{a}{b}$ $\tan B = \frac{\text{opposite leg}}{\text{adjacent leg}} = \frac{b}{a}$	

Example

Write the trigonometric ratio as a fraction and as a decimal rounded to the nearest hundredth.



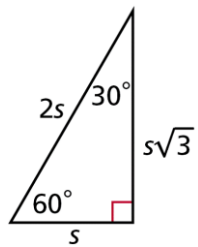
sin *J*

cos J

tan J

Example

Use a special right triangle to write cos 30° as a fraction.



Example

Use your calculator to find the trigonometric ratio. Round to the nearest hundredth.

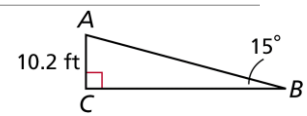
sin 52°

tan 65°

cos 19°

Example

Find the length. Round to the nearest hundredth.

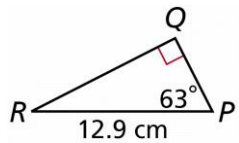


BC

Example

Find the length. Round to the nearest hundredth.

QR



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