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NOTES Trigonometric Ratios

- Which leg is opposite $\angle A$? $8\sqrt{3}$
- Which leg is adjacent to $\angle A$? 8
- What is the ratio of the leg opposite $\angle A$ to the hypotenuse? $\frac{8\sqrt{3}}{16}$
- What is the ratio of the leg adjacent to $\angle A$ to the hypotenuse? $\frac{8}{16}$
- What is the ratio of the leg opposite $\angle A$ to the leg adjacent to $\angle A$? $\frac{8\sqrt{3}}{8} = \sqrt{3}$

You need a calculator!

$$\frac{8\sqrt{3}}{16} = \frac{\sqrt{3}}{2}$$

- Which leg is opposite $\angle C$? 8
- Which leg is adjacent to $\angle C$? $8\sqrt{3}$
- What is the ratio of the leg opposite $\angle C$ to the hypotenuse? $\frac{8}{16}$ sine
- What is the ratio of the leg adjacent to $\angle C$ to the hypotenuse? $\frac{8\sqrt{3}}{16}$ cosine
- What is the ratio of the leg opposite $\angle C$ to the leg adjacent to $\angle C$? $\frac{8}{8\sqrt{3}}$ tangent

opposite - "across from"
adjacent - "next to"

INVESTIGATING TRIGONOMETRIC RATIOS

The triangles are similar. Use proportion and find the missing sides.

$\triangle ABC \sim \triangle A'B'C'$

$\frac{10}{5} = \frac{24}{x} = \frac{26}{y}$

$x = 12$, $y = 13$

Is $\angle C$ congruent to $\angle C'$? Yes

Complete the following table.

The ratio of the leg opposite of $\angle C$ to the hypotenuse	$\frac{10}{26} = \frac{5}{13}$	The ratio of the leg opposite of $\angle C'$ to the hypotenuse	$\frac{5}{13}$
The ratio of the leg adjacent to $\angle C$ to the hypotenuse	$\frac{24}{26} = \frac{12}{13}$	The ratio of the leg adjacent to $\angle C'$ to the hypotenuse	$\frac{12}{13}$
The ratio of the leg opposite of $\angle C$ to the leg adjacent to $\angle C$	$\frac{10}{24} = \frac{5}{12}$	The ratio of the leg opposite of $\angle C'$ to the leg adjacent to $\angle C'$	$\frac{5}{12}$

What is true about the ratios between the sides of the congruent angles in triangles that are similar?

They are the same

$\sin 45 = \underline{.7071}$

$\tan 89 = \underline{57.2900}$

$\cos 45 = \underline{.7071}$

$\sin 20 = \underline{.3420}$

$\cos 70 = \underline{.3420}$

$20 + 70 = 90$ $45 + 45 = 90$

$$\sin 30 = \frac{.5}{1}$$

$$\cos 60 = \frac{.5}{1}$$

$$\underline{30} + \underline{60} = \textcircled{90}$$

$$\sin 15^\circ = .2588$$

$$\cos 75 = .2588$$

$$15 + \underline{\quad} = 90$$