

COUNTDOWN Challenge

Trigonometry Ratios

Trigonometry was used by the ancient Egyptians and Mayans to build pyramids. The word trigonometry comes from the Greek words for triangle (trigonon) and measure (metria). Today, trigonometry helps us use ratios to find the measure of an unknown angle or the length of an unknown side of a right triangle.

Important Right Triangle Vocabulary Reminder

Hypotenuse is the side directly across from the 90° angle and is always the longest side. The **adjacent side** is the side next to the reference angle. The **opposite side** is the side directly across from the reference angle.

$$\text{sine } \angle a = \frac{\text{opposite}}{\text{hypotenuse}}$$

(sin)

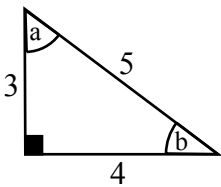
$$\text{cosine } \angle a = \frac{\text{adjacent}}{\text{hypotenuse}}$$

(cos)

$$\text{tangent } \angle a = \frac{\text{opposite}}{\text{adjacent}}$$

(tan)

Use the formulas above to calculate these trigonometry ratios.



$$\sin \angle a = \frac{4}{5} = 0.8$$

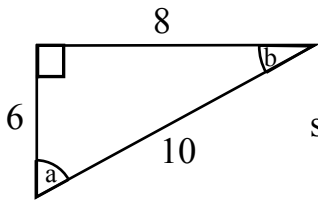
$$\cos \angle a = \frac{3}{5} = \underline{\quad}$$

$$\tan \angle a = \frac{4}{3} = \underline{\quad}$$

$$\sin \angle b = \frac{3}{5} = \underline{\quad}$$

$$\cos \angle b = \frac{4}{5} = \underline{\quad}$$

$$\tan \angle b = \frac{3}{4} = \underline{\quad}$$



$$\sin \angle a = \frac{8}{10} = \underline{\quad}$$

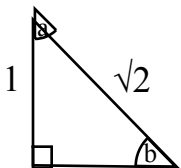
$$\cos \angle a = \underline{\quad}$$

$$\tan \angle a = \underline{\quad}$$

$$\sin \angle b = \underline{\quad}$$

$$\cos \angle b = \underline{\quad}$$

$$\tan \angle b = \underline{\quad}$$



$$\sin \angle a = \frac{1}{\sqrt{2}} = \underline{\quad}$$

$$\cos \angle a = \underline{\quad}$$

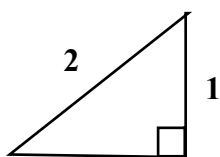
$$\tan \angle a = \underline{\quad}$$

$$\sin \angle b = \frac{1}{\sqrt{2}} = \underline{\quad}$$

$$\cos \angle b = \underline{\quad}$$

$$\tan \angle b = \underline{\quad}$$

$$\sqrt{2} \approx 1.41$$



$$\sin \angle a = \frac{1}{2} = \underline{\quad}$$

$$\cos \angle a = \underline{\quad}$$

$$\tan \angle a = \underline{\quad}$$

$$\sin \angle b = \underline{\quad}$$

$$\cos \angle b = \underline{\quad}$$

$$\tan \angle b = \underline{\quad}$$

$$1\sqrt{3}$$

$$\sqrt{3} \approx 1.73$$