

Day 1 – Solving for Unknown Angles and Sides Using Primary Trig Ratios and the Pythagorean Theorem

Last year, the Primary Trigonometric Ratios – or **Trig Ratios** for short – were introduced. Trig ratios tell us the relationship between the lengths of sides within a right triangle.

Ratio name	short form	pronunciation	ratio
Sine	sin	Sign	$\frac{\textit{opposite}}{\textit{hypotenuse}}$
Cosine	cos	like <i>coast</i> , without the <i>t</i>	$\frac{\textit{adjacent}}{\textit{hypotenuse}}$
Tangent	tan	Tan	$\frac{\textit{opposite}}{\textit{adjacent}}$

The trig ratios can be used to solve for an unknown angle or an unknown side length within a right triangle.

Review the conventions for labeling triangles (opposite, adjacent, hypotenuse) with reference to a specific angle.

Review the ratios sine, cosine and tangent, using the terms opposite, adjacent and hypotenuse.

Draw a right-angled triangle on the board and provide the degrees of one of the acute angles and the length of one side. Have students investigate how they might use what they have learned previously to find one of the missing sides. Circulate and ask leading questions, and listen to their dialogue to identify any misconceptions.

Ask: “How did you know to use that particular ratio?”

Have pairs share their strategy for solving the problem with the rest of the class.

Complete questions 1 – 4 of the handout “Practice with SOH CAH TOA?” with the whole class. Guide students to determine whether they would use sine, cosine or tangent ratios, or the Pythagorean theorem to solve for the unknown side or indicated angle. Starting at the reference angle, label the sides as opposite, adjacent or hypotenuse and decide which is the appropriate ratio to solve the problem.

Have students complete questions 5 – 8 individually.