Stage 5 Mathematics student work sample – Grade B

1. I can understand and use the trigonometric ratios (sine, cosine and tangent) in right-angled triangles:

\[ \sin A = \frac{a}{b} \]
\[ \sin A = \frac{7}{10} \]
\[ \cos A = \frac{3}{4} \]
\[ \cos A = \frac{4}{5} \]
\[ \tan A = \frac{b}{a} \]
\[ \tan A = \frac{6}{2} \]
\[ \tan A = \frac{3}{1} \]

Draws and labels right-angled triangles appropriately

Accurately calculates the size of angles in right-angled triangles using all three trigonometric ratios, but uses incorrect notation in representing trigonometric ratios

Rounds angle sizes correctly to two decimal places, indicating the level of accuracy

Accurately calculates the lengths of sides in right-angled triangles using all three trigonometric ratios, including when the unknown side is in the denominator of the fraction representing the ratio

Rounds the lengths of sides correctly to two decimal places, indicating the level of accuracy
Grade Commentary

Mackenzie demonstrates knowledge and understanding of trigonometry in relation to right-angled triangles. A variety of examples is presented, indicating competence in the processes and skills involved in using trigonometric ratios to calculate sides and angles in right-angled triangles accurately and efficiently. Understanding of the practical applications of trigonometry, and the use of appropriate mathematical terminology, is evident in the examples presented. Correct use of notation in representing trigonometric ratios, the use of minutes (and seconds) for representing fractions of degrees when expressing angle measurements, and a clear understanding of the location of an angle of depression would enhance the response.

Mackenzie’s response demonstrates characteristics of work typically produced by a student performing at a grade B standard.