

Sine Rule Mark Scheme:		
1	$\frac{x}{\sin(30)} = \frac{5}{\sin(80)}$	[1] Correct use of sine rule
	$x = \frac{5 \sin(30)}{\sin(80)}$	[1] Rearranging
	$x = \frac{5(0.5)}{0.9841 \dots} = 2.539 \dots$	[1] Calculation
	$\therefore x = 2.54 \text{ cm}$	[1] Final answer to 2 d.p.
2	$\frac{\sin(BCA)}{5} = \frac{\sin(33.1)}{7}$	[1] Correct use of sine rule
	$\sin(BCA) = \frac{5 \sin(33.1)}{7}$	[1] Correct evaluation
	$\sin(BCA) = 0.3901 \dots$ $BCA = 22.9590 \dots$	[1] Calculation
	$\therefore BCA = 22.96^\circ$	[1] Final answer to 2 d.p.
3(a)	$\frac{\sin(x)}{12} = \frac{\sin(15^\circ)}{7}$	[1] Correct use of sine rule
	$\sin(x) = \frac{12 \sin(15^\circ)}{7}$ $\sin(x) = \frac{12(0.2588 \dots)}{7}$ $\sin(x) = 0.4437 \dots$	[1] Rearranging
	$\therefore x = 180 - \sin^{-1}(0.4437 \dots)$ $x = 180 - 26.3395 \dots$	[1] Recognising x is obtuse
	$x = 153.6605 \dots$ $\therefore x = 154^\circ$	[1] Final answer

Turn over ►

4(a)	$\frac{\sin(MOL)}{6.5} = \frac{\sin(52)}{12}$	[1] Correct use of sine rule
	$\sin(MOL) = \frac{6.5 \sin(52)}{12}$	[1] Correct evaluation
	$MOL = 25.3^\circ$	[1] Correct answer
4(b)	Angle $LMO = 102.7^\circ$	[1] Calculation of angle
	$\frac{LO}{\sin(102.7)} = \frac{12}{\sin(52)}$	[1] Correct use of sine rule. Note other angle and corresponding length could have been used.
	$LO = \frac{12 \sin(102.7)}{\sin(52)}$	[1] Correct rearrangement
	$LO = 14.9 \text{ cm}$	[1] Answer
5(a)	$\begin{aligned} x + (2x - 35) + 50 &= 180 \\ 3x + 15 &= 180 \\ \therefore x &= 55 \end{aligned}$	[1] Angles in a triangle sum to 180
5(b)	angle $BAC = 75^\circ$	[1] Identifying angle
	$\frac{\sin(55)}{12} = \frac{\sin(75)}{BC}$	[1] Correct use of sine rule
	$BC = \frac{12 \times \sin(75)}{\sin(55)}$	[1] Correct evaluation
	$BC = 14.15$	[1] Correct answer
6(a)	$ADC = 100^\circ$ (Isosceles triangle)	[1] Identifying angle
	$\frac{AC}{\sin(100)} = \frac{6}{\sin(40)}$ $AC = \frac{6 \sin(100)}{\sin(40)}$	[1] Correct use of the sine rule
	$\begin{aligned} AC &= 9.1925 \dots \\ AC &= 9.2 \text{ m} \end{aligned}$	[1] Correct answer
6(b)	$ADB = 80^\circ$ (Angles in a straight line)	[1] Identifying angle
	$\therefore BAD = 55^\circ$ (Angles in a triangle)	[1] Identifying angle
	$\frac{BD}{\sin(55)} = \frac{6}{\sin(45)}$ $\therefore BD = \frac{6 \sin(55)}{\sin(45)}$	[1] Correct use of sine rule
	$\begin{aligned} BD &= 6.9508 \dots \\ \therefore BD &= 6.95 \text{ m} \end{aligned}$	[1] Final answer

END