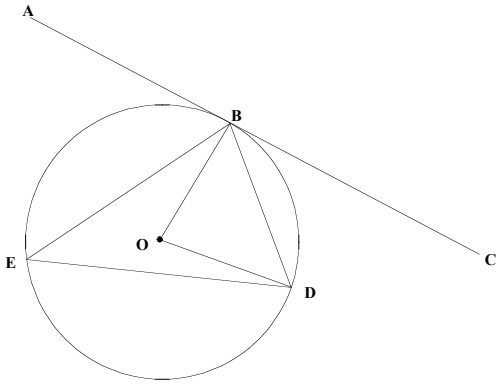
Assessment Schedule – 2005

Mathematics: Use geometric reasoning to solve problems (90153)

Evidence Statement

ANGLES AROUND US

	Achievement Criteria	Q	Evidence	Code	Judgement	Sufficiency
Achievement	Use geometric reasoning to solve problems.	1	$\angle CDE = 119°$	A	No alternative.	**Achievement:** 3 × code A.
		2	$\angle DEF = 105°$	A	No alternative.	
		3	$\angle CAB = 68°$	A	No alternative.	
Achievement with Merit	Use, and state, geometric reasons in solving problems.	2	$\angle \frac{(n-2)\times 180}{6} = 120$ ($\angle$ in a hexagon) $\frac{(n-2)\times 180}{8} = 135$ ($\angle$in an octagon) $\angle DEF = 360 - 120 - 135 = 105^o$ ($\angle$s at a pt) **OR** Ext $\angle$hexagon = 60 Ext $\angle$octagon = 45 $\angle DEF = 60 + 45 = 105^o$	A/M	Allow other valid chains of reasoning.	**Achievement with Merit:** **EITHER** 2 × code A **plus** 2 × code M **OR** 3 × code M.
		3	$\angle ABC = 56^o$ – corr angles parallel lines $\angle ACB = 56^o$ – base angles of isosceles triangle $\angle CAB = 68^o$ – angles sum of triangle	A/M	Throughout Merit, reasons may be combined into one statement. Eg base angles and angle sum of the isosceles triangle.	
		4	$\angle BAD = 90°$ – tangent (and radius are perpendicular) $\angle BCD = 90°$ – tangent (and radius are perpendicular) $\angle ADC = 28°$ – interior angles of a quad add to 360°	A/M		
		5	$\angle CBD = 79°$ – alternate angles – parallel lines $\angle CDB = 79°$ – base angles isosceles triangle $\angle BCD = 22°$ – angle sum of triangle OR cointerior angles parallel lines	A/M		
		6	$\angle ACB = \angle DFE$ – corresponding angles parallel lines $\angle ABC = 56°$ – corresponding angles – parallel lines so ΔABC is similar to ΔDEF with scale factor $\frac{200}{245}$ $EF = 274 \times \frac{200}{245} = 223.6735$ mm **Alternative solution** $\angle ACB = \angle DFE$ – corresponding angles parallel lines $\angle ABC = 56°$ – corresponding angles – parallel lines so ΔABC is similar to ΔDEF and is an isosceles triangle $EF = 2 \times 200 \cos 56 = 223.677$ mm	A/M	Throughout Merit, A is given for correct numerical value with incomplete or incorrect chains of reasoning.	

	Achievement Criteria	Q	Evidence	Code	Judgement	Sufficiency
Achievement with Excellence	Solve an extended geometric problem.	7	 Let ∠ CBD = α ∠ OBD = 90 – α – tgt perp to radius ∠ ODB = 90 – α – base angles isoc triangle equal radii ∠ BOD = 2α – angle sum of triangle ∠ BED = α – angle at the circumference half that at the centre.	A/M/E	Allow other valid proofs.	**Achievement with Excellence:** As for Merit **plus** code E.

Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
Use geometric reasoning to solve problems. 3 × A	Use, and state, geometric reasons in solving problems. 2 × A and 2 × M *or* 3 × M	Solve an extended geometrical problem. **Merit** *plus* 1 × E