Assessment Schedule – 2006

Mathematics: Use geometric reasoning to solve problems (90153)

Evidence Statement

	Criteria	No.	Evidence	Code	Judgement	Sufficiency
Achievement	Use geometric reasoning to solve problems.	1	$\angle CED = 48°$ vert opp $\angle$s = $\angle EDC = \mathbf{59°}$ $\angle$ sum $\Delta CED = 180^o$	**A**	CAO	2 of code **A.** **Replacement** evidence: any correct angle that involves at least two steps of geometric reasoning, in questions 4–7.
		2	$\angle MLN = 54°$ alt $\angle$s =, // lines $\angle LMN = \mathbf{63°}$ $\angle$ sum of isos $\Delta LMN = 180^o$	**A**	CAO	
		3	$\frac{AD}{85} = \frac{90}{64}$ ΔAEB similar to ΔADC $AD = 90 \times 85 \div 64$ $= 119.53\ldots$ $\approx \mathbf{120\ cm}$	**A**	Accept any correctly rounded / truncated answer. CAO	
Achievement with Merit	Use, and state, geometric reasons in solving problems.	4	$\angle HGF = 360^o \div 5 = 72°$ ext $\angle$s of reg pentagon $\angle EHG = 180 - 72 = \mathbf{108°}$ Co-int $\angle$s, // lines **OR:** $\angle HGK = \frac{(5-2)\times 180}{5} = 108°$ int $\angle$s of reg pentagon $\angle EHG = \mathbf{108°}$ Alt $\angle$s =, // lines EH, FG	**A/M** **A/M**	Accept other valid chains of reasons. Isosceles trapezium must be established before use	Achievement **plus** 2 of code **M** **OR** 3 of code **M**. **Replacement** evidence for **M**: any correct angle with at least two steps of geometric reasoning correctly given, in question 7.
		5	$\angle DBG = 110°$ vert opp $\angle$s =, // lines $\angle BDE = 180° - 110° = 70°$ Co-int $\angle$s are supp, // lines CG, DE $\angle DEF = 180° - 70° = \mathbf{110°}$ Co-int $\angle$s are supp, // lines DA, EF **OR:** $\angle DBG = 110°$ vert opp $\angle$s = Extend EF to BG at P, forming a parallelogram, $\angle DEF = \angle DBG = \mathbf{110°}$ opp $\angle$s are equal **OR:** Extend EF to through BG at P to AG at Q then: $\angle BPQ = 110°$ Corr opp $\angle$s =, // lines AD, EQ $\angle DEF = \mathbf{110°}$ Corr opp $\angle$s =, // lines CG, DE **OR:** ΔDEF similar to ΔCBA (with proof) $\angle DEF = \mathbf{110°}$	**A** **M** **A/M** **A/M** **M**	Throughout Merit, reasons may be combined in one statement e.g base angles and angle sum of isosceles triangle Proof of Similarity must be evident before use	
		6	$\angle AOD = 180° - 2 \times 55° = 70^o$ $\angle$ sum of isos Δ $\angle AOC = 70° + 68° = 138°$ $\angle ABC = 138° \div 2 = \mathbf{69°}$ $\angle$ at circ is ½ $\angle$ at centre **OR:** $\angle ADO = 55^o$ base $\angle$'s isos Δ = $\angle CDO = ½(180° - 68°) = 56°$ base $\angle$'s isos Δ = $\angle ABC = 180° - (56° + 55°) = \mathbf{69°}$ Opp $\angle$'s Cyclic Quad.	**A/M** **A** **M**		
Achievement with Excellence	Solve an extended geometrical Problem.	7	$\angle BEC = x$ base $\angle$s isos Δ = (ΔBCE) $\angle ABE = 2x$ ext$\angle$ = sum of int opp $\angle$s $\angle BAE = 2x$ base $\angle$s isoc Δ = (ΔABE) $\angle AEB = \mathbf{180° - 4}x$ $\angle$sum of $\Delta = 180°$ **OR:** $\angle EBC = 180° - 2x$ $\angle$sum of $\Delta = 180°$ $\angle ABE = 2x$ $\angle$'s on a straight line $\angle BAE = 2x$ base $\angle$s isoc Δ = (ΔABE) $\angle AEB = \mathbf{180° - 4}x$ $\angle$sum of $\Delta = 180°$	**A/M** **E** **A/M** **E**	For code **A**, angle only is sufficient evidence. For codes **M** and **E**, reasons are also required. Accept other valid chains of reasons.	Merit **plus** code **E**.

Judgement Statement

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