Angles 3 · Angles in triangles and quadrilaterals

Exam-Style Set · Mark Scheme (Total 20 marks)

M = method mark · A = accuracy mark (depends on the M mark before it) · B = independent mark

Question 1 · [3 marks]

(a)	$2x + 3x + (4x + 9) = 180$ (angles in a triangle add up to 180°)	**M1**
	$9x = 171 \rightarrow \mathbf{x = 19}$	**A1**
(b)	$4(19) + 9 = \mathbf{85°}$	**B1**

Note: Check: 38 + 57 + 85 = 180. In (b), follow through from their x.

Question 2 · [4 marks]

(a)	180 – 118 = **62°** (angles on a straight line)	**B1**
(b)	Angle ABC = 62° (base angles of an isosceles triangle are equal)	**B1**
	Angle BAC = 180 – 62 – 62	**M1**
	= **56°**	**A1**

Note: The isosceles reason must be stated for the first B1 in (b). Accept ‘base angles of isos. triangle’.

Question 3 · [3 marks]

(a)	$(3y - 10) + (2y + 15) = 180$ (co-interior angles add up to 180°)	**M1**
	$5y + 5 = 180 \rightarrow \mathbf{y = 35}$	**A1**
(b)	Angle QRS = angle SPQ = 3(35) – 10 = **95°** (opposite angles of a parallelogram are equal)	**B1**

Note: Accept ‘allied angles’ or ‘adjacent angles of a parallelogram add up to 180°’ for the reason in (a).

Question 4 · [4 marks]

(a)	**99°**	**B1**
(b)	$2x + x + 99 + 99 = 360$ (angles in a quadrilateral add up to 360°)	**M1**
	$3x = 162 \rightarrow \mathbf{x = 54}$	**A1**
(c)	$2 \times 54 = \mathbf{108°}$	**B1**

Note: (a): the angles between the unequal sides of a kite are equal (the kite is symmetrical about AC).

Question 5 · [6 marks]

(a)	**70°** (triangle ABD is isosceles, so angle ADB = angle ABD)	**B1**
(b)	180 – 70 = **110°** (angles on a straight line)	**B1**
(c)	Triangle ADC is isosceles with AD = DC, so angle ACD = angle DAC	**M1**
	(180 – 110) ÷ 2 = **35°**	**A1**
(d)	Angle BAC = 180 – 70 – 35	**M1**
	= **75°**	**A1**

Note: Alternative for (d): angle BAD = 180 – 70 – 70 = 40°, angle DAC = 35°, so angle BAC = 40 + 35 = 75°.