Angles 1 · Angles at a point, on a straight line and vertically opposite

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)	$3x + 2x + 15 = 180$ (angles on a straight line add to 180°)	**M1**
	$5x = 165 \rightarrow$ ***x* = 33**	**A1**
(b)	$3 \times 33 =$ **99°**	**B1**

Note: Common error: setting $3x = 2x + 15$ (treating them as equal).

Question 2 · [5 marks]

(a)	**Vertically opposite angles are equal.**	**B1**
(b)	$4x - 10 = 2x + 30 \rightarrow 2x = 40$	**M1**
	***x* = 20**	**A1**
(c)	Angle AOC = $4(20) - 10 = 70°$	**M1**
	Angle BOC = $180 - 70 =$ **110°** (angles on a straight line)	**A1**

Note: Accept ‘vert. opp. angles’. Do not accept ‘opposite angles’ alone. In (c), follow through from their x.

Question 3 · [4 marks]

(a)	$2y + (4y - 10) + (y + 15) + 3y + 85 = 360$ (angles at a point add to 360°)	**M1**
	$10y + 90 = 360$	**M1**
	***y* = 27**	**A1**
(b)	Angles are 54°, 98°, 42°, 81°, 85° → largest = **98°**	**B1**

Note: Second M1 is for correctly collecting terms. Check: 54 + 98 + 42 + 81 + 85 = 360.

Question 4 · [4 marks]

(a)	$(x + 40) + 2x + (3x - 10) = 180$ (angles on a straight line)	**M1**
	$6x + 30 = 180 \rightarrow$ ***x* = 25**	**A1**
(b)	Angle AOC = $25 + 40 = 65°$ and angle DOB = $3(25) - 10 = 65°$	**M1**
	Both are 65°, so angle AOC = angle DOB	**A1**

Note: ‘Show that’: both angles must be evaluated and a concluding statement given for A1.

Question 5 · [4 marks]

(a)	Angle RTQ = 180 – 48 = **132°** (angles on a straight line)	**B1**
(b)	Angle UTQ = 132 ÷ 2 = **66°**	**B1**
(c)	Angle QTS = 48° (vertically opposite angle PTR)	**M1**
	Angle UTS = 66 + 48 = **114°**	**A1**

Note: Alternative for (c): angle RTU = 66°, so angle UTS = 180 – 66 = 114° (angles on a straight line RS).