

WA7MMGTW4

Two-dimensional space and structures

Core + Challenge

Angle Notation and Angle Relationships — Marking Key

I can name points, lines and angles with correct notation, classify angles and use angles at a point and on a straight line.

For tutors and parents. Award method marks for correct working even if the final answer is wrong.

Marks summary

Section A Fluency: 16 Section B Core: 22 Section C Reasoning: 9 Section D Challenge: 11 **Total: 58**

Fluency: 1 mark each; accept an equivalent unsimplified answer for half credit at tutor's discretion.

A Fluency *answers and working*

/ 16 marks

Q	Answer	Working
1	O	the shared point of the two arms
2	acute	$50^\circ < 90^\circ$
3	right	90°
4	130°	$180^\circ - 50^\circ$
5	obtuse	between 90° and 180°
6	40°	$180^\circ - 50^\circ - 90^\circ$
7	straight	180°
8	angle COE (or angle AOE)	marked square corner
9	310°	$360^\circ - 50^\circ$
10	reflex	between 180° and 360°
11	55°	$90^\circ - 35^\circ$
12	145°	$180^\circ - 35^\circ$
13	$x = 90^\circ$	$360^\circ - 270^\circ$
14	revolution	a full turn
15	2	a ray has 1, a line has 0
16	angle BOC (or angle COB)	vertex letter in the middle

Angle Notation and Angle Relationships · WA7MMGTW4

B

Core *answers, working and marks*

/ 22 marks

Q	Answer	Working / sample response	Marks
1	$a = 110^\circ$, $b = 70^\circ$, $c = 110^\circ$	a: straight line, $180^\circ - 70^\circ$ b: vertically opposite the 70° c: vertically opposite a <i>1 mark each with reason</i>	3
2	angle PQR; obtuse	Vertex Q in the middle; the angle is bigger than 90° . <i>1 mark each</i>	2
3	$x = 55^\circ$	Angles on a straight line: $180^\circ - 125^\circ$ <i>1 mark: reason</i> <i>1 mark: 55°</i>	2
4	$x = 70^\circ$	$360^\circ - (90^\circ + 115^\circ + 85^\circ)$ <i>1 mark: 360°</i> <i>1 mark: 70°</i>	2
5	62°	$90^\circ - 28^\circ$ <i>1 mark: 90°</i> <i>1 mark: 62°</i>	2
6	120° ; obtuse	Each hour mark is $360^\circ \div 12 = 30^\circ$; $4 \times 30^\circ = 120^\circ$ <i>1 mark each</i>	2
7	See key idea	Line: no ends · Segment: two endpoints · Ray: one endpoint, goes on forever one way <i>1 mark each</i>	3
8	$x = 60^\circ$	$x + 2x + 3x = 360^\circ$, so $6x = 360^\circ$ <i>1 mark: equation</i> <i>1 mark: 60°</i>	2
9	$x = 70^\circ$	$x + 40^\circ + x = 180^\circ$, so $2x = 140^\circ$ <i>1 mark: equation</i> <i>1 mark: 70°</i>	2
10	150° and 210°	5 hour-gaps $\times 30^\circ = 150^\circ$; $360^\circ - 150^\circ = 210^\circ$ <i>1 mark each</i>	2

C

Reasoning *sample answers and marking criteria*

/ 9 marks

Q	Answer	Working / sample response	Marks
1	Both are supplementary to the same angle	$b + a = 180^\circ$ and $70^\circ + a = 180^\circ$ So $b = 70^\circ$: both angles make 180° with the same angle a <i>1 mark: two straight lines</i> <i>1 mark: same partner</i> <i>1 mark: conclusion</i>	3

Angle Notation and Angle Relationships · WA7MMGTW4

Q	Answer	Working / sample response	Marks
2	No	Each is more than 90° , so together they are more than 180° . <i>1 mark: no</i> <i>1 mark: reason</i>	2
3	Many angles share vertex O	‘angle O’ could mean any of them; the outer letters show which arms. <i>2 marks</i>	2
4	One full turn	Turning all the way around a point is one revolution = 360° . <i>2 marks</i>	2

D

Challenge *solutions and marking criteria*

/ 11 marks

Q	Answer	Working / sample response	Marks
1	36° and 144°	$x + 4x = 180^\circ$ $x = 36^\circ$; $4x = 144^\circ$ <i>1 mark: equation</i> <i>1 mark: 36°</i> <i>1 mark: 144°</i>	3
2	75°	Minute hand at 6: 180° from 12 Hour hand at $3.5 \times 30^\circ = 105^\circ$ $180^\circ - 105^\circ = 75^\circ$ <i>1 mark: minute hand</i> <i>1 mark: hour hand 105°</i> <i>1 mark: 75°</i>	3
3	50° , 60° , 70° , 50° , 60° , 70°	Three adjacent angles make a straight line: $180^\circ - 50^\circ - 60^\circ = 70^\circ$ Each is vertically opposite an equal angle <i>1 mark: 70°</i> <i>2 marks: all six</i>	3
4	45°	$180^\circ - x = 3(90^\circ - x)$ $2x = 90^\circ$, so $x = 45^\circ$ <i>1 mark: equation</i> <i>1 mark: 45°</i>	2