

WA7MMGTW5

Two-dimensional space and structures

Core + Challenge

Angles on Parallel Lines — Marking Key

I can identify corresponding, alternate and co-interior angles, find unknown angles on parallel lines and test whether lines are parallel.

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	115°	straight line with 65°
2	65°	vertically opposite a
3	115°	vertically opposite b
4	65°	corresponding to a
5	115°	corresponding to b
6	65°	corresponding to c
7	115°	corresponding to d
8	corresponding	same position at each intersection
9	alternate	Z-shape, inside the parallels
10	alternate	Z-shape
11	co-interior	C-shape, same side, inside
12	co-interior	C-shape
13	180°	they are supplementary
14	72°	equal
15	108°	$180^\circ - 72^\circ$
16	equal	Z-shape

B

Core answers, working and marks

/ 22 marks

Q	Answer	Working / sample response	Marks
1	$x = 70^\circ$, corresponding angles	Same position at both intersections 1 mark: 70° 1 mark: reason	2
2	$y = 55^\circ$, alternate angles	Z-shape between the parallel lines 1 mark: 55° 1 mark: reason	2
3	$z = 60^\circ$, co-interior angles	$180^\circ - 120^\circ$ 1 mark: 60° 1 mark: reason	2
4	$w = 105^\circ$	Corresponding: the angle above w's line is 75° Straight line: $180^\circ - 75^\circ = 105^\circ$ 1 mark: step 1 mark: 105°	2
5	No	$68^\circ + 110^\circ = 178^\circ \neq 180^\circ$ 1 mark: 178° 1 mark: not parallel	2
6	$x = 35$	$3x = 105^\circ$ 1 mark: equation 1 mark: 35	2
7	$x = 30$	$2x + 10 + 110 = 180$ $2x = 60$ 1 mark: 180 1 mark: equation 1 mark: 30	3
8	72° , corresponding angles	The rail is a transversal 1 mark each	2
9	$x = 75^\circ$	Draw a parallel line through P Alternate angles: 35° above it and 40° below it $x = 35^\circ + 40^\circ = 75^\circ$ 1 mark: construction 1 mark: alternate 1 mark: 75°	3
10	122°	$180^\circ - 58^\circ$ 1 mark each	2

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C

Reasoning *sample answers and marking criteria*

/ 9 marks

Q	Answer	Working / sample response	Marks
1	See working	$e = a$ (corresponding) $a + d = 180^\circ$ (straight line) So $d + e = 180^\circ$ <i>1 mark each step</i>	3
2	Measure corresponding angles	Draw a transversal and measure corresponding angles: if they are equal the lines are parallel. <i>2 marks</i>	2
3	When the lines are not parallel	The rule only works for parallel lines. <i>2 marks</i>	2
4	Vertically opposite and corresponding	At each crossing, vertically opposite angles are equal; corresponding angles copy these to the other crossing. <i>2 marks</i>	2

D

Challenge *solutions and marking criteria*

/ 11 marks

Q	Answer	Working / sample response	Marks
1	$x = 20$; 60°	$3x = x + 40$ $2x = 40$ <i>1 mark: x</i> <i>1 mark: 60°</i>	2
2	Proof	The two alternate angles copy the base angles to the top Together with the top angle they form a straight line: 180° <i>1 mark: diagram</i> <i>1 mark: alternate</i> <i>1 mark: straight line</i>	3
3	72° and 108°	$5 \text{ parts} = 180^\circ$ $1 \text{ part} = 36^\circ$ <i>1 mark: 5 parts</i> <i>1 mark: 36°</i> <i>1 mark: both</i>	3
4	65°	$x = \text{top} + \text{bottom}$ $110^\circ - 45^\circ = 65^\circ$ <i>1 mark: rule</i> <i>1 mark: working</i> <i>1 mark: 65°</i>	3