

WA7MMGTH1

Three-dimensional space and structures

Core + Challenge

Views of Prisms and Cube Stacks — Marking Key

I can draw and interpret front, side and top views of prisms and cube stacks, and count cubes from drawings and views.

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	4	$3 + 1$
2	4	columns 2, 1, 1
3	3	one row of 3
4	4	3 on the bottom + 1
5	3	L-shape of 3
6	8	$2 \times 2 \times 2$
7	4	2×2
8	6	$3 + 3$
9	5	columns 3, 1, 1
10	4	$3 + 1$
11	6	
12	12	
13	8	
14	5	2 triangles + 3 rectangles
15	9	$3 + 3 + 3$
16	a circle	

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B

Core *answers, working and marks*

/ 22 marks

Q	Answer	Working / sample response	Marks
1	Front: columns 1, 2, 3 high · Side: one column 3 high · Top: 1×3 row	Front shows each column's height From the right you see only the tallest (3) From above: 3 squares in a row <i>1 mark each view</i>	3
2	5 cubes · Front: 2, 1 · Side: 2, 1 (front row first) · Top: 2×2	Front row 2 + 1, back row 1 + 1 Views as listed <i>1 mark: 5</i> <i>2 marks: views</i>	3
3	18	$3 \times 3 \times 2$ <i>1 mark each</i>	2
4	Front: triangle · Side: rectangle · Top: rectangle	The triangle is the cross-section <i>1 mark: triangle</i> <i>1 mark: rectangles</i>	2
5	12	6 columns $\times$ 2 <i>1 mark each</i>	2
6	Cylinder	Circle from above, rectangles from the side <i>2 marks</i>	2
7	Square-based pyramid	Square base, triangular faces <i>2 marks</i>	2
8	8	Only the corner cubes <i>1 mark: corners</i> <i>1 mark: 8</i>	2
9	$6 + 8 - 12 = 2$; $5 + 6 - 9 = 2$	Count faces, vertices and edges <i>1 mark each</i>	2
10	7 cubes; front columns 3, 1	$2 + 1 + 3 + 1$ Tallest in each column: 3 and 1 <i>1 mark each</i>	2

C

Reasoning *sample answers and marking criteria*

/ 9 marks

Q	Answer	Working / sample response	Marks
1	One cube is on top of another	Looking down, the stacked cube hides the one below it. <i>2 marks</i>	2
2	e.g. a row of 2 vs a 2×2 square	A single row of 2 cubes and a 2-by-2 block of 4 both show 2 squares from the front. <i>2 marks</i>	2

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Q	Answer	Working / sample response	Marks
3	Views hide depth	Cubes behind others are hidden. <i>2 marks</i>	2
4	Same heights, opposite direction	Both views show the tallest cube in each row Seen from opposite sides, left and right are swapped <i>1 mark: same heights</i> <i>2 marks: mirror</i>	3

D

Challenge *solutions and marking criteria*

/ 11 marks

Q	Answer	Working / sample response	Marks
1	Greatest 7, least 6	Greatest: fill each spot to the smaller limit: $2 + 3 + 1 + 1 = 7$ Least: 3 (front right) + 2 (front left) + 1 (back) = 6 <i>1 mark: 7</i> <i>1 mark: 6</i> <i>1 mark: reasoning</i>	3
2	12, 6, 1	Edges: 12 (one per edge) Face centres: 6 Centre: 1 <i>1 mark each</i>	3
3	18 cm^2	$4 \text{ cubes} \times 6 \text{ faces} = 24$ $3 \text{ joins hide } 2 \text{ faces each: } 24 - 6 = 18$ <i>1 mark: 24</i> <i>1 mark: joins</i> <i>1 mark: 18</i>	3
4	12	$4 \text{ columns} \times 3$ <i>1 mark each</i>	2