

3D shapes, plans and elevations

Foundation and Higher tiers | Total marks: 45

Marks

- M** Method mark, for a correct method. It can be implied by a correct answer.
- A** Accuracy mark, for a correct answer. It needs the method mark before it.
- B** A mark for a correct value or statement, with or without working.
- ft** Follow through: the mark is given for using an earlier wrong answer correctly.
- oe** Or equivalent.
- [a, b]** Any value from a to b inclusive.

Questions

Q	Skill	Spec	Tier	Grade	Calculator	Marks
1	Properties of 3D shapes	G12	Foundation	1	No	3
2	Faces, edges and vertices	G12	Foundation	2	No	2
3	Nets of a cube	G12	Foundation	3	No	2
4	Folding a net	G12	Foundation	3	No	1
5	Recognise a solid from its plan and elevations	G13	Foundation	3	No	1
6	Spot the error: elevations	G13	Foundation	3	No	1
7	Edges of a pyramid	G12	Foundation	4	No	2
8	Draw a plan and an elevation	G13	Common	4	No	4
9	Draw a plan to scale	G13	Common	4	No	2
10	Interpret a plan and elevation: how many cubes	G13	Foundation	5	No	3
11	Draw a solid from its plan and elevations	G13	Common	5	No	2
12	Nets of a cuboid, the area of a face	G12 G16	Foundation	2	Yes	3
13	Edges of a prism in context	G12 G17	Foundation	3	Yes	4
14	Surface area of a cuboid	G16 G12	Foundation	3	Yes	3
15	Interpret a plan and elevation	G13 G16	Foundation	4	Yes	4
16	Volume of a prism from its plan and elevation	G13 G16	Foundation	4	Yes	4
17	Surface area from elevations	G13 G16 G20	Common	6	Yes	4
	Total					45

Question 1 G12 · Foundation · Grade 1 · 3 marks

Q	Answer	Mark	Comments
1(a)	cone	B1	
1(b)	square-based pyramid	B1	
1(c)	cylinder	B1	

Question 2 G12 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
2	8, 18, 12	B2	B1 for two correct

Question 3 G12 · Foundation · Grade 3 · 2 marks

Q	Answer	Mark	Comments
3	B and C	B2	B1 for one correct with at most one wrong

Question 4 G12 · Foundation · Grade 3 · 1 mark

Q	Answer	Mark	Comments
4	D	B1	

Question 5 G13 · Foundation · Grade 3 · 1 mark

Q	Answer	Mark	Comments
5	square-based pyramid	B1	accept pyramid with a square base

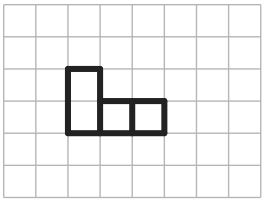
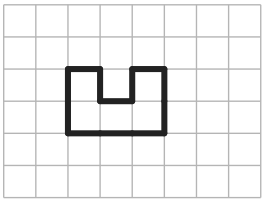
Question 6 G13 · Foundation · Grade 3 · 1 mark

Q	Answer	Mark	Comments
6	No and a correct reason	B1	eg it is the side elevation, or the front elevation is 4 squares wide

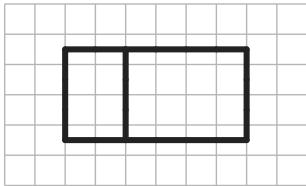
Question 7 G12 · Foundation · Grade 4 · 2 marks

Q	Answer	Mark	Comments
7	the base has 9 vertices or 9 sides	M1	oe, a 9-sided base
	18	A1	

Question 8 G13 · Common · Grade 4 · 4 marks

Q	Answer	Mark	Comments
8(a)	Correct plan, any orientation 	B2	B1 for the correct outline (an L shape of 4 squares) with the internal lines missing or wrong
8(b)	Correct front elevation 	B2	B1 for the correct outline with the internal lines missing or wrong

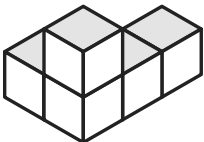
Question 9 G13 · Common · Grade 4 · 2 marks

Q	Answer	Mark	Comments
9	a 6 cm by 3 cm rectangle with a line 2 cm from one end, across the 3 cm width 	B2	B1 for a 6 by 3 rectangle

Question 10 G13 · Foundation · Grade 5 · 3 marks

Q	Answer	Mark	Comments
10(a)	12	B1	
10(b)	one column of the right height in each row from front to back, with the others 1 cube high	M1	oe, eg 3+1+1+1+2+1
	9	A1	

Question 11 G13 · Common · Grade 5 · 2 marks

Q	Answer	Mark	Comments
11	a correct drawing, any orientation 	B2	B1 for 4 of the 5 cubes correct, or a correct solid with one wrong edge

Question 12 G12 G16 · Foundation · Grade 2 · 3 marks

Q	Answer	Mark	Comments
12(a)	8	B1	
12(b)	3.2×4.6	M1	
	14.72	A1	

Question 13 G12 G17 · Foundation · Grade 3 · 4 marks

Q	Answer	Mark	Comments
13	9 edges, or 6×0.85 and 3×2.35	B1	may be implied
	$6 \times 0.85 + 3 \times 2.35$ or 12.15	M1	oe, the total length
	their 12.15×2.79	M1	oe
	£33.90	A1	from £33.8985

Question 14 G16 G12 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
14	24.5×18 or 441, or 24.5×6.4 or 156.8, or 18×6.4 or 115.2	M1	one face
	$2 \times 441 + 2 \times 156.8 + 2 \times 115.2$	M1	oe, all six faces
	1426	A1	

Question 15 G13 G16 · Foundation · Grade 4 · 4 marks

Q	Answer	Mark	Comments
15(a)	cylinder	B1	
15(b)	radius 2.5 and height 8	B1	may be implied
	$\pi \times 2.5^2 \times 8$	M1	oe, ft their radius and height
	157.1	A1	accept 50π or 157.1 or [157.07, 157.08]

Question 16 G13 G16 · Foundation · Grade 4 · 4 marks

Q	Answer	Mark	Comments
16	the length of the prism is 5.5 cm	B1	may be implied
	$\frac{1}{2} \times (4.8 + 7.6) \times 3.5$ or 21.7	M1	oe, the area of the trapezium
	their $21.7 \times$ their 5.5	M1	
	119.35	A1	

Question 17 G13 G16 G20 · Common · Grade 6 · 4 marks

Q	Answer	Mark	Comments
17	$\frac{1}{2} \times 2.4 \times 1.6$ or 1.92	M1	the area of one end
	$1.2^2 + 1.6^2$ or sloping side = 2	M1	oe
	$2 \times 1.92 + 2 \times 2 \times 3.5 + 2.4 \times 3.5$	M1	oe, ft their sloping side
	26.24	A1	