

Area and perimeter

Foundation and Higher tiers | Total marks: 68

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	Area and perimeter by counting	G17 G16	Foundation	1	No	2
2	Area of a triangle	G16	Foundation	2	No	2
3	Area of a trapezium	G16	Foundation	3	No	2
4	Perimeter with missing lengths	G17	Foundation	3	No	3
5	Drawing a shape of a given area	G16	Foundation	3	No	2
6	Area of a parallelogram, spot the error	G16	Foundation	3	No	2
7	Perimeter to area	G17 G16	Foundation	5	No	3
8	Equal areas, forming an equation	G16 A17	Common	5	No	3
9	Area by subtraction, show that	G16	Foundation	5	No	3
10	Area of a triangle using Pythagoras	G16 G20	Common	5	No	3
11	Area leading to a quadratic equation	G16 A18	Higher	7	No	5
12	Perimeter with decimals in context	G17	Foundation	2	Yes	3
13	Area of a triangle with decimals	G16	Foundation	2	Yes	2
14	Area of a rectangle in context, a cost	G16 N2	Foundation	2	Yes	3
15	Area of a parallelogram with decimals	G16	Foundation	2	Yes	2
16	From the area of a rectangle to its perimeter	G17 G16	Foundation	3	Yes	3

Q	Skill	Spec	Tier	Grade	Calculator	Marks
17	Compound area with decimals	G16	Foundation	3	Yes	3
18	Area of a triangle, finding the height	G16	Foundation	3	Yes	3
19	Perimeter in context, rounding up	G17	Foundation	3	Yes	3
20	Area in context, how many fit	G16 N13	Foundation	4	Yes	4
21	Area of a trapezium in context	G16 N13	Foundation	4	Yes	4
22	Compound area in context	G16 G17	Foundation	5	Yes	5
23	Area of a trapezium, finding a length	G16	Foundation	5	Yes	3
	Total					68

Question 1 G17 G16 · Foundation · Grade 1 · 2 marks

Q	Answer	Mark	Comments
1(a)	13	B1	
1(b)	16	B1	

Question 2 G16 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
2	$\frac{1}{2} \times 9 \times 6$	M1	oe
	27	A1	

Question 3 G16 · Foundation · Grade 3 · 2 marks

Q	Answer	Mark	Comments
3	$\frac{1}{2} \times (7 + 13) \times 6$	M1	oe, or split into a rectangle and triangles
	60	A1	

Question 4 G17 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
4	14 – 9 or 5, or 10 – 4 or 6	M1	one missing length
	14 + 4 + 5 + 6 + 9 + 10	M1	oe, all six lengths added, ft their missing lengths
	48	A1	

Question 5 G16 · Foundation · Grade 3 · 2 marks

Q	Answer	Mark	Comments
5	a parallelogram, not a rectangle, with area 12 cm ²	B2	B1 for a rectangle with area 12 cm ² , or a parallelogram (not a rectangle) with area 6 or 24

Question 6 G16 · Foundation · Grade 3 · 2 marks

Q	Answer	Mark	Comments
6(a)	she has used 5 cm, the sloping side, instead of the perpendicular height	B1	oe
6(b)	32	B1	

Question 7 G17 G16 · Foundation · Grade 5 · 3 marks

Q	Answer	Mark	Comments
7	$72 \div 12$ or 6	M1	the side of one square
	$5 \times$ their 6^2	M1	oe
	180	A1	

Question 8 G16 A17 · Common · Grade 5 · 3 marks

Q	Answer	Mark	Comments
8	$\frac{1}{2} \times 10 \times (x + 3) = 6x$	M1	oe
	$5x + 15 = 6x$	M1	oe, expands correctly
	15	A1	

Question 9 G16 · Foundation · Grade 5 · 3 marks

Q	Answer	Mark	Comments
9	10×7 or 70	M1	the rectangle
	$2 \times \frac{1}{2} \times 3 \times 5 + 2 \times \frac{1}{2} \times 7 \times 2$ or 29	M1	oe, the four corner triangles
	$70 - 29 = 41$	A1	a full method with no errors

Question 10 G16 G20 · Common · Grade 5 · 3 marks

Q	Answer	Mark	Comments
10	$13^2 - 5^2$ or 144	M1	oe, half the base used
	$\frac{1}{2} \times 10 \times \sqrt{144}$	M1	oe, ft their height
	60	A1	

Question 11 G16 A18 · Higher · Grade 7 · 5 marks

Q	Answer	Mark	Comments
11	$(x + 3)(2x - 1) = 60$	M1	
	$2x^2 + 5x - 63 = 0$	M1	oe, expanded and rearranged
	$(2x - 9)(x + 7) = 0$	M1	oe, or the quadratic formula used correctly
	$x = 4.5$	A1	ignore -7 if seen
	31	A1	sides 7.5 cm and 8 cm

Question 12 G17 · Foundation · Grade 2 · 3 marks

Q	Answer	Mark	Comments
12	$3.65 + 1.4 + 3.65 + 1.4$ or $2 \times (3.65 + 1.4)$ or 10.1	M1	oe, the perimeter
	their 10.1×4.80	M1	oe
	£48.48	A1	

Question 13 G16 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
13	$\frac{1}{2} \times 3.65 \times 4.2$	M1	oe
	7.665	A1	

Question 14 G16 N2 · Foundation · Grade 2 · 3 marks

Q	Answer	Mark	Comments
14	7.25×4.8 or 34.8	M1	the area
	their 34.8×3.85	M1	oe
	£133.98	A1	

Question 15 G16 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
15	9.4×5.25	M1	
	49.35	A1	

Question 16 G17 G16 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
16	$21.06 \div 5.4$ or 3.9	M1	the width
	$2 \times (5.4 + \text{their } 3.9)$ or $5.4 + 5.4 + \text{their } 3.9 + \text{their } 3.9$	M1	oe
	18.6	A1	

Question 17 G16 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
17	$5.2 - 3.4$ or 1.8, or $6.4 - 4.05$ or 2.35	M1	a missing length
	$6.4 \times 3.4 + 4.05 \times \text{their } 1.8$ or $4.05 \times 5.2 + \text{their } 2.35 \times 3.4$	M1	oe, a complete method, or $6.4 \times 5.2 - \text{their } 2.35 \times \text{their } 1.8$
	29.05	A1	

Question 18

G16 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
18	$\frac{1}{2} \times 8.5 \times h = 31.62$	M1	oe
	$31.62 \times 2 \div 8.5$ or $63.24 \div 8.5$ or $31.62 \div 4.25$	M1	oe
	7.44	A1	

Question 19

G17 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
19	$2 \times (84.5 + 52.75)$ or 274.5	M1	oe, the perimeter
	their $274.5 \div 2.5$ or 109.8	M1	oe
	110	A1	

Question 20

G16 N13 · Foundation · Grade 4 · 4 marks

Q	Answer	Mark	Comments
20	$4.8 \div 0.6$ or 8, or $3.6 \div 0.4$ or 9	M1	oe, or $4.8 \times 3.6 = 17.28$ and $0.6 \times 0.4 = 0.24$
	8×9 or 72	M1	oe, $17.28 \div 0.24$
	their $72 \div 8 \times 27.50$	M1	oe
	£247.50	A1	

Question 21

G16 N13 · Foundation · Grade 4 · 4 marks

Q	Answer	Mark	Comments
21	$\frac{1}{2} \times (23.6 + 31.4) \times 18.5$ or 508.75	M1	oe, the area
	their 508.75×40 or 20 350	M1	oe, grams of fertiliser
	their $20\,350 \div 5000$ or $20.35 \div 5$ or 4.07	M1	oe, a correct conversion between g and kg
	5	A1	

Question 22

G16 G17 · Foundation · Grade 5 · 5 marks

Q	Answer	Mark	Comments
22	6.4×2.8 or 17.92	M1	
	$\frac{1}{2} \times 6.4 \times 1.9$ or 6.08	M1	
	their $17.92 +$ their $6.08 - 1.2 \times 1.5$	M1	oe, 22.2
	their 22.2×2 and 3×12	M1	oe, or their $22.2 \times 2 \div 12 = 3.7$
	No and 44.4 and 36	A1	oe, No and 3.7 tins

Question 23 G16 · Foundation · Grade 5 · 3 marks

Q	Answer	Mark	Comments
23	$\frac{1}{2} \times (7.4 + 11.6) \times h = 51.3$	M1	oe
	$51.3 \times 2 \div 19$ or $51.3 \div 9.5$	M1	oe
	5.4	A1	