



KS3.M-G8 Area of Parallelograms, Trapezia and Compound Shapes

AQA KS3.M-G8 · Calculators not allowed · about 50 minutes

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** A parallelogram has base 8 cm and height 5 cm. Work out its area.

(1)

- 2** Calculate the area of a parallelogram with base 12 cm and height 3.5 cm. Give your answer in cm^2 .

(2)

- 3** A parallelogram has base 7 m and area 42 m^2 . Work out the height.

(2)

- 4** Find the area of a trapezium with parallel sides 6 cm and 10 cm and height 4 cm.

(2)

- 5** A trapezium has parallel sides 7.5 m and 12.5 m with height 2 m. Calculate its area in m^2 .

(2)

- 6** A compound shape is made of a rectangle 8 cm by 5 cm and a triangle with base 8 cm and height 3 cm attached along one 8 cm side. Find the total area.

(2)

-
- 7** A parallelogram has base 9 cm and area 63 cm^2 . State the height.

(1)

-
- 8** An L-shaped figure is made from two rectangles. One rectangle is 6 m by 3 m and the other is 4 m by 2 m. Find the total area.

(2)

-
- 9** A shape is made from a rectangle 10 cm by 4 cm and a trapezium attached to one 4 cm side. The trapezium has parallel sides 4 cm and 8 cm and height 3 cm. Find the total area of the shape.

(3)

-
- 10** A rectangle has area 45 m^2 and width 5 m. A parallelogram has the same area and height 9 m. Work out the base of the parallelogram.

(2)

11 A small parallelogram has area 2500 cm^2 . Express this area in m^2 .

(2)

12 A compound shape consists of a parallelogram with base 14 cm and height 3 cm, and a triangle on top with base 14 cm and height 4 cm. Find the total area.

(3)

13 A trapezium has parallel sides 9 m and 15 m and area 96 m^2 . Work out its height.

(2)

14 Priya lays a parallelogram-shaped flower bed with base 6 m and height 2 m. Soil costs 3 pounds per m^2 . Calculate the cost to cover the bed with soil.

(3)

15 A parallelogram has base 8 cm and height 5 cm. If the base is doubled and the height stays the same, what happens to the area? Give a number and a short reason.

(2)

- 16** A rectangle 12 m by 6 m has a right triangle removed from one corner. The triangle has legs 3 m and 4 m (right angle between them). Find the area of the remaining shape.

(3)

- 17** Explain why the area of a trapezium equals the average of the two parallel sides multiplied by the height. You may give a short diagram description or words.

(3)

- 18** Stretch: A compound shape is made from a parallelogram with base 9 cm and height 4 cm, and two congruent right triangles each with base 3 cm and height 2 cm attached to the other two sides of the parallelogram. Find the total area.

(3)

Mark scheme · KS3.M-G8 Area of Parallelograms, Trapezia and Compound Shapes

Question 1

- **B1** Area $8 \times 5 = 40 \text{ cm}^2$ cao
- Answer: **40 cm²**

Question 2

- **M1** Use area = base x height: 12×3.5 or equivalent
- **A1** 42 cm^2 cao
- Answer: **42 cm²**

Question 3

- **M1** Use height = area / base: $42 / 7$ or equivalent
- **A1** 6 m cao
- Answer: **6 m**

Question 4

- **M1** Use area = $(a + b)/2 \times \text{height}$ with $a=6$, $b=10$: $(6+10)/2 \times 4$
- **A1** 32 cm^2 cao
- Answer: **32 cm²**

Question 5

- **M1** Use $(7.5 + 12.5)/2 \times 2$ or equivalent
- **A1** 20 m^2 cao
- Answer: **20 m²**

Question 6

- **M1** Area rectangle $8 \times 5 = 40$ and triangle $1/2 \times 8 \times 3 = 12$ used
- **A1** 52 cm^2 cao
- Answer: **52 cm²**

Question 7

- **B1** height = $63 / 9 = 7 \text{ cm}$ cao
- Answer: **7 cm**

Question 8

- **M1** Areas $6 \times 3 = 18$ and $4 \times 2 = 8$ calculated and added
- **A1** 26 m^2 cao
- Answer: **26 m²**

Question 9

- **M1** Area rectangle $10 \times 4 = 40$ and area trapezium $(4+8)/2 \times 3 = 18$ calculated
- **M1** Both areas added $40 + 18$
- **A1** 58 cm^2 cao
- Answer: **58 cm²**

Question 10

- **M1** Area of rectangle = 45 used as area of parallelogram; base = area / height = $45 / 9$
- **A1** 5 m cao
- Answer: **5 m**

Question 11

- **M1** Recognise $100\text{ cm} = 1\text{ m}$ so $1\text{ m}^2 = 10000\text{ cm}^2$ or divide by 10000
- **A1** 0.25 m^2 cao
- **Answer: 0.25 m^2**

Question 12

- **M1** Area parallelogram $14 \times 3 = 42$ and triangle $\frac{1}{2} \times 14 \times 4 = 28$ calculated
- **M1** Areas added $42 + 28$
- **A1** 70 cm^2 cao
- **Answer: 70 cm^2**

Question 13

- **M1** Use area $= (a+b)/2 \times h$ so $h = \text{area} \times 2 / (a+b)$: $h = 96 \times 2 / (9+15)$
- **A1** 8 m cao
- **Answer: 8 m**

Question 14

- **M1** Area $= 6 \times 2 = 12\text{ m}^2$ used
- **M1** Multiply area by cost per m^2 : 12×3
- **A1** 36 pounds cao
- **Answer: 36 pounds**

Question 15

- **M1** State new area calculation or relation: original $8 \times 5 = 40$ so new base 16 gives $16 \times 5 = 80$
- **A1** Area doubles to 80 cm^2 , because area $=$ base $\times$ height so doubling base doubles area
- **Answer: 80 cm^2**

Question 16

- **M1** Area rectangle $12 \times 6 = 72$ and triangle area $\frac{1}{2} \times 3 \times 4 = 6$ calculated
- **M1** Subtract triangle from rectangle: $72 - 6$
- **A1** 66 m^2 cao
- **Answer: 66 m^2**

Question 17

- **M1** Mention splitting trapezium into two triangles or rearranging into a rectangle idea, or pairing two identical trapezia to make a rectangle
- **M1** State that pairing two trapezia gives a rectangle with width $a + b$ and same height so area of two trapezia $= (a + b) \times h$
- **A1** Conclude area of one trapezium $= (a + b)/2 \times h$ cao
- **Answer: $(a + b)/2 \times h$**

Question 18

- **M1** Area parallelogram $9 \times 4 = 36$ and area of one triangle $\frac{1}{2} \times 3 \times 2 = 3$ calculated
- **M1** Two triangles total $3 + 3 = 6$ and add to parallelogram
- **A1** 42 cm^2 cao
- **Answer: 42 cm^2**