



EP.M115 Perimeter and Area of Compound Shapes

GL ASSESSMENT GL-11PLUS-MATHS · Calculators not allowed · about 55 minutes

Total Marks

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Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** The outline of a rectilinear shape has sides, in order, 8 cm, 3 cm, 5 cm, 4 cm, 6 cm, 7 cm, 2 cm and 5 cm. Work out the perimeter of the shape.

- ☐ A) 32 cm
- ☐ B) 40 cm
- ☐ C) 44 cm
- ☐ D) 36 cm
- ☐ E) 48 cm

(Total for Question 1 is 1 mark)

- 2** Two rectangles are joined along a full side. One rectangle measures 5 cm by 4 cm and the other measures 3 cm by 4 cm. What is the area of the combined shape?

- ☐ A) 32 cm²
- ☐ B) 20 cm²
- ☐ C) 40 cm²
- ☐ D) 24 cm²
- ☐ E) 12 cm²

(Total for Question 2 is 1 mark)

- 3** An L-shaped figure is made by removing a 2 cm by 3 cm rectangle from a 7 cm by 5 cm rectangle (the small rectangle is cut from one corner). What is the area of the L-shaped figure?

- ☐ A) 29 cm²
- ☐ B) 35 cm²
- ☐ C) 6 cm²
- ☐ D) 28 cm²
- ☐ E) 23 cm²

(Total for Question 3 is 1 mark)

- 4 A rectilinear shape has seven known side lengths around its perimeter: 3 cm, 6 cm, 4 cm, 5 cm, 2 cm, 8 cm and 7 cm. The total perimeter is 40 cm. What is the length of the missing side?

- ☐ A) 3 cm
☐ B) 5 cm
☐ C) 7 cm
☐ D) 4 cm
☐ E) 6 cm

(Total for Question 4 is 1 mark)

- 5 A 6 cm by 4 cm rectangle and a 4 cm by 2 cm rectangle are placed side by side so that their 4 cm sides lie along the same straight line (they are adjacent but do not overlap). What is the area of the combined shape?

- ☐ A) 32 cm²
☐ B) 24 cm²
☐ C) 20 cm²
☐ D) 30 cm²
☐ E) 16 cm²

(Total for Question 5 is 1 mark)

- 6 A rectangle measures 9 cm by 6 cm. A small 3 cm by 2 cm rectangle is removed from one corner. What is the area of the remaining shape?

- ☐ A) 48 cm²
☐ B) 52 cm²
☐ C) 54 cm²
☐ D) 42 cm²
☐ E) 36 cm²

(Total for Question 6 is 1 mark)

- 7 Two rectangles, 6 cm by 3 cm and 6 cm by 2 cm, are placed one above the other sharing the 6 cm side. What is the total area?

- ☐ A) 30 cm²
☐ B) 18 cm²
☐ C) 24 cm²
☐ D) 12 cm²
☐ E) 36 cm²

(Total for Question 7 is 1 mark)

- 8** A rectilinear shape has side lengths around the perimeter: 7 cm, 4 cm, 6 cm, 3 cm, 5 cm and x cm. The total perimeter is 32 cm. What is x?

- ☐ A) 7 cm
- ☐ B) 6 cm
- ☐ C) 5 cm
- ☐ D) 3 cm
- ☐ E) 8 cm

(Total for Question 8 is 1 mark)

- 9** A compound shape is formed by a 10 cm by 4 cm rectangle with a 4 cm by 2 cm rectangle attached to one short end so the 4 cm sides touch. What is the perimeter of the combined shape?

- ☐ A) 28 cm
- ☐ B) 30 cm
- ☐ C) 32 cm
- ☐ D) 34 cm
- ☐ E) 36 cm

(Total for Question 9 is 1 mark)

- 10** A square of side 6 cm has a 2 cm by 3 cm rectangle removed from one side (not a corner) leaving a rectilinear shape. What is the area of the new shape?

- ☐ A) 30 cm²
- ☐ B) 36 cm²
- ☐ C) 33 cm²
- ☐ D) 24 cm²
- ☐ E) 18 cm²

(Total for Question 10 is 1 mark)

- 11** On a plan, a rectilinear shape has side lengths 9 m, 4 m, 5 m, 3 m, 7 m and 6 m in that order. What is the perimeter of this shape in metres?

- ☐ A) 34 m
- ☐ B) 36 m
- ☐ C) 32 m
- ☐ D) 38 m
- ☐ E) 30 m

(Total for Question 11 is 1 mark)

- 12** A rectilinear tile layout consists of a 7 cm by 6 cm rectangle and a 2 cm by 6 cm rectangle placed end to end (sharing the 6 cm side). What is the total area in cm^2 ?

- ☐ A) 54 cm^2
☐ B) 42 cm^2
☐ C) 36 cm^2
☐ D) 60 cm^2
☐ E) 24 cm^2

(Total for Question 12 is 1 mark)

- 13** The perimeter of a rectilinear shape is 54 cm. The side lengths around the shape in order are 8 cm, x cm, 5 cm, 3 cm, 10 cm, 6 cm, 4 cm and 8 cm. Work out the value of x.

(Total for Question 13 is 2 marks)

- 14** An L-shaped garden is formed by removing a 3 m by 2 m rectangle from a corner of a 9 m by 6 m rectangle. Find the area of the remaining garden.

(Total for Question 14 is 3 marks)

- 15** Two rectangles, 7 cm by 3 cm and 7 cm by 4 cm, are placed so the 7 cm sides are aligned and the rectangles share that side (they are stacked). Find the perimeter of the combined shape.

(Total for Question 15 is 2 marks)

- 16** A rectangle measures 10 cm by 6 cm. A 4 cm by 3 cm rectangle is removed from one corner. Find the area of the remaining shape.

(Total for Question 16 is 3 marks)

- 17** A tiled L-shaped kitchen floor is made from two rectangles: one 5 m by 4 m and the other 3 m by 4 m placed end to end sharing the 4 m side. Calculate the total area of the kitchen floor.

(Total for Question 17 is 2 marks)

- 18** A rectilinear plot has sides 12 cm, 5 cm, 7 cm, x cm, 4 cm and 9 cm. The perimeter is 54 cm. Find x.

(Total for Question 18 is 3 marks)

- 19** A building plan shows an 8 m by 6 m rectangle. From one side a 2 m by 3 m rectangle is removed and on another side a 4 m by 2 m rectangle is attached (externally). Find the area of the final shape.

(Total for Question 19 is 3 marks)

- 20** The perimeter of a rectilinear shape is 70 cm. The side lengths in order are 14 cm, 8 cm, 6 cm, x cm, 10 cm and 12 cm.

(a) Find x.

(b) The same shape can be split into a rectangle 14 cm by 6 cm and a square 6 cm by 6 cm. Find the total area of the shape.

(a) Find x.

(2)

(b) Find the total area using the rectangle 14 x 6 and the square 6 x 6.

(2)

(Total for Question 20 is 4 marks)

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Question 1

- **B1** correct option B (40 cm) cao
- **Answer: B) 40 cm** ($8+3+5+4+6+7+2+5 = 40$ cm).

Question 2

- **B1** correct option A (32 cm^2) cao
- **Answer: A) 32 cm^2** ($5 \times 4 + 3 \times 4 = 20 + 12 = 32 \text{ cm}^2$).

Question 3

- **B1** correct option A (29 cm^2) cao
- **Answer: A) 29 cm^2** . ($7 \times 5 = 35$; removed $2 \times 3 = 6$; $35 - 6 = 29 \text{ cm}^2$).

Question 4

- **B1** correct option B (5 cm) cao
- **Answer: B) 5 cm** (sum known = 35; $40 - 35 = 5$ cm).

Question 5

- **B1** correct option A (32 cm^2) cao
- **Answer: A) 32 cm^2** ($6 \times 4 + 4 \times 2 = 24 + 8 = 32 \text{ cm}^2$).

Question 6

- **B1** correct option A (48 cm^2) cao
- **Answer: A) 48 cm^2** ($9 \times 6 = 54$; remove $3 \times 2 = 6$; $54 - 6 = 48 \text{ cm}^2$).

Question 7

- **B1** correct option A (30 cm^2) cao
- **Answer: A) 30 cm^2** ($6 \times 3 + 6 \times 2 = 18 + 12 = 30 \text{ cm}^2$).

Question 8

- **B1** correct option A (7 cm) cao
- **Answer: A) 7 cm** (sum known = $7+4+6+3+5 = 25$; $32 - 25 = 7$ cm).

Question 9

- **B1** correct option C (32 cm) cao
- **Answer: C) 32 cm.** (Because the 4 cm sides match exactly, the two rectangles join flush to form one straight rectangle 4 cm by $(10+2) = 12$ cm. Perimeter = $2 \times (4 + 12) = 32$ cm.)

Question 10

- **B1** correct option A (30 cm^2) cao
- **Answer: A) 30 cm^2** ($6 \times 6 = 36$; remove $2 \times 3 = 6$; $36 - 6 = 30 \text{ cm}^2$).

Question 11

- **B1** correct option A (34 m) cao
- **Answer: A) 34 m** ($9+4+5+3+7+6 = 34$ m).

Question 12

- **B1** correct option A (54 cm^2) cao
- **Answer: A) 54 cm^2** ($7 \times 6 + 2 \times 6 = 42 + 12 = 54 \text{ cm}^2$).

Question 13

- **M1** Write equation: $8 + x + 5 + 3 + 10 + 6 + 4 + 8 = 54$ or sum known then $x = 54 - \text{sum known}$
- **A1** $x = 10$ cm cao
- **Answer: $x = 10$ cm** (sum known 44; $54 - 44 = 10$).

Question 14

- **M1** Area of whole rectangle $9 \times 6 = 54$ seen
- **M1** Area of removed rectangle $3 \times 2 = 6$ seen
- **A1** $54 - 6 = 48 \text{ m}^2$ cao
- **Answer: 48 m².**

Question 15

- **M1** Recognise combined outside dimensions are 7 cm by $(3+4)=7$ cm
- **A1** Perimeter $= 2(7+7) = 28$ cm cao
- **Answer: 28 cm.**

Question 16

- **M1** Area of whole rectangle $10 \times 6 = 60$ seen
- **M1** Area removed $4 \times 3 = 12$ seen
- **A1** $60 - 12 = 48 \text{ cm}^2$ cao
- **Answer: 48 cm².**

Question 17

- **M1** Calculate areas: 5×4 and 3×4 seen
- **A1** Total $= 20 + 12 = 32 \text{ m}^2$ cao
- **Answer: 32 m².**

Question 18

- **M1** Sum known sides $= 12+5+7+4+9 = 37$ seen
- **M1** Set up $x = 54 - 37$ or equivalent
- **A1** $x = 17$ cm cao
- **Answer: x = 17 cm.**

Question 19

- **M1** Area of original $8 \times 6 = 48$ seen
- **M1** Subtract removed $2 \times 3 = 6$ and add attached $4 \times 2 = 8$ (or show $48 - 6 + 8$)
- **A1** Final area $= 48 - 6 + 8 = 50 \text{ m}^2$ cao
- **Answer: 50 m².**

Question 20

- (a) **M1** Sum known sides $14+8+6+10+12 = 50$ or equivalent seen
- (a) **A1** $x = 70 - 50 = 20$ cm cao
- (a) **Answer: x = 20 cm**
- (b) **M1** Areas $14 \times 6 = 84$ and $6 \times 6 = 36$ seen
- (b) **A1** Total area $= 84 + 36 = 120 \text{ cm}^2$ cao
- (b) **Answer: 120 cm²**