4.7 Perimeter and Area of Rectangles and Triangles: 2-hour Pack

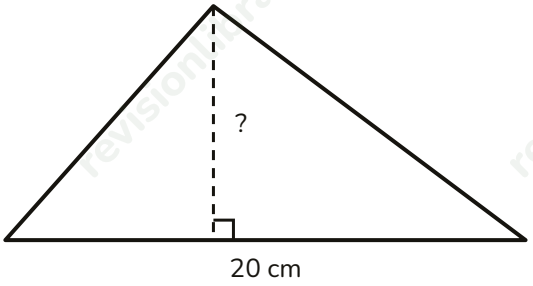
Calculators not allowed · about 120 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A triangle has area 90 cm² and a base of 20 cm. Work out its perpendicular height.

Diagram NOT accurately drawn



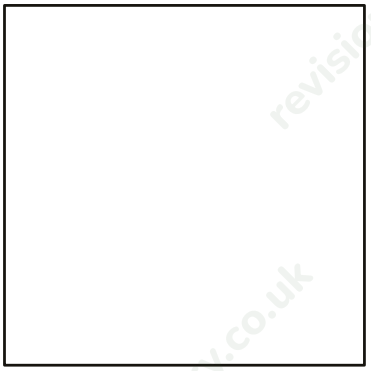
Area = 90 cm²

(3)

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2 A square has a perimeter of 40 cm. Work out its area.

Diagram NOT accurately drawn



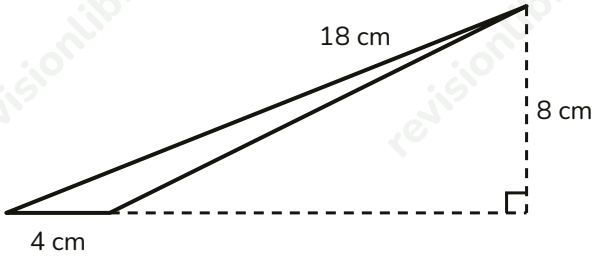
Perimeter = 40 cm

(2)

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3 A triangle has base 4 cm and perpendicular height 8 cm. Its sloping side is 18 cm long. Work out the area of the triangle.

Diagram NOT accurately drawn

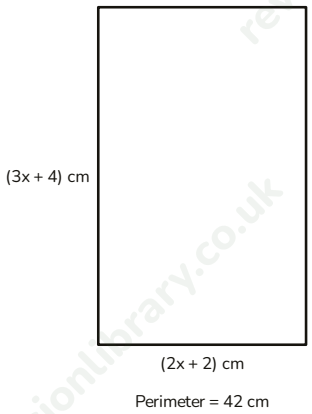


(2)

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4 A rectangle has length (2x + 2) cm and width (3x + 4) cm. The perimeter of the rectangle is 42 cm.
Work out the value of x and the area of the rectangle.

Diagram NOT accurately drawn



(4)

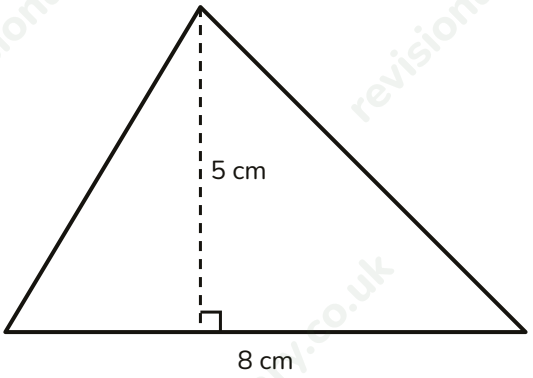
5 The area of a rectangle is 105 mm² and its length is 21 mm. Work out its width and its perimeter.

(3)

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6 A triangle has base 8 cm and height 5 cm. Calculate its area.

Diagram NOT accurately drawn



(1)

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7 A floor is 7 m long and 9 m wide. Carpet costs £10 per square metre. Work out the total cost of carpeting the floor.

(3)

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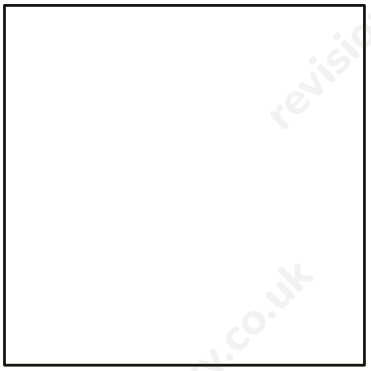
8 A wall is 7 m by 3 m. One tin of paint covers 6 m² and costs £7. Work out the cost of the paint needed. Only whole tins can be bought.

(3)

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9 A square has a perimeter of 12 m. Work out its area.

Diagram NOT accurately drawn



Perimeter = 12 m

(2)

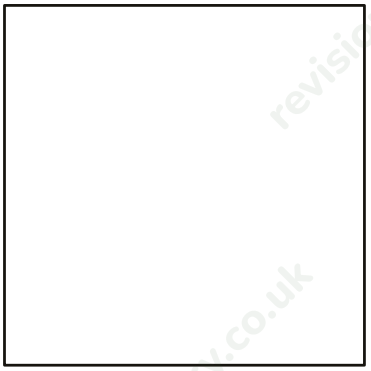
10 A floor is 3 m long and 5 m wide. Carpet costs £7 per square metre. Work out the total cost of carpeting the floor.

(3)

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11 A square has a perimeter of 16 m. Work out its area.

Diagram NOT accurately drawn



Perimeter = 16 m

(2)

---

12 A rectangle has length (4x + 1) cm and width (3x + 1) cm. The perimeter of the rectangle is 88 cm.
Work out the value of x and the area of the rectangle.

Diagram NOT accurately drawn



Perimeter = 88 cm

(4)

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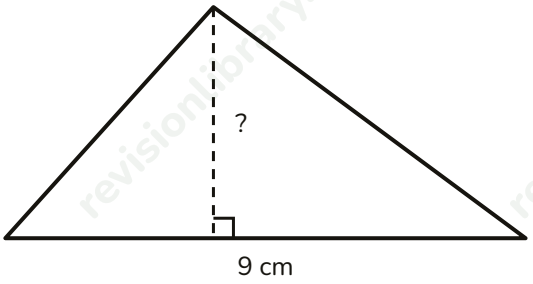
13 The perimeter of a rectangle is 58 cm and its length is 15 cm. Work out its area.

(3)

---

14 A triangle has area 18 cm² and a base of 9 cm. Work out its perpendicular height.

Diagram NOT accurately drawn



Area = 18 cm²

(3)

---

15 A wall is 8 m by 7 m. One tin of paint covers 6 m² and costs £9. Work out the cost of the paint needed. Only whole tins can be bought.

(3)

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16 A floor is 9 m long and 2 m wide. Carpet costs £13 per square metre. Work out the total cost of carpeting the floor.

(3)

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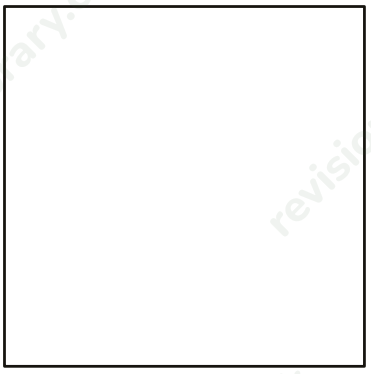
17 A wall is 9 m by 8 m. One tin of paint covers 6 m² and costs £15. Work out the cost of the paint needed. Only whole tins can be bought.

(3)

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18 A square has a perimeter of 44 m. Work out its area.

Diagram NOT accurately drawn



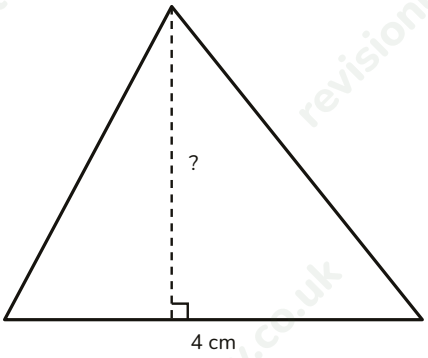
Perimeter = 44 m

(2)

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19 A triangle has area 6 cm² and a base of 4 cm. Work out its perpendicular height.

Diagram NOT accurately drawn



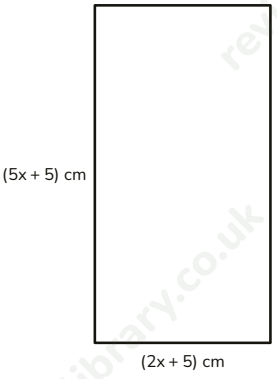
Area = 6 cm²

(3)

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20 A rectangle has length (2x + 5) cm and width (5x + 5) cm. The perimeter of the rectangle is 76 cm.
Work out the value of x and the area of the rectangle.

Diagram NOT accurately drawn



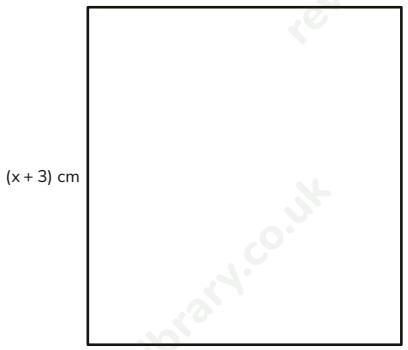
Perimeter = 76 cm

(4)

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21 A rectangle has length (x + 2) cm and width (x + 3) cm. The perimeter of the rectangle is 54 cm.
Work out the value of x and the area of the rectangle.

Diagram NOT accurately drawn



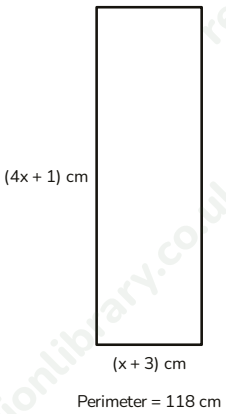
Perimeter = 54 cm

(4)

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22 A rectangle has length (x + 3) cm and width (4x + 1) cm. The perimeter of the rectangle is 118 cm.
Work out the value of x and the area of the rectangle.

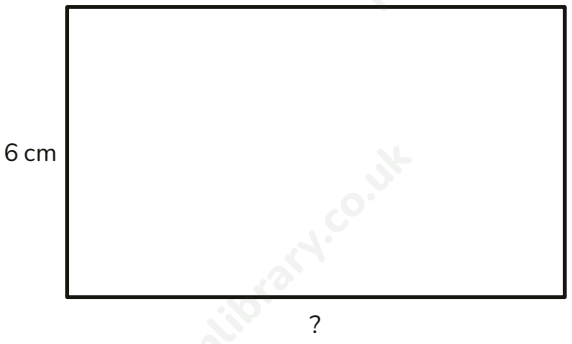
Diagram NOT accurately drawn



(4)

23 A rectangle has width 6 cm. Its perimeter is 30 cm. Work out the length of the rectangle.

Diagram NOT accurately drawn

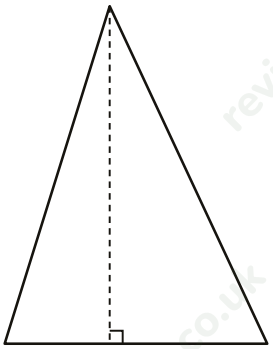


(2)

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24 A triangle has base 7 cm and area 42 cm². Work out the height of the triangle.

Diagram NOT accurately drawn

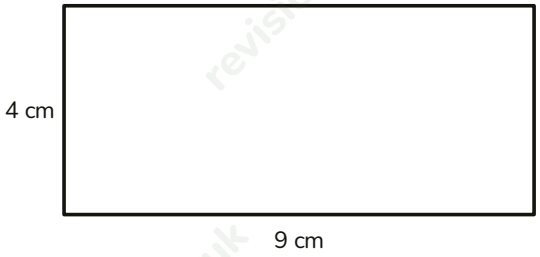


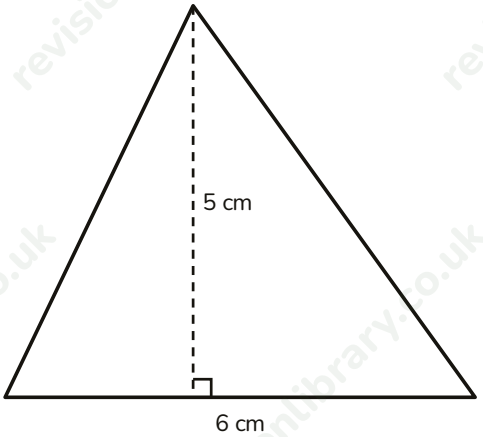
(2)

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25 A shape is made from a rectangle and a triangle. The rectangle is 9 cm by 4 cm. A triangle with base 6 cm and height 5 cm is attached to one side of the rectangle. Calculate the total area of the shape.

Diagram NOT accurately drawn





(2)

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26 A rectangle has length 14 cm and area 98 cm². Work out its width.

Diagram NOT accurately drawn



14 cm

Area = 98 cm²

(2)

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27 A rectangle has perimeter 64 cm. Its length is three times its width. Work out the area of the rectangle.

Diagram NOT accurately drawn



3w

Perimeter = 64 cm

(3)

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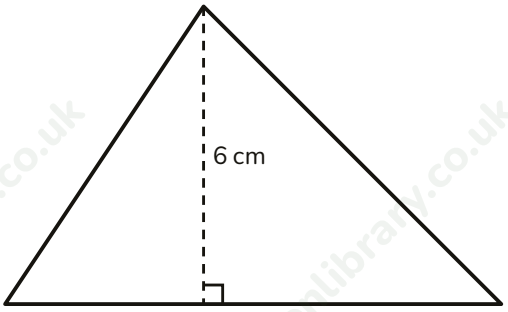
28 A composite shape is made of a rectangle of area 54 cm² (length 9 cm) and a triangle with perpendicular height 6 cm. Only part of the triangle's base is joined to one 9 cm side of the rectangle, with no overlap between the shapes. The total area of the shape is 90 cm². Work out the base of the triangle.

Diagram NOT accurately drawn



9 cm

Area = 54 cm²



(3)

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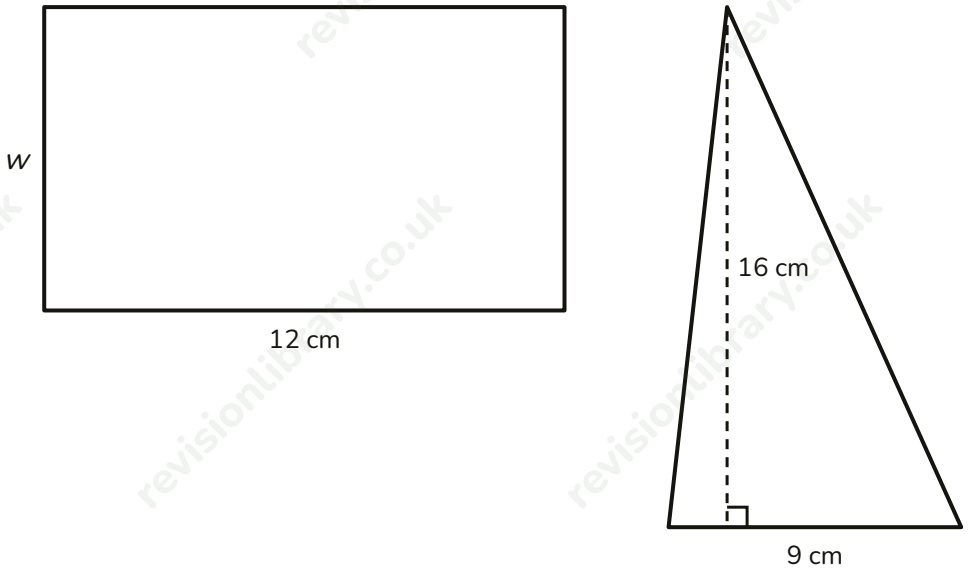
29 A rectangular garden is 15 m by 10 m. A triangular flower bed with base 8 m and height 5 m is removed from one corner. Work out the remaining area of the garden.

(3)

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30 A triangle has base 9 cm and height 16 cm, so its area is 72 cm². A rectangle has length 12 cm and unknown width w. The rectangle and the triangle have equal areas. Work out w.

Diagram NOT accurately drawn



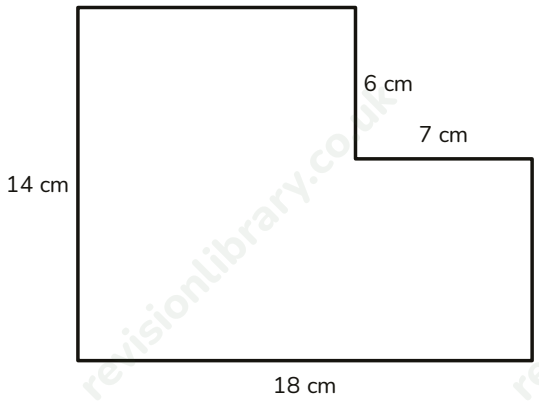
Area = 72 cm²

(2)

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31 Stretch question. An L-shape is made from an 18 cm by 14 cm rectangle with a 7 cm by 6 cm rectangular notch removed from one corner. Work out the area of the L-shape. Given that the perimeter of the L-shape is 64 cm, work out how much longer this perimeter is compared with the perimeter of the original 18 cm by 14 cm rectangle before the notch was removed.

Diagram NOT accurately drawn

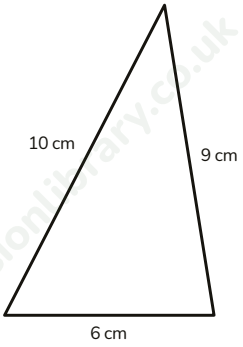


(4)

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32 A triangle has sides 6 cm, 9 cm and 10 cm. Work out its perimeter.

Diagram NOT accurately drawn

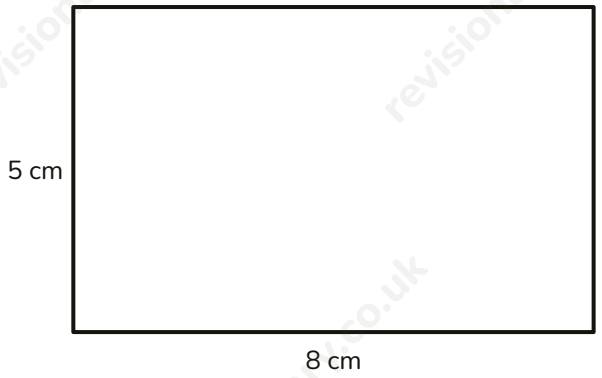


(1)

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33 Calculate the area of a rectangle with length 8 cm and width 5 cm.

Diagram NOT accurately drawn

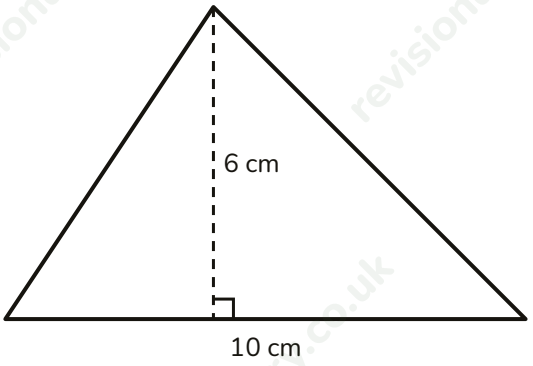


(2)

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34 A triangle has base 10 cm and height 6 cm. Calculate its area.

Diagram NOT accurately drawn



(1)

35 A rectangle has width 8 cm. Its perimeter is 34 cm. Work out the length of the rectangle.

Diagram NOT accurately drawn



Perimeter = 34 cm

(1)

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Mark scheme · 4.7 Perimeter and Area of Rectangles and Triangles: 2-hour Pack

Question 1

90 = 1/2 x 20 x h or 90 x 2	M1
180 ÷ 20	M1
9 cm cao	A1

Answer: **9 cm**

Question 2

40 ÷ 4 = 10	M1
100 cm² cao	A1

Answer: **100 cm^2**

Question 3

1/2 x 4 x 8	M1
16 cm² cao (the sloping side is not needed)	A1

Answer: **16 cm^2**

Question 4

2((2x + 2) + (3x + 4)) = 42	M1
x = 3	A1
8 x 13	M1
104 cm² cao	A1

Answer: **x = 3, area = 104 cm^2**

Question 5

105 ÷ 21	M1
width = 5 mm	A1
perimeter = 52 mm	A1

Answer: **width = 5 mm, perimeter = 52 mm**

Question 6

20 cm² cao	B1

Answer: **20 cm^2**

Question 7

7 x 9 = 63	M1
63 x 10	M1
£630 cao	A1

Answer: **£630**

Question 8

21 ÷ 6	M1
rounds up to 4 tins	M1
£28 cao	A1

Answer: **£28**

Question 9

12 ÷ 4 = 3	M1
9 m² cao	A1

Answer: **9 m^2**

Question 10

3 x 5 = 15	M1
15 x 7	M1
£105 cao	A1

Answer: **£105**

Question 11

16 ÷ 4	M1
16 m² cao	A1

Answer: **16 m^2**

Question 12

2((4x + 1) + (3x + 1)) = 88	M1
x = 6	A1
25 x 19	M1
475 cm² cao	A1

Answer: **x = 6, area = 475 cm^2**

Question 13

15 + w = 29 (half the perimeter)	M1
w = 14 and 15 x 14	M1
210 cm² cao	A1

Answer: **210 cm^2**

Question 14

18 = 1/2 x 9 x h or 18 x 2	M1
36 ÷ 9	M1
4 cm cao	A1

Answer: **4 cm**

Question 15

56 ÷ 6	M1
rounds up to 10 tins	M1
£90 cao	A1

Answer: **£90**

Question 16

9 x 2 = 18	M1
18 x 13	M1
£234 cao	A1

Answer: **£234**

Question 17

72 ÷ 6	M1
rounds up to 12 tins	M1
£180 cao	A1

Answer: **£180**

Question 18

44 ÷ 4 = 11	M1
121 m² cao	A1

Answer: **121 m^2**

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Question 19

6 = 1/2 x 4 x h or 6 x 2	M1
12 ÷ 4	M1
3 cm cao	A1

Answer: **3 cm**

Question 20

2((2x + 5) + (5x + 5)) = 76	M1
x = 4	A1
13 x 25	M1
325 cm² cao	A1

Answer: **x = 4, area = 325 cm^2**

Question 21

2((x + 2) + (x + 3)) = 54	M1
x = 11	A1
13 x 14	M1
182 cm² cao	A1

Answer: **x = 11, area = 182 cm^2**

Question 22

2((x + 3) + (4x + 1)) = 118	M1
x = 11	A1
14 x 45	M1
630 cm² cao	A1

Answer: **x = 11, area = 630 cm^2**

Question 23

use 2(length + width) = 30 or equivalent method to form equation	M1
length = 9 cm cao	A1

Answer: **9 cm**

Question 24

uses height = 2 x area / base	M1
12 cm cao	A1

Answer: **12 cm**

Question 25

finds rectangle area 36 cm² and triangle area 15 cm²	M1
51 cm² cao	A1

Answer: **51 cm^2**

Question 26

uses width = area / length	M1
7 cm cao	A1

Answer: **7 cm**

Question 27

forms 2(w + 3w) = 64, so 8w = 64	M1
solves w = 8 cm, so length = 24 cm	M1
area = 192 cm² cao	A1

Answer: **192 cm^2**

Question 28

finds triangle area = 90 - 54 = 36 cm²	M1
uses base = 2 x 36 / 6	M1
base = 12 cm cao	A1

Answer: **12 cm**

Question 29

finds garden area = 150 m²	M1
finds triangle area = 20 m²	M1
remaining area = 130 m² cao	A1

Answer: **130 m^2**

Question 30

sets up 12w = 72	M1
w = 6 cm cao	A1

Answer: **6 cm**

Question 31

finds the area of the full rectangle = 252 cm²	M1
finds the area of the notch = 42 cm²	M1
area of L-shape = 210 cm² cao	A1
difference in perimeter = 0 cm (the L-shape has the same perimeter as the original rectangle)	B1

Answer: **Area 210 cm^2; perimeter is unchanged (difference 0 cm)**

Question 32

25 cm cao	B1

Answer: **25 cm**

Question 33

uses area = length x width	M1
40 cm² cao	A1

Answer: **40 cm^2**

Question 34

30 cm² cao	B1

Answer: **30 cm^2**

Question 35

9 cm cao	B1

Answer: **9 cm**

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