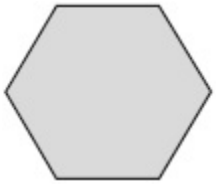
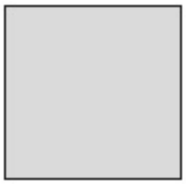
1. These two shapes have the **same** perimeter.

regular hexagon



square



Not actual size

The length of each side of the **hexagon** is **8** centimetres.

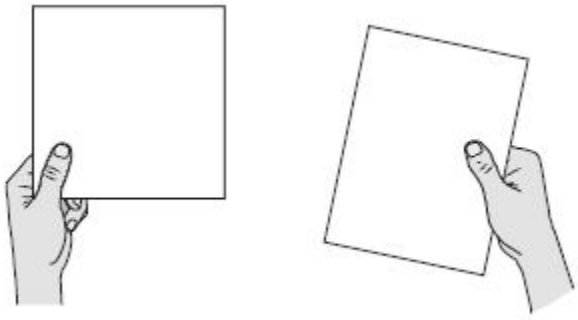
Calculate the **area** of the **square**.

Show your method

cm²

2 marks

2.



A square tile measures 20 cm by 20 cm.

A rectangular tile is 3 cm **longer** and 2 cm **narrower** than the square tile.

What is the **difference in area** between the two tiles?

Show your method

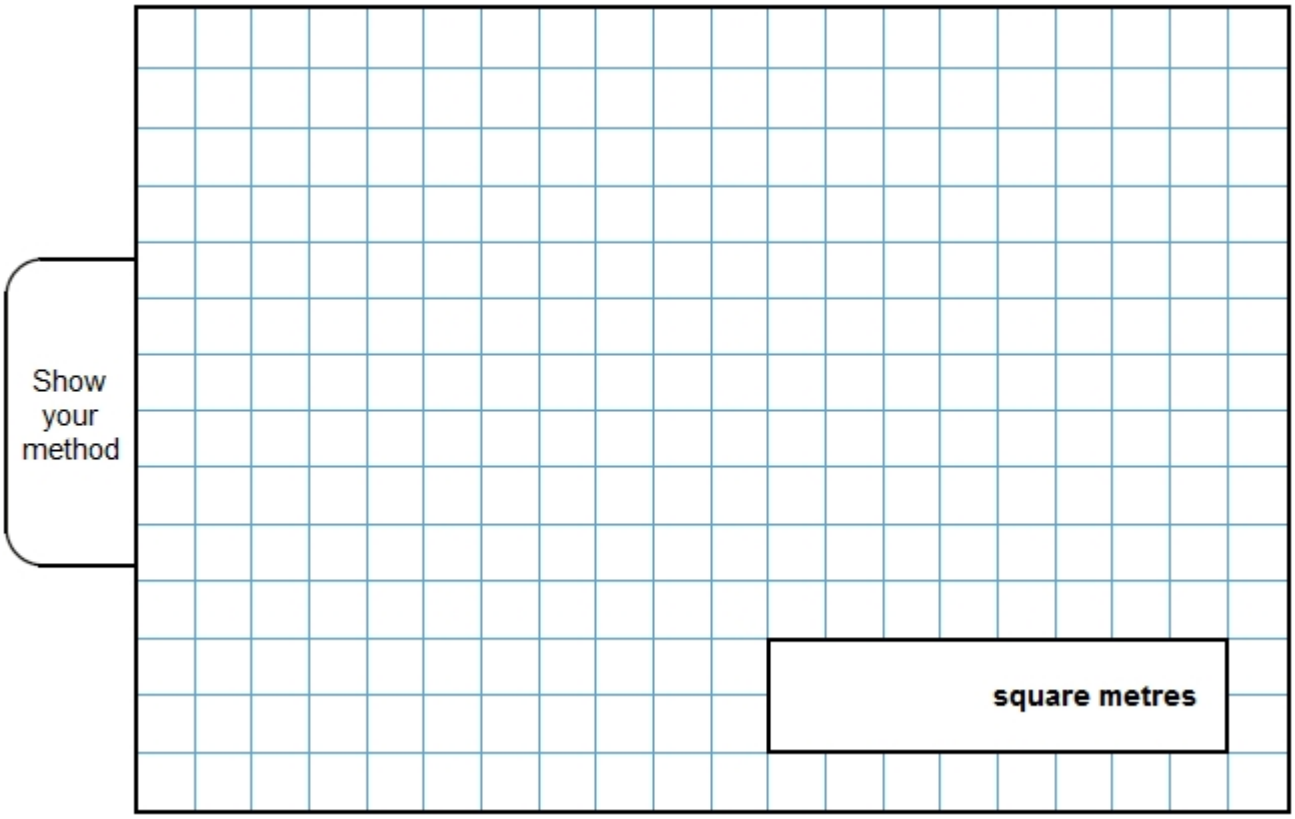
cm^2

3 marks

3. The area of a rugby pitch is 6,108 square metres.

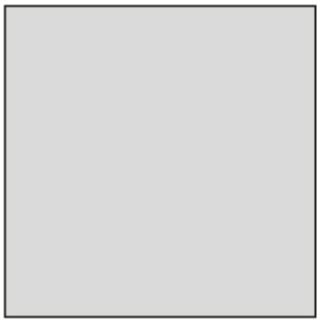
A football pitch measures 112 metres long and 82 metres wide.

How much larger is the area of the football pitch than the area of the rugby pitch?



3 marks

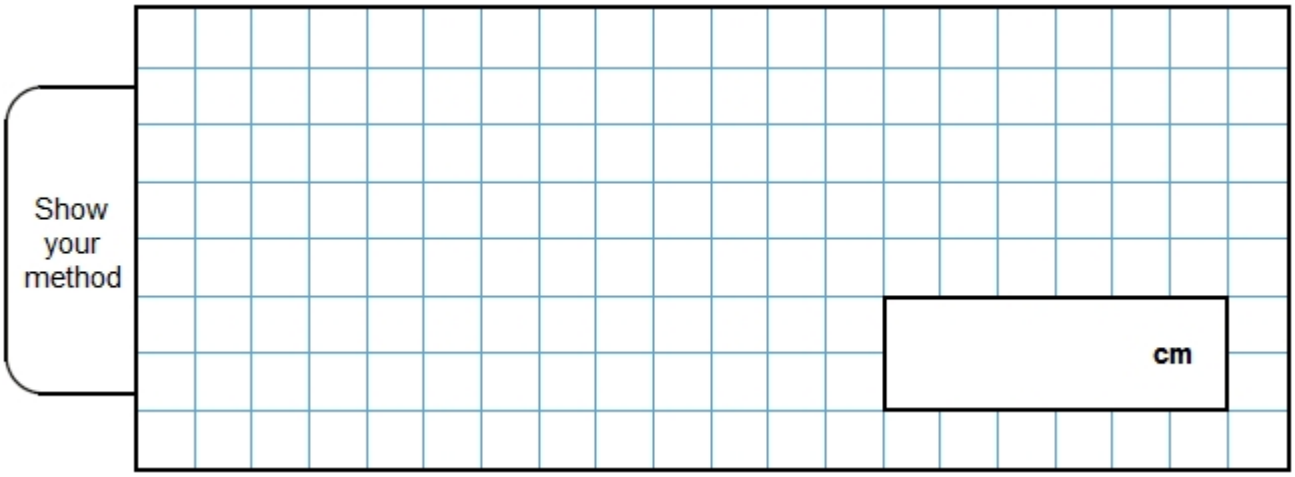
4. The **area** of this square is 36 cm^2.



Not actual size

The square is cut into quarters to create 4 identical rectangles.

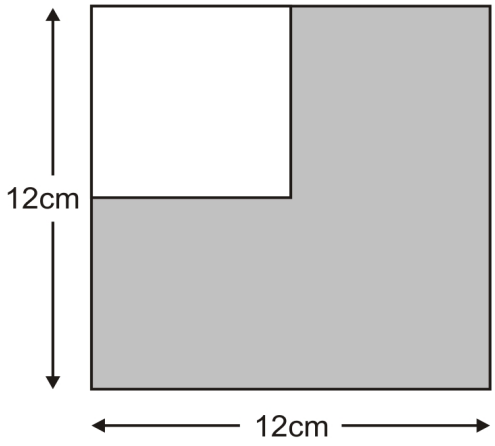
What is the **perimeter** of **one** of the small rectangles?



2 marks

5. A white square is painted in one corner of a grey square.

Each side of the white square is **half** the length of a side of the grey square.



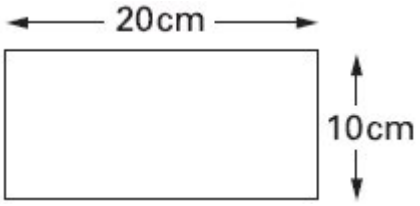
Not actual size

What is the **area** of the grey section?

Show your method

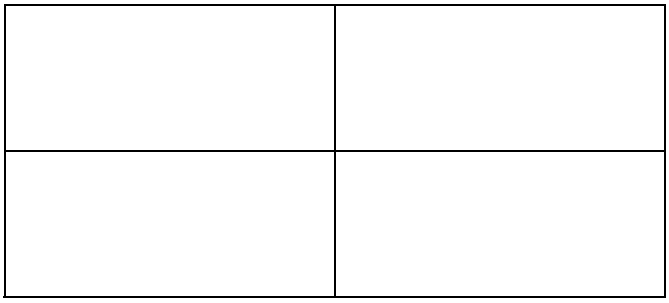
cm²

6. Rebecca has rectangular tiles like this.



Not to scale

She makes a larger rectangle using 4 of the tiles.



What is the **area** of the larger rectangle?

cm^2

1 mark

7. The area of a rectangle is 16 cm^2.

One of the sides is 2 cm long

What is the perimeter of the rectangle?

cm

1 mark

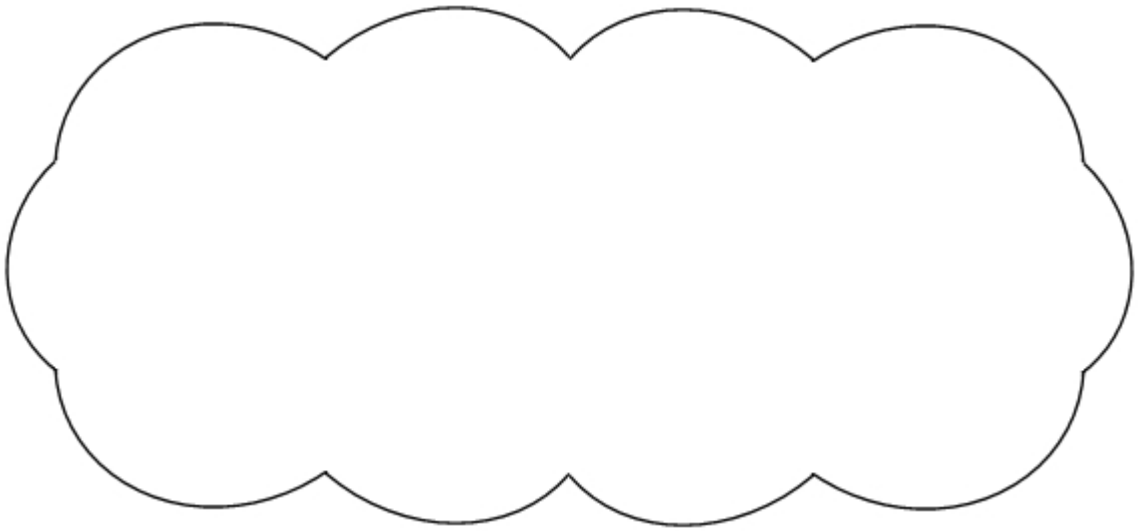
8. Megan says,

'If two rectangles have the same perimeter, they must have the same area.'

Is she correct?
Circle **Yes** or **No**.

Yes / No

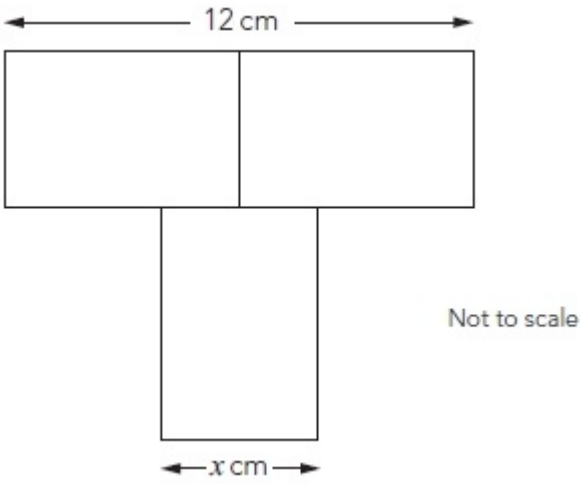
Explain how you know.



1 mark

9. Here is a T-shape made from 3 identical rectangles.

The area of the T-shape is **90 cm²**



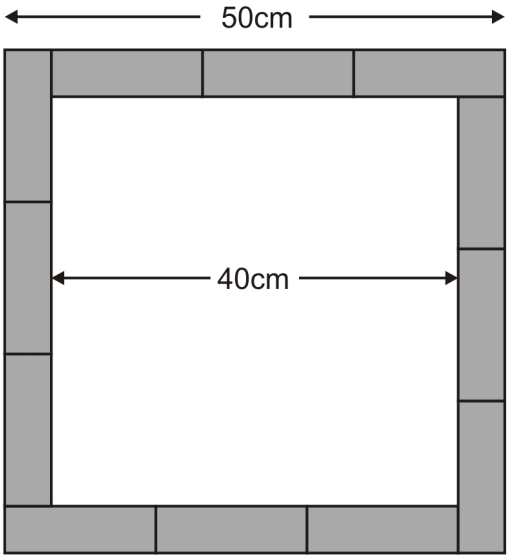
Work out the value of x

Show your method

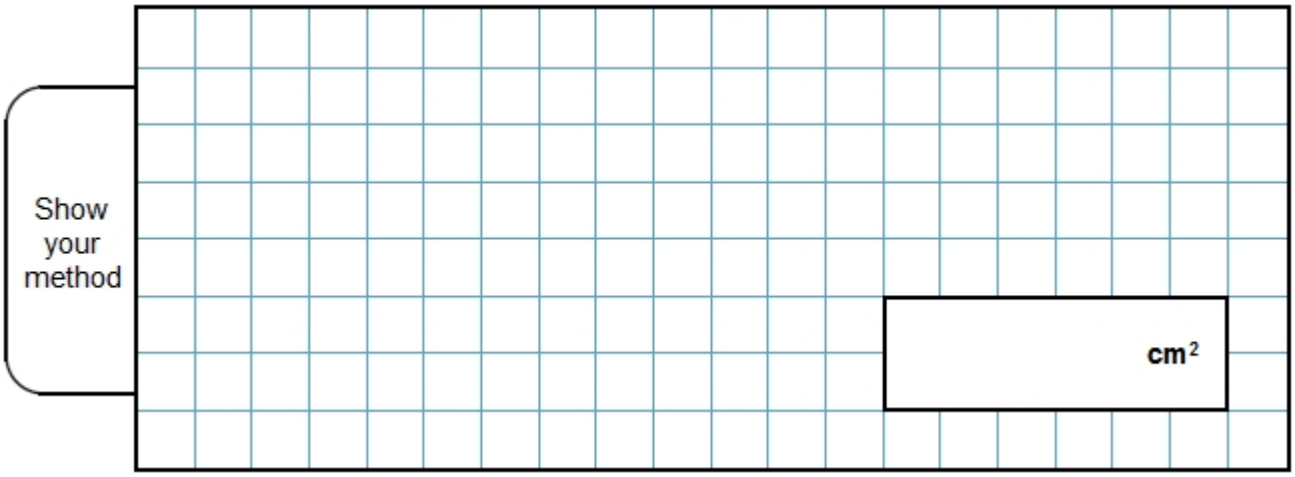
cm

2 marks

10. **Twelve rectangles**, all the same size, are arranged to make a **square**, as shown in the diagram.



Calculate the **area** of **one** of the rectangles.



2 mark

Mark schemes

1. Award **TWO** marks for the correct answer of 144

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g.

- 8 × 6 = 48
  48 ÷ 4 = 13 (error)
  13 × 13 = 169

OR

Award **ONE** mark for:

- evidence for the side length of the square calculated correctly, i.e. 12

  *Answer need not be obtained for the award of **ONE** mark.*

Up to 2m

[2]

2. Award **THREE** marks for the correct answer of 14

If the answer is incorrect, award **TWO** marks for:

- sight of 414 as evidence of 23 × 18 completed correctly

OR

- evidence of an appropriate method with no more than one arithmetic error, e.g.

  20 × 20 = 400

  $$\begin{array}{r} 23 \\ \times\ 18 \\ \hline 230 \\ 184 \\ \hline 314 \end{array}$$ *(error)*

  400 − 314 = 86

Award **ONE** mark for evidence of an appropriate method.

*Answer need not be obtained for the award of **ONE** mark.*

A misread of a number may affect the award of marks. No marks are awarded if there is more than one misread or if the mathematics is simplified.

***TWO** marks will be awarded for an appropriate method using the misread number followed through correctly to a final answer.*

***ONE** mark will be awarded for evidence of an appropriate method using the misread number followed through correctly with no more than one arithmetic error.*

Up to 3m

[3]

3. Award **THREE** marks for the correct answer of 3076 square metres.

If the answer is incorrect, award **TWO** marks for:

- sight of 9184 as evidence of the multiplication for the first step completed correctly.

OR

- evidence of an appropriate method which contains no more than **ONE** arithmetical error, e.g:

```
   112
 ×  82
 8960
  224
 9187   (error)

   9187
 − 6108
 3079
```

- Award **ONE** mark for evidence of an appropriate method which contains more than **ONE** arithmetical error.

Do not award any marks if the error is in the place value of the multiplication, e.g. the omission of the final zero when multiplying by tens, e.g.

```
   112
 ×  82
  896
  224
```

wrong answer

Commentary: As well as a range of 1 mark and 2 mark questions, one of the questions in a suite of tests may now attract three marks. The solution to a 3 mark question may involve more steps or, as in this example, more complex calculations.

Up to 3m

[3]

4. 15

2

or

6(cm) and 1.5(cm) seen (*the dimensions of the rectangle*)

OR

Shows or implies a complete correct method, eg:

- $\sqrt{36}$ = 8 (*error*)
  8 ÷ 4 = 2
  2 × (8 + 2)

- 6 × 6 = 36
  6 ÷ 4 = 1.2 (*error*)
  6 + 1.2 + 6 + 1.2

Do not accept *confusion between area and perimeter, ie:*

- *side of square is 36 ÷ 4 = 9 (error)*
  2 × (9 + 2.25)

1

[2]

5. Award **TWO** marks for the correct answer of 108

If the answer is incorrect, award **ONE** mark for evidence of appropriate method, eg

12 × 12 = 144

$\frac{3}{4}$ of 144

OR

(12 × 12) – (6 × 6)

OR

(12 × 12) + (6 × 6)

OR

(6 × 6) × 3

Answer need not be obtained for the award of ***ONE*** *mark.*

Up to 2 (U1)

[2]

6. 800

[1]

7. 20 (cm)

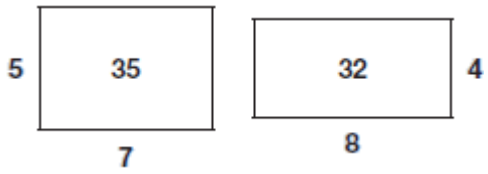
[1]

8. Indicates No and gives a correct explanation that includes indicating two different areas, eg:

- A rectangle with sides 6 cm by 2 cm has a perimeter of 16 cm and an area of 12 cm^2 but a rectangle with sides 5 cm and 3 cm has the same perimeter of 16 cm but it has an area of 15 cm^2 which is different so she is not correct

- A square with sides 3 cm by 3 cm and a rectangle with sides 4 cm by 2 cm have the same perimeter of 12 cm but they have different areas of 9 cm^2 and 8 cm^2

Accept minimally acceptable explanation, eg:

- *6 × 2 = 12, 5 × 3 = 15*
- 

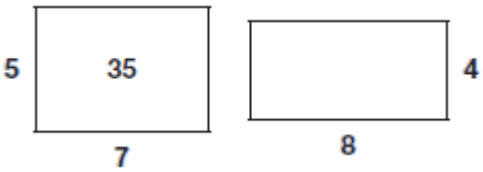
! Ignore any incorrect units given in an otherwise correct explanation, eg:

- *6^2 for 6 cm^2*

! Indicates Yes, or no decision made, but explanation clearly correct

Condone, provided the explanation is more than minimal

***Do not accept** Incomplete or incorrect explanation, eg:*

- *6 × 2, 5 × 3*
- *Two rectangles, one with sides 6 cm by 5 cm and one with sides 8 cm by 3 cm have the same perimeter of 22 cm but they don't have the same area*
- 

[1]

9. 5 cm

2
U1

or

Answer of 2.5

OR

Shows understanding of a correct method even if there are computational errors, eg

- 90 ÷ 3 = 36 (error)

  12 ÷ 2 = 6

  36 ÷ 6 = 6

1

[2]

10. Award **TWO** marks for the correct answer of 75

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, eg

width = (50 – 40) ÷ 2
length (50 – 5) ÷ 3
area = 5 × 15
OR $(50^2 – 40^2) ÷ 12$

Calculation need not be completed for the award of the mark.

Up to 2

[2]