Reasoning and Problem Solving
Step 4: Area of Rectangles

National Curriculum Objectives:

Mathematics Year 5: (5M7b) Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes

Differentiation:

Questions 1, 4 and 7 (Problem Solving)
Developing Use dimensions of a smaller shape, to calculate the area of a larger rectangle. Includes squares and whole numbers up to 12 x 12.
Expected Use dimensions of a smaller shape, to calculate the area of a larger rectangle. Includes using a formula and multiplying 2-digit numbers by 1.
Greater Depth Use dimensions of a smaller shape, to calculate an area of a larger rectangle. Includes using a formula and decimal numbers.

Questions 2, 5 and 8 (Problem Solving)
Developing Use the area to calculate the possible dimensions of a rectangle. Whole numbers up to 12 x 12.
Expected Use the area to calculate the possible dimensions of a rectangle. Includes using a formula and multiplying 2-digit numbers by 1.
Greater Depth Use the area to calculate the possible dimensions of a rectangle. Includes using a formula and decimal numbers.

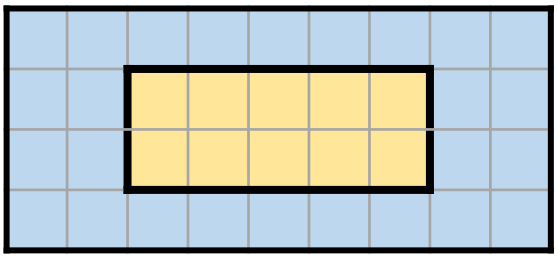
Questions 3, 6 and 9 (Reasoning)
Developing Explain mistakes made when calculating the area of a rectangle. Whole numbers up to 12 x 12.
Expected Explain mistakes made when calculating the area of a rectangle. Includes using a formula and multiplying 2-digit numbers by 1.
Greater Depth Explain mistakes made when calculating the area of a rectangle. Includes using a formula and decimals numbers.

More resources which follow the same small steps as White Rose.

Did you like this resource? Don't forget to review it on our website.

Area of Rectangles

1a. Using the information, calculate the area of the larger rectangle.



Each square in the smaller rectangle = 1cm². What is the area of the larger rectangle?

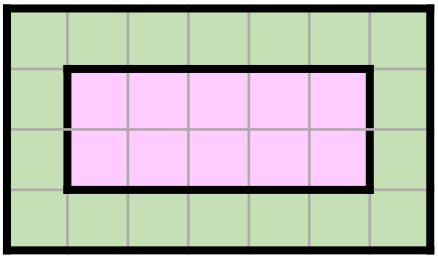
D

Not to scale

PS

Area of Rectangles

1b. Using the information, calculate the area of the larger rectangle.



Each square in the smaller rectangle = 1cm². What is the area of the larger rectangle?

D

Not to scale

PS

2a. This rectangle has an area of 36cm². What could the dimensions be? Include a range of possible answers.

Area = 36cm²

D

Not to scale

PS

2b. This rectangle has an area of 84cm². What could the dimensions be? Include a range of possible answers.

Area = 84cm²

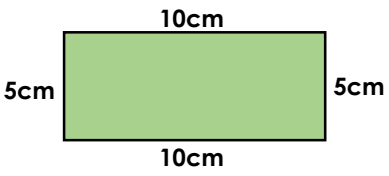
D

Not to scale

PS

3a. Katy says,

The area of this rectangle is 125cm².



Explain Katy's mistake.

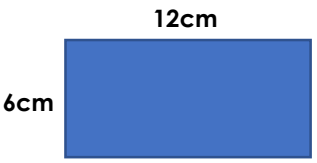
D

Not to scale

R

3b. Paul says,

The area of this rectangle is 18cm².



Explain Paul's mistake.

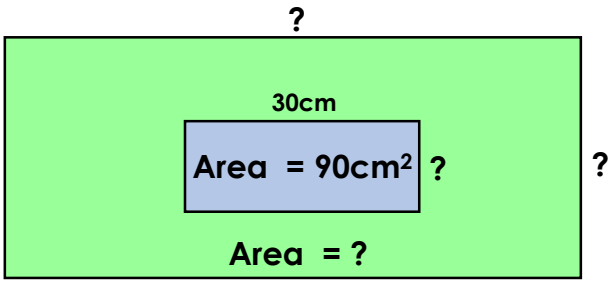
D

Not to scale

R

Area of Rectangles

4a. Using the information, calculate the area of the larger rectangle.



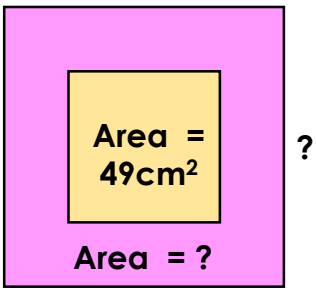
The larger rectangle has sides that are 3 times as long as the smaller one.

Not to scale

PS

Area of Rectangles

4b. Using the information, calculate the area of the larger square.

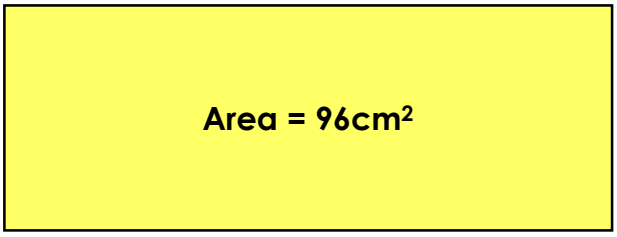


The smaller square has sides that are half the size of the larger square.

Not to scale

PS

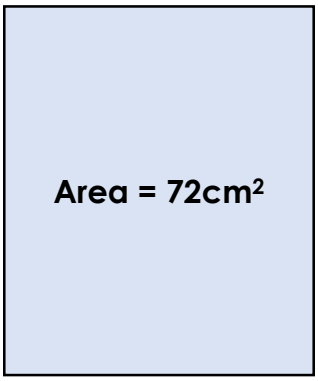
5a. This rectangle has an area of 96cm². What could the dimensions be? Include a range of possible answers.



Not to scale

PS

5b. This rectangle has an area of 72cm². What could the dimensions be? Include a range of possible answers.

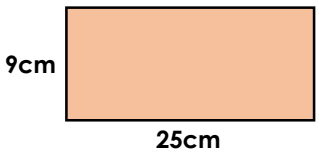


Not to scale

PS

6a. Enid says,

The area of this rectangle is 68cm².



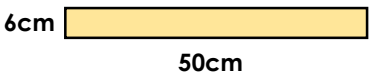
Explain Enid's mistake.

Not to scale

R

6b. Howard says,

The area of this rectangle is 56cm².



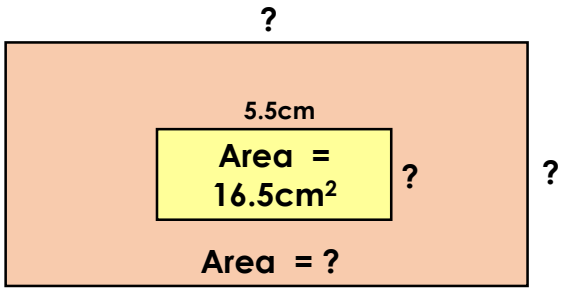
Explain Howard's mistake.

Not to scale

R

Area of Rectangles

7a. Using the information, calculate the area of the larger rectangle.



The larger rectangle has sides that are 3 times as long as the smaller one.

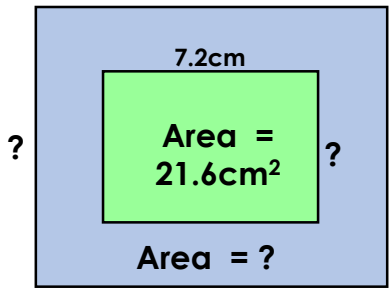
GD

Not to scale

PS

Area of Rectangles

7b. Using the information, calculate the area of the larger rectangle.



The smaller rectangle has sides that are half the size of the larger one.

GD

Not to scale

PS

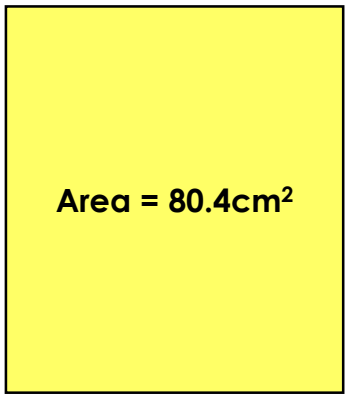
8a. This rectangle has an area of 171cm². What could the dimensions be? Include a range of possible decimal answers.

GD

Not to scale

PS

8b. This rectangle has an area of 80.4cm². What could the dimensions be? Include a range of possible decimal answers.



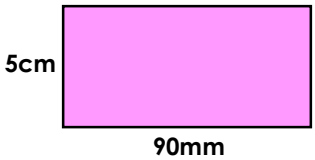
GD

Not to scale

PS

9a. Cara says,

The area of this rectangle is 450cm².



Explain Cara's mistake.

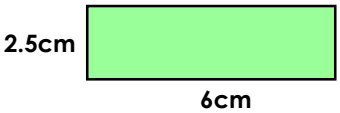
GD

Not to scale

R

9b. Saul says,

The area of this rectangle is 17cm².



Explain Saul's mistake.

GD

Not to scale

R

Reasoning and Problem Solving
Area of Rectangles

Developing

1a. 36cm^2

2a. Various answers, for example:
9cm x 4cm, 12cm x 3cm, 18cm x 2cm

3a. Katy has incorrectly worked out the area. She has multiplied together the opposing sides and then added them together. She should have multiplied 10cm x 5cm to give her an area of 50cm^2.

Expected

4a. 810cm^2

5a. Various answers, for example:
12cm x 8cm, 24cm x 4cm, 48cm x 2cm

6a. Enid has added up all the sides and worked out the perimeter and not the area.
The correct answer is 25cm x 9cm = 225cm^2.

Greater Depth

7a. 148.5cm^2

8a. Various answers, for example:
28.5cm x 6cm, 57cm x 3cm, 34.2cm x 5cm

9a. Cara has multiplied together the given dimensions, however she has not realised that they are two different units of measure. To work out the answer, Cara should change the 90mm into 9cm and then multiply by 5cm to give an area of 45cm^2.

Reasoning and Problem Solving
Area of Rectangles

Developing

1b. 28cm^2

2b. Various answers, for example:
12cm x 7cm, 21cm x 4cm, 42cm x 2cm

3b. Paul has added together the dimensions given instead of multiplying them.
The correct answer is 12cm x 6cm = 72cm^2.

Expected

4b. 196cm^2

5b. Various answers, for example:
36cm x 2cm, 18cm x 4cm, 9cm x 8cm

6b. Howard has added together the two given dimensions instead of multiplying them.
The correct answer is 50cm x 6cm = 300cm^2.

Greater Depth

7b. 86.4cm^2

8b. Various answers, for example:
20.1cm x 4cm, 40.2cm x 2cm, 6.7cm x 12cm

9b. Saul has added up all the sides and worked out the perimeter and not the area.
The correct answer is 2.5cm x 6cm = 15cm^2.