Reasoning and Problem Solving
Step 2: Counting Squares

National Curriculum Objectives:

Mathematics Year 4: (4M7b) Find the area of rectilinear shapes by counting squares

Differentiation:

Questions 1, 4 and 7 (Problem Solving)
Developing Calculate the area of squares in a simple repeating pattern when a shape is made larger.
Expected Calculate the number of squares in a repeating pattern when a shape is made larger.
Greater Depth Calculate the number of squares in a repeating pattern when a shape is made larger. Including whole squares and half squares.

Questions 2, 5 and 8 (Reasoning)
Developing Count the area of a rectangle or square to explain whether there are enough squares to complete a shape.
Expected Count the area of a rectilinear shape up to 6 sides to explain whether there are enough squares to complete a shape.
Greater Depth Count the area of a rectilinear shape up to 8 sides to explain whether there are enough squares to complete a pattern. Including whole squares, half squares and squares that cover multiple squares of the pattern.

Questions 3, 6 and 9 (Reasoning)
Developing Explain whether the statement is correct by counting how many squares are missing. Using squares and rectangles.
Expected Explain whether the statement is correct by counting how many squares are missing. Using rectilinear shapes with up to 6 sides.
Greater Depth Explain whether the statement is correct by counting how many squares are missing. Using rectilinear shapes with up to 8 sides including whole squares and half squares.

More Year 4 Area resources.

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

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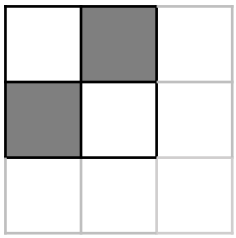
Counting Squares

1a. Katie is making patterns using PE mats in the hall.

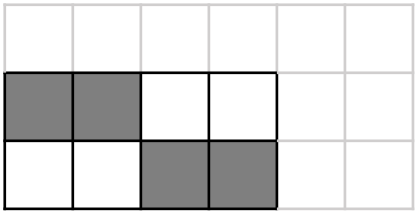


She continues her pattern so it is 3 squares wide and 3 squares long.
What is the area of white mats?
What is the area of grey mats?

D

PS

1b. Jacob is making patterns using panels.

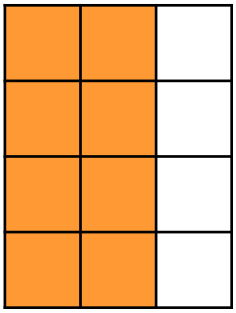


He continues his pattern so it is 6 squares wide and 3 squares long.
What is the area of white panels?
What is the area of grey panels?

D

PS

2a. Max is trying to work out if he has enough tiles to make this shape on his bathroom wall. He has 6 tiles.

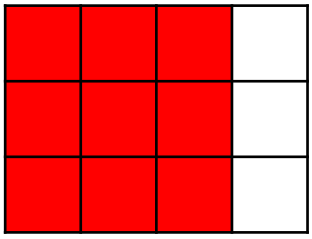


Does he have enough tiles?
Explain how you know.

D

R

2b. Amy is trying to work out if she has enough paving slabs to make this shape on her patio. She has 10 paving slabs.



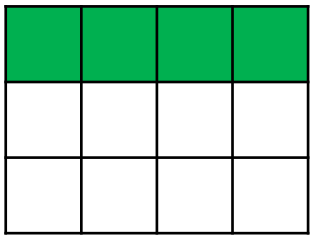
Does she have enough slabs?
Explain how you know.

D

R

3a. Aisha has started carpeting a room with carpet tiles.

To complete the shape, I will need 7 more carpet tiles.



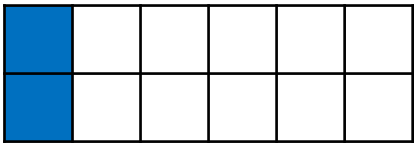
Is she correct? Explain your answer.

D

R

3b. Jenny has started turfing in her garden.

To complete the shape, I will need 12 more pieces of turf.



Is she correct? Explain your answer.

D

R

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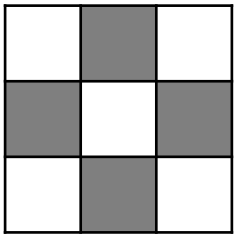
Counting Squares

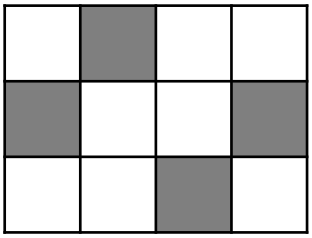
4a. Julia is making a patterned sponge cake.



She continues her pattern so the cake is 5 squares wide and 4 squares long.
What is the area of white sponge?
What is the area of grey sponge?

E PS

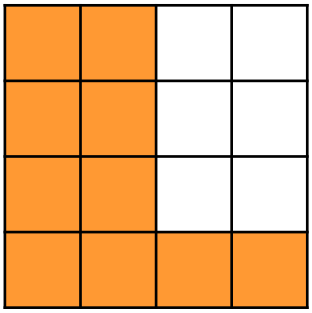
4b. Sam is making patterns on a patchwork quilt.



He continues his pattern so it is 6 squares wide and 6 squares long.
What is the area of white patches?
What is the area of grey patches?

E PS

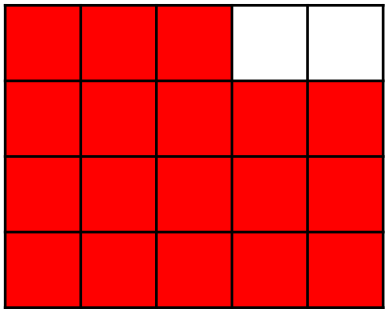
5a. John is trying to work out if he has enough stained-glass panes to make this shape on a window. He has 15 panes.



Does he have enough panes?
Explain how you know.

E R

5b. Molly is trying to work out if she has enough tiles to make this shape on a gameboard. She has 16 tiles.

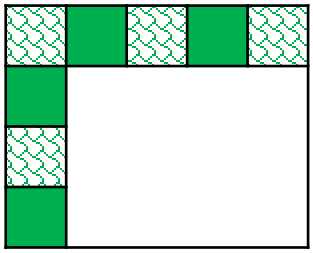


Does she have enough tiles?
Explain how you know.

E R

6a. Jack has started making a mosaic using two different tiles.

To complete the pattern, I will need 12 more patterned tiles and 8 more plain tiles.

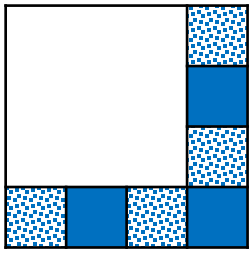


Is he correct? Explain your answer.

E R

6b. Jude has started tiling on his kitchen floor using two different tiles.

To complete the pattern, I will need 4 more spotted tiles and 4 more plain tiles.



Is he correct? Explain your answer.

E R

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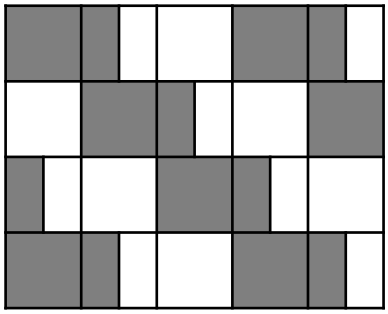
Counting Squares

7a. Chloe is making patterns using bricks.

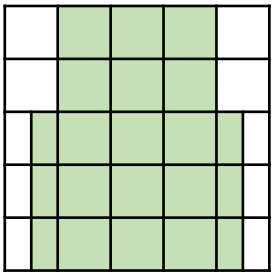


She continues her pattern so it is 6 squares wide and 5 squares long.
What is the area of white bricks?
What is the area of grey bricks?

GD

PS

8a. Tim is trying to work out if he has enough fabric pieces to make this shape. He knows he has 4 pieces. Each piece covers 4 squares.



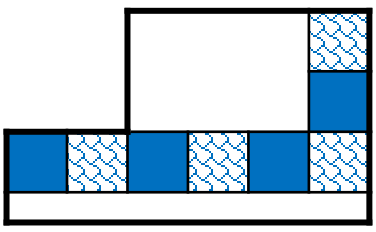
Does he have enough pieces?
Explain how you know.

GD

R

9a. Charlie has started carpeting a room with two different carpet tiles.

To complete the pattern, I need 3 full plain and 3 full patterned tiles and 2 half plain and 2 half patterned tiles.



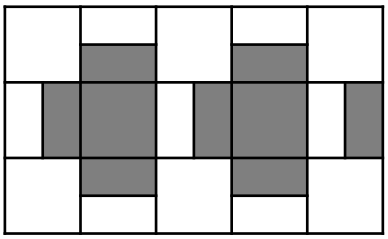
Is he correct? Explain your answer.

GD

R

Counting Squares

7b. Jack is making patterns in his squared Maths book.

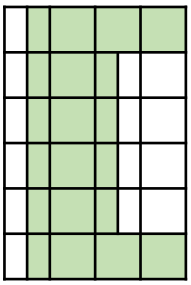


He continues his pattern so it is 7 squares wide and 6 squares long.
What is the area of white squares?
What is the area of grey squares?

GD

PS

8b. Jilly is trying to work out if she has enough turf to make this shape in her garden. She knows she has 6 turf tiles. Each tile covers 4 squares.



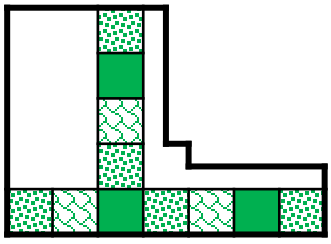
Does she have enough turf?
Explain how you know.

GD

R

9b. Emma has started repairing a section of the swimming pool with tiles.

To complete the pattern, I will need the same number of all three tiles.



Is she correct? Explain your answer.

GD

R

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Reasoning and Problem Solving
Counting Squares

Developing

1a. Area of mats: grey = 4 squares; white = 5 squares

2a. Max doesn't have enough tiles because he needs 8 to make the pattern.

3a. Aisha is incorrect because 2 rows of 4 tiles are missing which is 8 tiles not 7.

Expected

4a. Area of sponges: grey = 10 squares; white = 10 squares

5a. John has enough because he only needs 10 panes to make the pattern and he has 15.

6a. Jack is incorrect. He needs 6 more patterned tils and 6 more plain tiles.

Greater Depth

7a. Area of bricks: grey – 15 squares; white tiles – 15 squares

8a. Tim does not have enough because the area of the pattern is 18 squares and he only has enough fabric pieces for 16 squares.

9a. Charlie is incorrect because he needs 3 half plain and 3 half patterned tiles to complete his pattern.

Reasoning and Problem Solving
Counting Squares

Developing

1b. Area of panels: grey = 8 squares; white= 10 squares

2b. Amy has enough because she only needs 9 slabs to make the pattern and she has 10.

3b. Jenny is incorrect. 2 rows of 5 turf pieces are missing, which is 10 pieces not 12.

Expected

4b. Area of patches: grey tiles = 12 squares; white = 24 squares

5b. Molly does not have enough because she needs 18 and she only has 16.

6b. Jude is incorrect. He does need 4 more spotted tiles but he needs 5 more plain tiles.

Greater Depth

7b. Area of squares: grey = 9 squares; white tiles = 18 squares

8b. Jilly has enough turf tiles. The area of her pattern is 15 squares and she has enough grass for 24 squares.

9b. Emma is incorrect because she needs 4 full lined tiles, 3 full plain tiles and 2 full lined tiles. She needs the same number of each half tile.

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