

# Reasoning and Problem Solving

## Area Consolidation – Year 4

### About This Resource

This resource is aimed at Year 4 Expected and has been designed to give children the opportunity to consolidate the skills they have learned in Spring Block 2 Area.

The questions are based on a selection of the same ‘small steps’ that are addressed in the block, but are presented in a different way so children can work through the pack independently and demonstrate their understanding and skills.

### Small Steps

What is area?

Counting squares

Making shapes

Comparing area

### National Curriculum Objectives

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

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# Reasoning and Problem Solving – Area Consolidation – Year 4

Your school is improving the external walls of the building. Children have complained the building is currently boring and uninspiring.



The school council decided that bright colourful murals are the answer. They are looking at abstract artists for inspiration.

The wall has been chosen and Mr Burke, the Headteacher, takes you and a small group to help measure the area for the mural. The head is called away to answer the phone and leaves you to complete the job. No one is sure what he meant by measure the area.



Talia

The area is how high the wall is.



Phoebe

The area is the number of steps along the wall



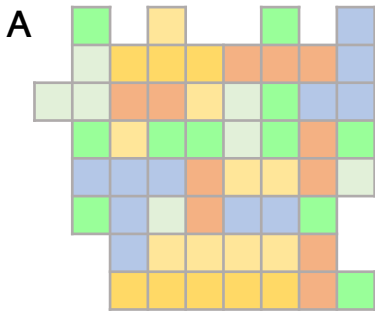
Ewan

Area is to do with counting the bricks.

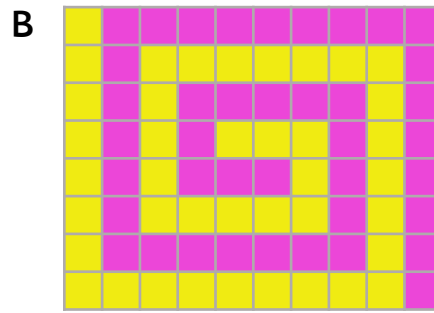
1. Are any of the other children correct? Can you explain what Mr Burke meant when he said measure the area of the wall?

The abstract artist research has identified four different mural options for the wall. Mr Burke plans to use square tiles measuring 1cm by 1cm to allow more detail in the design. You're next task is to calculate how many tiles each mural will need.

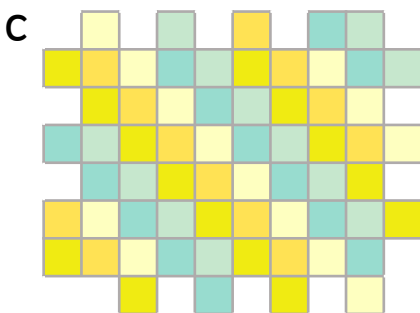
2. How many tiles will be needed to cover the area of each design?



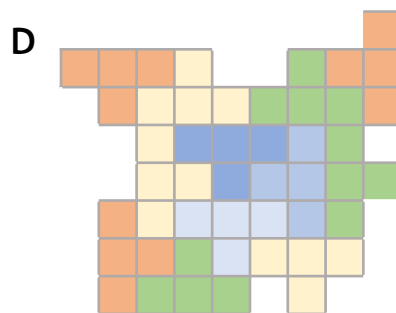
cm<sup>2</sup>



cm<sup>2</sup>



cm<sup>2</sup>



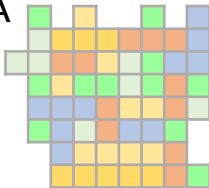
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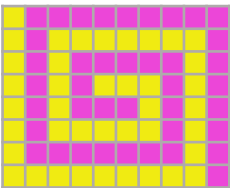
It's time to think about the cost of the mural. Mr Burke wants to get a quote for the tiles needed. The price is calculated per  $\text{cm}^2$ .

3. Order the designs from cheapest (1) to most expensive (4).

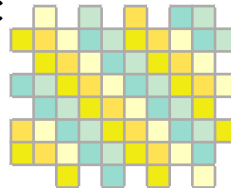
A



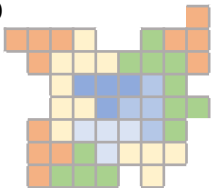
B



C

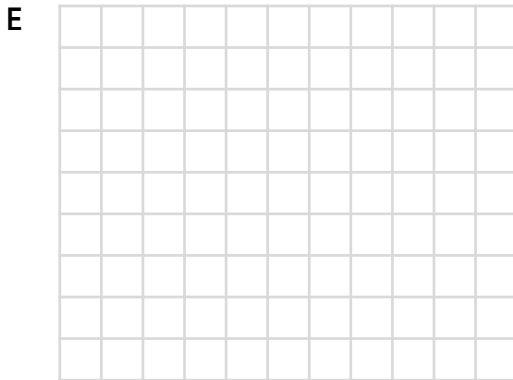


D



Mr Burke has decided to create a competition for the children in the school to design a mural. The winner's mural will be created alongside one of the other murals in the school entrance. There is a limit for the area of between  $50\text{cm}^2$  and  $88\text{cm}^2$ .

4. Create your design below.



What is the surface area of your design?

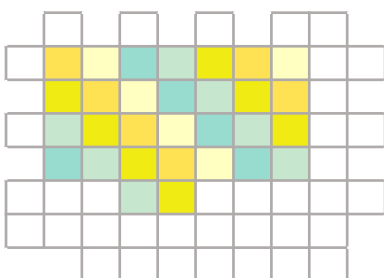
$\text{cm}^2$

The School Council like the designs so much, they decide to commission 3 murals instead of 2.

5. Which 3 murals have the largest areas? Remember to check your own design!

6. Using these 3 murals, how much will it all cost if the tiles are £10 each?

The artist works at a rate of  $15\text{cm}^2$  per day. At the end of day two,  $30\text{cm}^2$  of C has been tiled. Shade or tick the squares to show how the design might progress tomorrow.



7. How long will it take to complete the whole design of mural C?



Once completed, the opening ceremony is a grand affair. Everyone loves your winning mural design.

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1. Children's answers will vary. They may suggest Ewan is close to the definition as he suggests counting bricks.  
Explanations will vary, e.g. Area is a measurement of the amount of space on a flat surface.
2. A is  $57\text{cm}^2$ , B is  $80\text{cm}^2$ , C is  $64\text{cm}^2$ , D is  $48\text{cm}^2$
3. A is 2, B is 4, C is 3, D is 1
4. Options will include B and C, then either A or E. Children's answers will vary but D should be excluded as it is less than the  $50\text{cm}^2$  minimum area required for E.
5. Children's answers will vary dependant on their own design. Answer will be 10x area of their design or option A, plus £1440 (cost of B and C).
6. Children should shade or tick any 15 squares.
7. It will take 5 days in total to complete the design. Some children may answer 3 more days.