

## 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

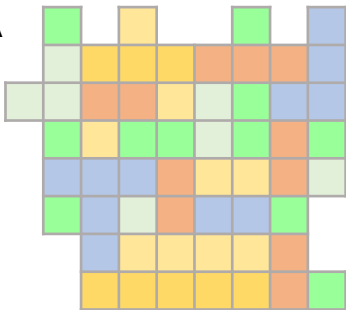
Area is to do with counting the bricks.

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. Your next task is to calculate how many tiles each mural will need.

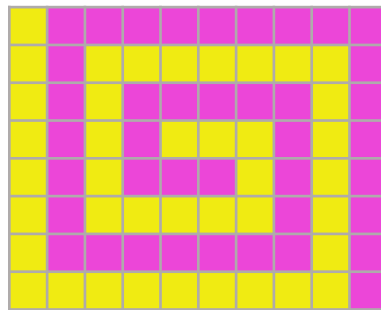
2. How many tiles will be needed to cover the area of each design?

A



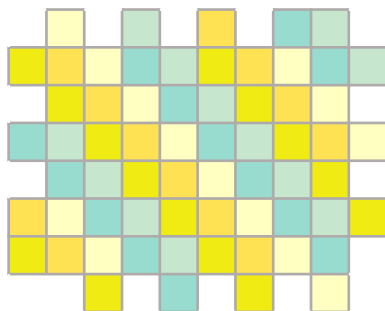
cm<sup>2</sup>

B



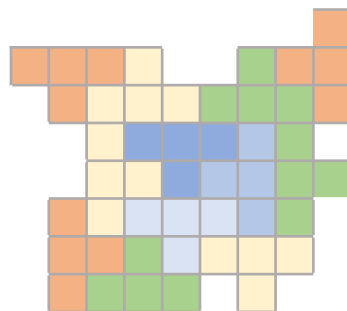
cm<sup>2</sup>

C



cm<sup>2</sup>

D



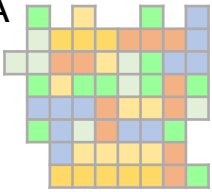
cm<sup>2</sup>

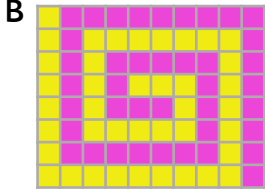
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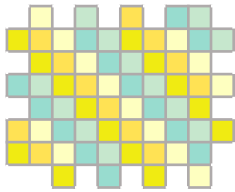
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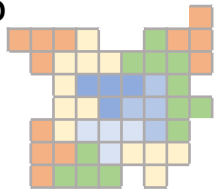
It's time to think about the cost of the mural. Mr Burke wants to get a quote for the tiles needed. The price is calculated per  $\text{cm}^2$ .

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

A 

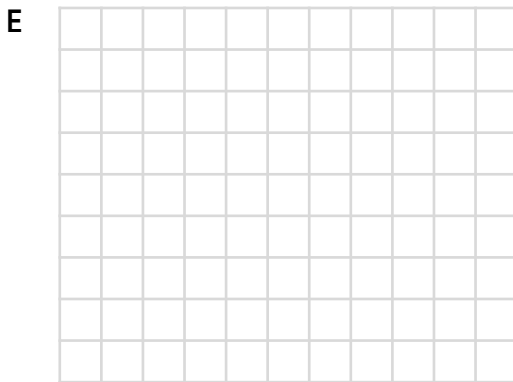
B 

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?

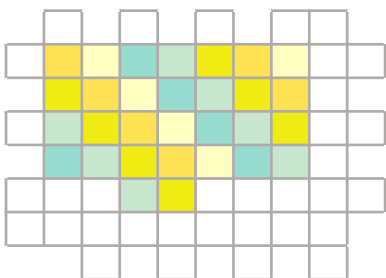


The School Council like the designs so much, they decide to commission 3 murals instead of 2.

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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