

Area and Perimeter Prior Assessment Questions 3, 4 and 5

Objective: I can find the area of shapes. (I can use the formula to find the area of shapes)

NC: M4 recognise that shapes with the same areas can have different perimeters and vice versa

M: 5 recognise when it is possible to use formulae for area and volume of shapes

Teacher Input Ideas:

Follow on from the perimeter description, practical and very visual to help children understand what the area is. DO NOT just teach the children the formula for area, they need to understand why. This can be done outside or in the hall with chalk, tape and metre sticks. Tell the children you want to make a carpet/ vegetable patch/ party table cloth etc and you want to measure its size to check it will fit the space provided. Give the children the measurements 2 metres by 3 metres to create a rectangle.

Encourage the children to use metre sticks and chalk to draw the sides the correct lengths. With the children draw each metre inside the rectangle (so you should have 6 squares). Inform the children that when you are finding the area you are working out how much space has been used inside the shape. Model that one side was 2 metres, so I need to show that I have 2 metres on this length (draw a line down the middle) then recap that we have 3 metres so draw the 3 metre marks each time. Establish that this makes 6 square metres. I have a shape that is 2 square metres by 3 square metres so the area is 6 square metres. The children should be able to count and see how 6 square metres has been made. Model to the children how we can write this as a sum 2×3 which is the width \times length.

Recap for other measurements. Those children that made errors in Q3 may want to focus on counting the squares created inside alongside the formula so they develop their understanding of using the squares and the formula.

Show the children a shape made from 2 or 3 rectangles. Encourage the children to suggest ways of finding the area of these. You could even do this with rooms in the building that are irregular shapes. Encourage the children to suggest, sectioning the shape and finding the area of each section. Children should begin to use the formula here too.

Practice Activities

Purple Practice: Most suited for children who made errors in question Q3 and Q4 of the prior assessment and need to understand what area is before using the formula.

This activity encourages the children to count the squares inside the shape. The activity gets more challenging as the children must count half squares too. Further down the page the shapes are solid, therefore they should use the grid around the outside of the shape to help to visualise the squares inside the shape.

Green Practice: Most suited for children who made errors in Question 5 as the children did not use the formula to work out the area.

This activity encourages the children to use the formula for area ($L \times W$) to find the area of different shapes using the measurements provided. The activity gets a little more challenge as the children are required to split shapes to find the area, using the information that they have. Encourage the children to look at the sides and lengths that they have before deciding which way to split the shape as they will notice that if they split it another way they may not have the information needed to use the formula. The children may suggest using prior knowledge of finding missing lengths here.

Yellow Practice Most suited for children who knew to use the formula in the prior learning assessment, however will benefit from applying other skills too.

The children are required to use the formula of $L \times W$. Some of the measurements given provide opportunity for the children to apply written multiplication methods such as multiplying a decimal by a whole number and 2 digit numbers by 3 digit numbers.

Also, the children could be challenged further to convert the mm and cm measurements in to meters or vice versa to apply their knowledge of measure and multiplying/dividing by 10/100.

Mastery

For this activity, the children are required to explore making different shapes all with the same perimeter. Additionally, the children are then provided with the opportunity to explore creating a shape that has the same perimeter and area. Children could use squared paper to help them or alternatively, the children could also apply knowledge of drawing to scale, such as using 1 cm to represent 1 m.

Answers:

Purple:

- | | | |
|-----------------------|-------------------------|------------------------|
| 1) 24 cm ² | 2) 12.5 cm ² | 3) 29.5cm ² |
| 4) 24cm ² | 5) 24cm ² | 6) 16cm ² |

Green:

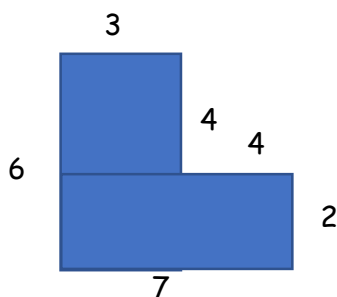
- | | | |
|---------------------|----------------------|------------------------|
| 1) 32m ² | 2) 16cm ² | 3) 42cm ² |
| 4) 39m ² | 5) 144m ² | 6) 4200mm ² |

Yellow:

- | | | |
|-------------------------|-----------------------|-------------------------|
| 1) 30550cm ² | 2) 57.9m ² | 3) 7300mm ² |
| 4) 16m ² | 5) 20m ² | 6) 10750mm ² |

Mastery:

- 1) Many different suggestions, allow children time to share
- 2) a suggestion



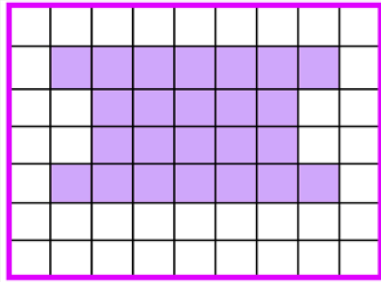
Perimeter = 26

Area = 4 × 3 = 12 and 2 × 7 = 14 = 26 cm²

Lo: I can use a grid to help me to find the area of different shapes.

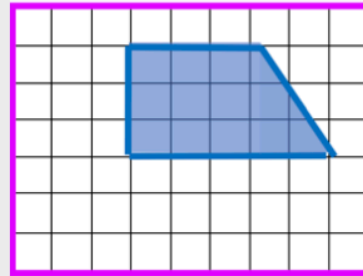
Look at each shape. Use the squares on the grid to help you to work out the area. Each square represents 1cm.

1)



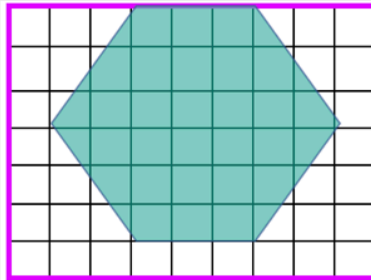
Area =

2)



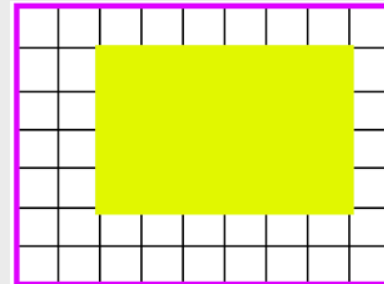
Area =

3)



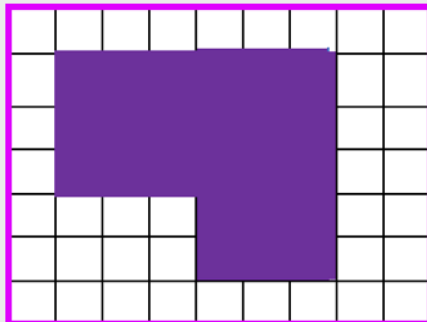
Area =

4)



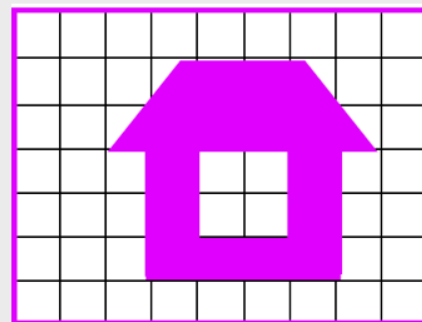
Area =

5)



Area =

6)



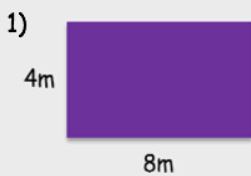
Area =

Lo: I use the formula to calculate the area of a shape.

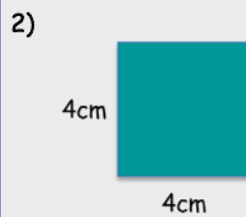
Can you find the area of these shapes?

Tip: Write the formula here to help you:

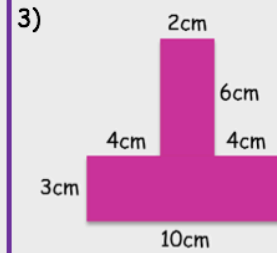
Area =



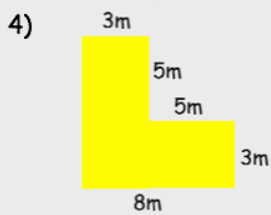
m



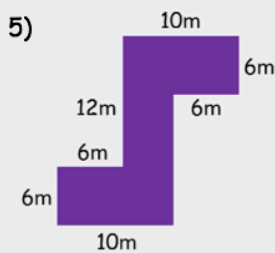
cm



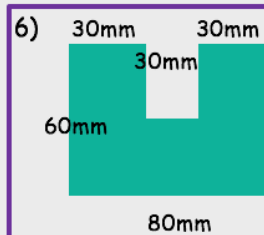
cm



m



m



mm

Lo: I use the formula to calculate the area of a shape.

Can you find the area of these shapes?

Tip: Write the formula here to help you:

Area =


1)



94cm
325cm

cm

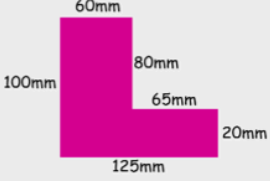
2)



6m
9.65m

m

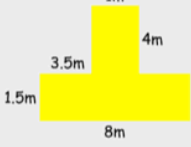
3)



60mm
100mm
80mm
65mm
125mm
20mm

mm

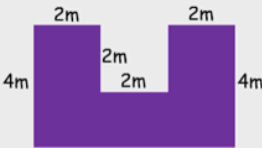
4)



1m
3.5m
1.5m
4m
8m

m

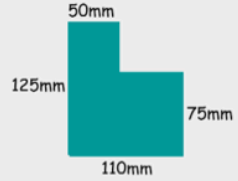
5)



2m
4m
2m
2m
2m
2m
4m

m

6)



50mm
125mm
75mm
110mm

mm

- 1) Harry wants to create a running patch in his garden for his rabbit to run around. He has some wood to build the sides for this patch. He has 30 metres of wood that he can use.



Create 3 different designs for a running patch, ensuring that each design has a perimeter of 30 metres.

- 2) Harry wants the design to have the same size area and perimeter. Create a design that has an area of 26m^2 and a perimeter of 26m.