Area and Perimeter Prior Assessment Questions 8

Objective: I can find the area of parallelograms using the formula.

NC: M6 calculate the area of parallelograms and triangles.

Teacher Input Ideas:

Recap with the children how they find the area of a rectangle and square. Encourage the children to use the formula.

Give the children a variety of parallelograms on paper so that they can cut these up and explore. Give the children a challenge: can you use all the parallelogram to make a rectangle? Allow the children time to explore to establish that a rectangle can be made by splitting the shape into a rectangle and two triangles. Encourage the children to cut off one of the triangles and place it at the other end to make a rectangle. The children should understand that the same formula can now be used as the same amount of area/space has been used.

Show Q8 of the prior learning assessment and allow the children to calculate the answer using the formula for area. If needed, draw a couple more examples of parallelograms onto the board and ask the children to find the area of these.

Practice Activities

Purple Practice: Most suited for children who made errors in Question Q8 and need to further understand the relationship between a rectangle and a parallelogram.

Practical: the children are to be given the task sheet and cut out one parallelogram at a time so that the children can further explore the link between a parallelogram and a rectangle. Encourage the children to cut off one end of the parallelogram, like in the input, to create a rectangle. Establish that nothing has been added or taken away, just moved, so the area is the same, therefore the formula for rectangles can be used. After a few examples of this, the children should feel confident to use the formula without cutting out the shapes.

<u>Green Practice:</u> Most suited for children who made errors in Question 8 and are ready to apply the formula to find the area of a parallelogram.

The children are presented with parallelograms in different orientations and should be able to work out the answers using the formula for area. The children are required to apply mental and written multiplication methods with amounts including decimals.

<u>Yellow Practice</u>: Most suited for children who show confidence in finding the area of parallelograms and would benefit from applying other shape and measure skills.

Practical: Children are to select a block from the sheet and draw parallelograms from the requirements on each block. This provides the children with the opportunity to apply knowledge of length, angles, area and properties of shape to produce accurate drawings of parallelograms. The children are then to work out the area or missing measurements of the parallelograms.

The blocks do get trickier as you go further down the page, and some include missing angles and mixture of mm and cm. Additionally, ensure that the children understand that the height measurement is from the base to the top of the parallelogram and not the measurement of 2 of the sides. The children may require some modelling of using the different measurements to create the shapes.

<u>Mastery</u>: the children are to apply their knowledge of finding the area of a parallelogram by using the formula. The children should then understand that this must be x by 12 to solve the problem. The children should suggest using written multiplication to calculate the answers. This problem requires the children to multiply 3 and 5 digit numbers by 2 digit numbers.

For the second part of the challenge, the children are required to divide a 4-digit number by a 1-digit number to find the area of one football pitch. This provides the opportunity for children to use the short division method to work this out.

Answers:

Purple:

1)18cm^2 2) 20cm^2 3) 35m^2 4) 200mm^2

5) 72m^2 6) 600mm^2 7) 3.2m^2 8) 16cm^2

Green:

1) 36m^2 2) 56cm^2 3) 48cm^2

4) 42cm^2 5) 20280mm^2 6)144cm^2

Yellow:

1) area 30cm^2

2) area 4125mm^2

3) area 127cm^2, obtuse angles 145°

4) area 52.2cm^2, acute angles 30 °

5)base 9cm

6) height 8cm, obtuse angles 164 °

Mastery:

1) 233700mm^2
2) 375m^2

BRICKWORK Mathematics

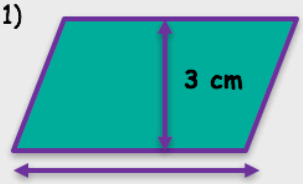
Purple Practice

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

Look at each parallelogram. Calculate the area of the parallelogram using the formula to help you.

area = length x height

1)



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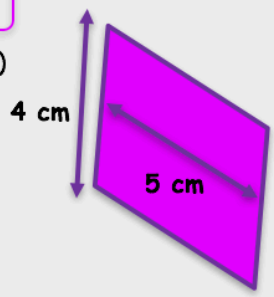

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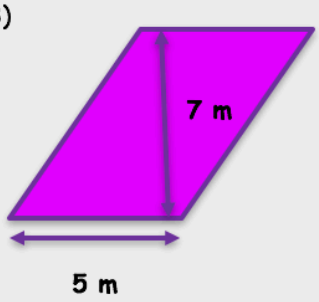

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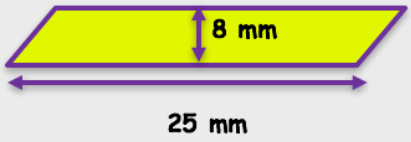

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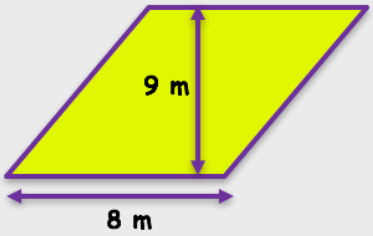

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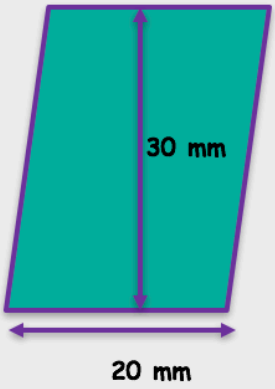

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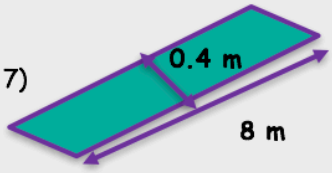

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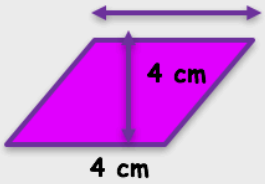


BRICKWORK Mathematics

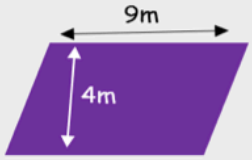
Green Practice

Lo: I use the formula for a parallelogram to find the area.

Look at each parallelogram and find the area:

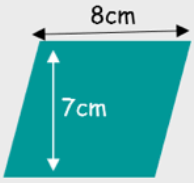
Formula = base x height

1)



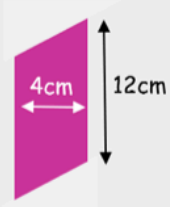
m2

2)



cm2

3)



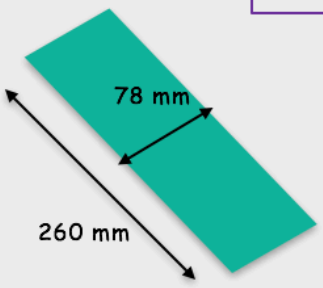
cm2

4)

cm2

5)

mm2



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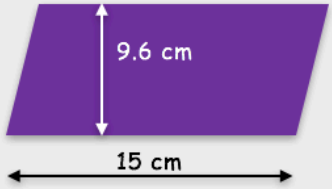

cm2

Challenge:

Draw 2 different parallelograms both with the area of 40cm^2.

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Yellow Practice

I can use my knowledge of area, shape and measure to draw accurate parallelograms.

Look at the information on each block. Use this to draw accurate parallelograms, using a ruler and a protractor. **Remember that the height of the parallelogram, is not the length of 2 of the sides.**

The base needs to be 5 cm.
The height needs to be 6 cm.
The acute angles should be 60°.
The obtuse angles should be 120 °.

What is the area?

The base needs to be 75mm.
The height needs to be 55mm.
The acute angles should be 85 °.
The obtuse angles should be 95 °.

What is the area?

The base needs to be 12.7cm.
The height needs to be 10 cm.
The acute angles should be 35 °.

What is the area?

The base needs to be 58mm.
The height needs to be 9 cm.
The obtuse angles should be 150 °.

What is the area?

Area is 54cm2.
The height is 6 cm.
The obtuse angles should be 103 °.
The acute angles should be 77 °.

What is the base?

The base is 12cm.
The area is 96cm2.
The acute angles should be 16 °.

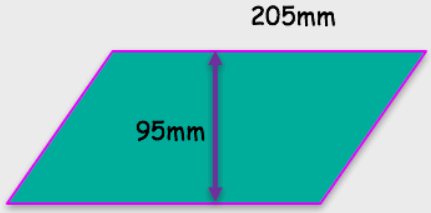
What is the height?

BRICKWORK Mathematics

Mastery

Fluency

1) Samuel wants to make a design out of 12 parallelograms. Work out the area of the 12 parallelograms.



The area of 12 parallelograms is

2) At a sports centre, there are 7 five- a – side football pitches. The total area is 2625m^2.

What is the size of one football pitch?