

Maths home learning tasks for two weeks

You are going to be focusing on: Area.

Monday 4th May – Today you will develop strategies to estimate the area of irregular shapes

Firstly think about what area is. Do you remember what perimeter is? Do you remember what area is? Watch this short clip as a reminder from year 3 and 4:

https://www.youtube.com/watch?v=rSVMrPu0_U

Now write the definitions for area and perimeter.

Look at the question below - discuss and then record your thoughts in sentences:

Which has a greater area...

your footprint or your handprint?

How could you prove it?

Some ideas for answers:

Area is how much surface an object takes up so you could compare by putting one on top of the other to see which takes up more surface.

You could place both your foot and your hand on some squared paper and count how many squares they take up. Whichever covers the most squares has the largest area.

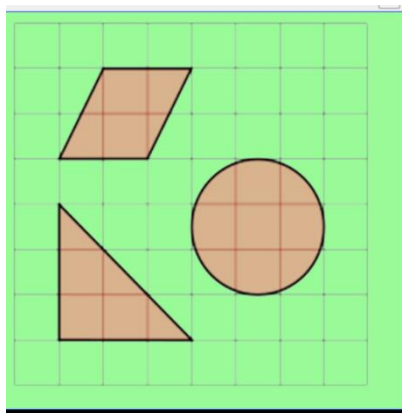
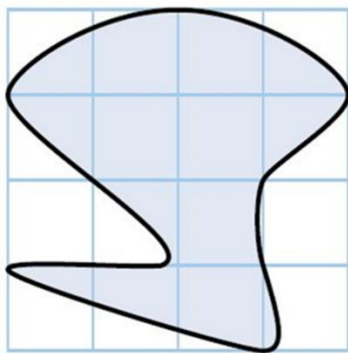
I think you would have to count the whole number of squares and think about the parts of squares though because a hand and foot will not cover only whole squares.

Now use 'sheet 1 finding the area Monday' to answer the questions and then mark them.

Tuesday 5th May - to ESTIMATE the area of irregular shapes with whole and part squares

Remember area relates to the surface covered by an object. What is an irregular shape? Do you remember? Today we are going to work out how to include whole and part squares to identify and **estimate** the area. When you have shapes with part squares you can only make an **estimate** which is a sensible guess.

How would you deal with a shape with part squares? Look at the FOUR shapes below. How would you **ESTIMATE** their areas?

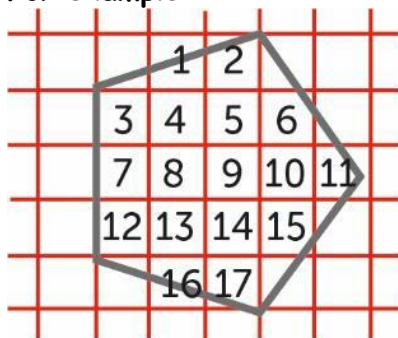


Possible suggestions:

'I would count the whole squares. I would count squares with more than a half covered as 1 and those which take up less than a half I wouldn't count.'

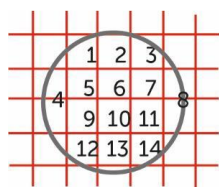
'I would count the whole squares then I would look for parts of squares which I could put together to make extra whole squares.'

For example:



You are now going to complete the sheet 'sheet 2 estimating the area of irregular shapes.' Once you have completed it then please mark your work - see if your estimations are accurate. Whilst you are completing this have a think: Is one method of estimating area more effective than the other?

Optional challenge: If you would like to then why not draw your own irregular shapes and work out their area? Like this example:

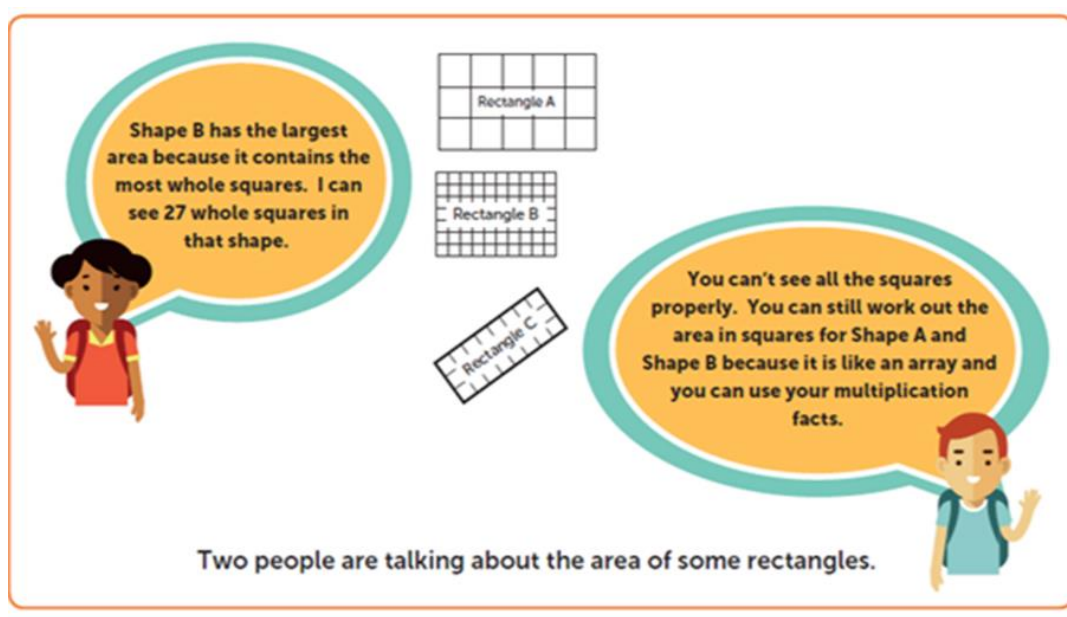


Whilst you are doing this have a think: Are there particular shapes for which one method is more accurate than the other? **Please see the document '1cm square paper' for you to print and use if required.**

Wednesday 6th May – To estimate area using standard units

During this lesson you will; build on your understanding of counting squares to estimate area. Understand the need for standard units of measure to enable comparisons. To explore areas including 1cm^2 and 1m^2 as benchmarks for comparisons.

Look at this conversation cartoon. The children are discussing the area of some rectangles.



Think about what you know already about area and write your ideas down in a bullet pointed list. Use the conversation cartoon above to help you.

Possible bullet points could be:

- Area is the surface covered by something
- Area can be measured in squares (or other shapes of a consistent size)
- When counting the squares in a rectangle you can use your multiplication facts rather than having to count all squares e.g. Shape A is 3 squares x 5 squares = 15 squares
- The orientation of the shape doesn't matter in calculating area
- You can only compare the area of shapes by counting squares if the squares are of the same size.

So how could we accurately compare the area of shapes A and C in the conversation cartoon? Have a think. Now read the possible suggestions.

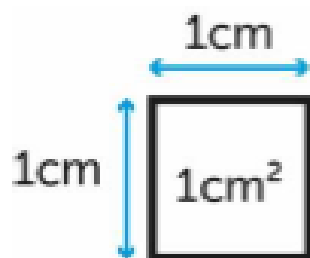
Possible suggestions:

You would have to compare the shapes on top of each other or put them on paper with the same size squares.

We could measure using standard units of measure (cm or m for example) because these are always the same.

A way of making sure we have accurate comparisons of shapes is by using standard units of measure (cm or m for example)

For example: The sides of a square on squared paper measure 1cm. Therefore it is 1cm²



When you square something, it means you multiply it by itself.
So cm x cm, which is cm squared, can be written as cm².

Now have a go at exploring the questions on the next page, record your answers:

Can you find objects which cover an area: greater than 1m^2 , smaller than 1cm^2 , between 1cm^2 and 10cm^2 , approximately 50cm^2 ?

How many of your books do you think would cover 1m^2 ?

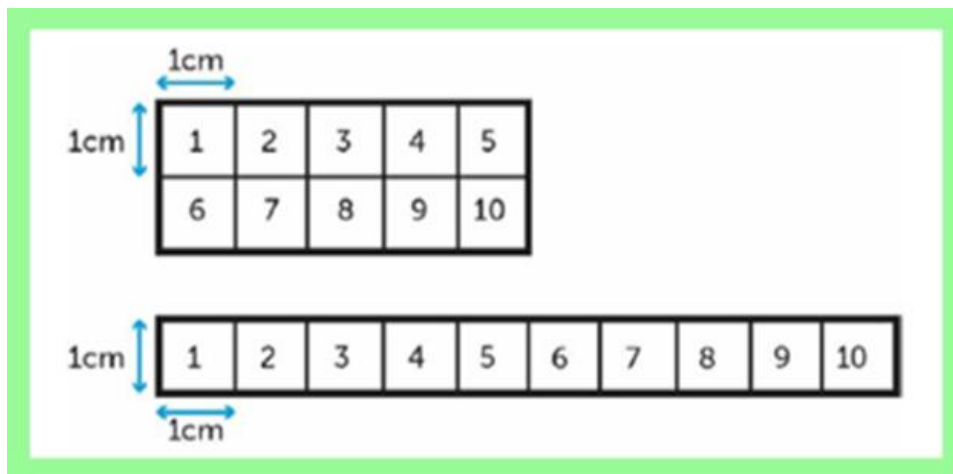
How many pencils could you stand up in a pot with a 5cm^2 base?

What area do you estimate is covered by: your table or desk at home, your pencil case?

Thursday 7th May - To calculate and compare rectangles

We are now going to learn and understand the properties of rectangles and calculate their area using drawings with given measurements.

Look at the images below of two rectangles:



What is the same and what is different about the rectangles above?

How can we use this to calculate the area? Record your ideas.

Possible ideas could be:

- They are both rectangle shapes and both have an area of 10cm^2 .
- They have different lengths and widths.
- One rectangle is $2\text{cm} \times 5\text{cm}$ and the other is $1\text{cm} \times 10\text{cm}$.
- It shows that $2\text{cm} \times 5\text{cm} = 10\text{cm}^2$ and also $1\text{cm} \times 10\text{cm} = 10\text{cm}^2$ because both ways there are 10 cm squares in the rectangle.

Remember the area of a rectangle can be calculated as length (in squares) \times width (in squares) and so different arrays for the same number can be used to create different rectangles with the same area.

Now using squared paper investigate:

How many different rectangles with an area of 24cm^2 can you draw using only whole squares on cm^2 paper?

Use the document called '1cm square paper' if required.

Friday 8th May - Bank holiday no set learning tasks - Next week we will continue learning about area! Enjoy the bank holiday weekend! ☺

Monday 11th May - to calculate and compare rectangles

We are continuing with our learning from last week on the area of rectangles.

Now I would like you to show all the ways that you can represent a rectangle with the area of:

20cm^2

11cm^2

16cm^2

Use squared paper (see '1cm squared paper' document if needed) and a ruler to draw your rectangles.

Challenge: Can you create your own? Which rectangle has the most/least representations?

Tuesday 12th May - to find unknown measures when calculating area

Today we are going to continue our learning about area and rectangles - and think about what we do when we have some missing information and a problem to solve.

Look at this image of a rectangle:

What do you know about this shape? Record your thoughts in bullet points.

Use this speaking frame to help you:



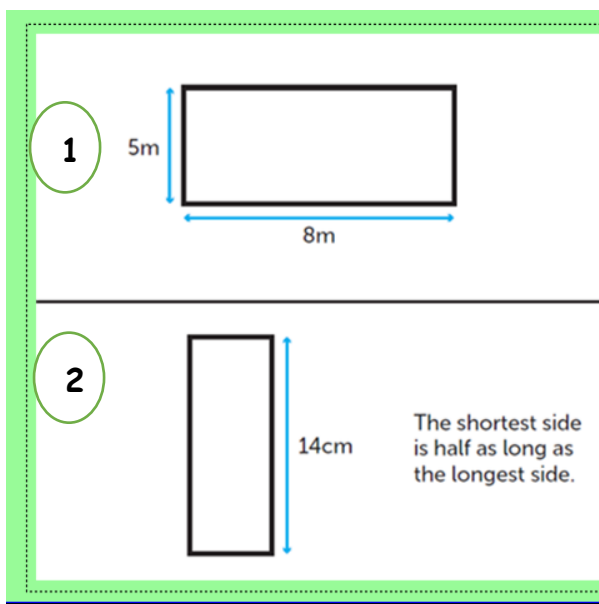
Reasoning Speaking Frame

I notice ...
I know ... because ...
If ... then ...
I can work out ...

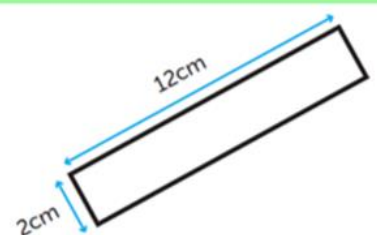
Possible ideas:

- I know it is a rectangle because it has 4 sides and 4 right angles.
- I notice 10cm is marked on one side.
- If I knew the other measurement then I could work out the area and the perimeter of the shape.
- If the short length was 5cm then the area of the shape would be 50cm² because $10\text{cm} \times 5\text{cm} = 50\text{cm}^2$.

Now look at these rectangles and work out their areas, remember to record m² or cm²!



3



The answers are on the following page

Now mark your work:

Answers:

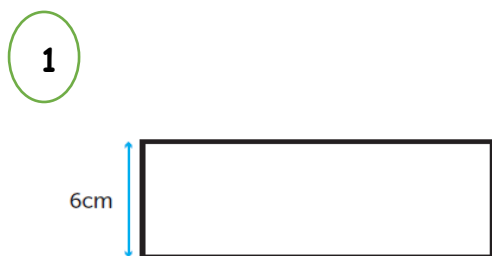
$$1 = 40\text{m}^2$$

$$2 = 7\text{cm} \times 14\text{cm} = 98\text{cm}^2$$

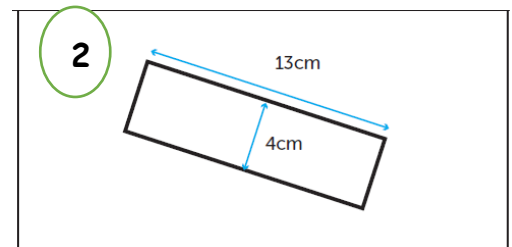
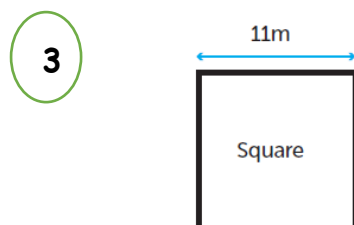
$$3 = 24\text{cm}^2$$

Wednesday 13th May - area and problem solving

Today we are continuing from yesterday! Answer these questions below. Take your time and ensure that you read the questions carefully... recording cm^2/m^2 !



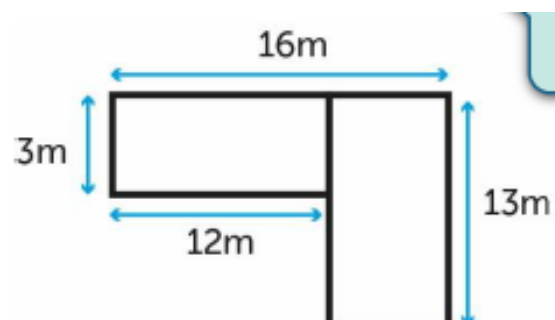
The longest side is 3 times as long as the shortest side.



Look on the next page to mark your work

Optional Challenge:

Can you work out the area in more than one way? List all of the ways that you can find!



Answers:

1. $6\text{cm} \times 3 = 18\text{cm}$ then do $18\text{cm} \times 6\text{cm} = 108\text{cm}^2$
2. 52cm^2
3. It is a square - so all sides are the same length! $11\text{cm} \times 11\text{cm} = 121\text{m}^2$

Challenge Answers:

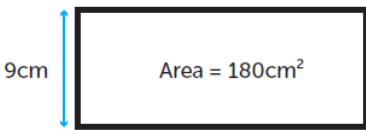
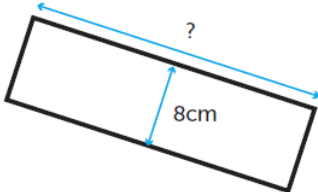

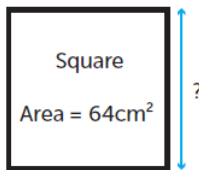
I worked out $12\text{m} \times 3\text{m}$ then added $13\text{m} \times 4\text{m}$. = 88m^2

I worked out $16\text{m} \times 13\text{m} - 12\text{m} \times 10\text{m}$. = 88m^2

I worked out $3\text{m} \times 16\text{m} + 4\text{m} \times 10\text{m}$. = 88m^2

Thursday 14th May - area and problem solving with squares and rectangles

We are now going to have a go at some more area problems involving rectangles and squares. Some of these you may find challenging. Take your time and use your knowledge from previous lessons to help you and your times tables. You may need to do your division calculations using the bus stop method.

<p>1</p>  <p>9cm</p> <p>Area = 180cm^2</p>	<p>3</p> <p>The area of this rectangle is 184cm^2.</p> 
<p>2</p>  <p>9m</p> <p>The area of the whole rectangle is 126m^2. The white square has a length of 4m.</p> <p>What is the area of the blue shape?</p>	<p>4</p>  <p>Square</p> <p>Area = 64cm^2</p>

Please look on the following page for the answers and mark your work.

Mark your work

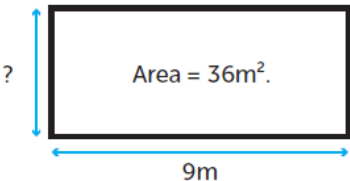
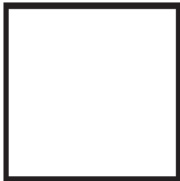
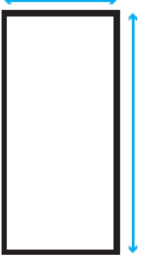

Answers:

- 1 = 20cm (180cm² divided by 9cm = 20cm)
2. The white square is 16m² and so you take this away from 126m² which = 110 m²
3. = 23cm (184cm² divided by 8cm)
4. 8cm x 8cm = 64cm² therefore the answer is 8cm²

Friday 15th May - area and problem solving with squares and rectangles

Answer the questions below today! Remember to take your time and read each question carefully. (The answers are on the next page to mark afterwards!)

You may need to do the opposite which is divide. Use your times table knowledge too. You may also use the bus stop method for division.

<p>1</p>  <p>Area = 36m².</p> <p>9m</p>	<p>2</p> <p>This square has an area of 81m².</p> 
<p>3</p>  <p>The area of the rectangle is 168cm².</p>	<p>4</p>  <p>The two rectangles are identical. Their combined area is 36cm².</p>

Mark your work

1. 4m (36m^2 divided by 9)
2. 9m (I know that $9\text{m} \times 9\text{m} = 81\text{m}^2$)
3. I used the bus stop method for division = 168cm^2 divided by $7\text{cm} = 24\text{cm}$
4. I know that $6\text{cm} \times 3\text{cm} = 18\text{cm}^2$ and if I double that I get 36cm^2 .
Therefore the answer is 3cm!

Next week we will finish off our area learning and move onto a new topic!

Well done for working through lots of new Maths!

Mrs Crockett 😊