Released January 2018

Years 3/4

Small Steps Guidance and Examples

Block 2 – Length, Perimeter, Area

White Rose Maths

Year 3/4 – Yearly Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value				Number: Addition and Subtraction				Number: Multiplication and Division			Consolidation
Spring	Number: Multiplication and Division		Measurement: Length, Perimeter and Area		Number: Fractions				Year 3: Fractions Year 4: Decimals			Consolidation
Summer	Measurement: Money		Statistics		Measurement: Time			Geometry – Properties of Shapes		Year 3: Mass and Capacity Year 4: Position and Direction		Consolidation

Week 3 to 4 – Length, Perimeter and Area

Overview

Small Steps

Year 3	Year 4
Measure length	
Equivalent lengths – m and cm	Kilometres
Equivalent lengths – cm and mm	
Comparing lengths	
Adding lengths	
Subtracting lengths	
Measure perimeter	Perimeter on a grid
Calculate perimeter	Perimeter of a rectangle
	Perimeter of rectilinear shapes
	What is area?
	Count squares
	Make shapes
	Compare area

Measure Length

Notes and Guidance

Children are introduced to millimetres for the first time and build on their understanding of centimetres and metres.

It is important that child have a variety of hands on experiences and opportunities to explore the concept of a millimetre.

Mathematical Talk

What would be the best equipment to measure X with? (e.g. tape measure, ruler, metre stick)

Look at each side of different measuring equipment – what's the same, what's different?

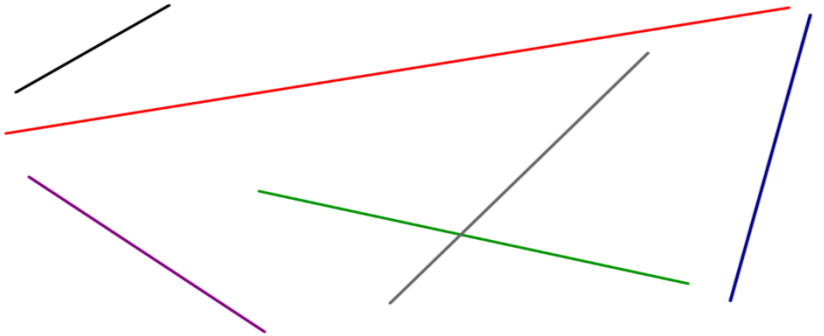
What do we have to remember when using a ruler to measure? Which side are we going to use to measure?

What unit of measure would we use to measure X?

What should you do if it the object does not start from 0?

Varied Fluency

1 Measure these lines to the nearest cm, then to the nearest mm



2 Look and think about real life objects.
What unit would you use to measure each one?
Possible examples:

Fingernail	Eraser	Pencil
Height of a house	Length of a playground	Length of a table

3 What is the length of each pencil?

Measure Length

Reasoning and Problem Solving

Abigail's ruler is broken. How could she use it to still measure things?

Possible answer: She could start from a different number and count on to measure.

Paige thinks that this chew bar is 4 cm long. Is she correct?

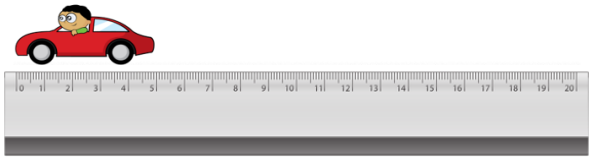
Convince me.

She is not correct because she has not placed the chocolate bar at 0, she has put it at the end of the ruler.

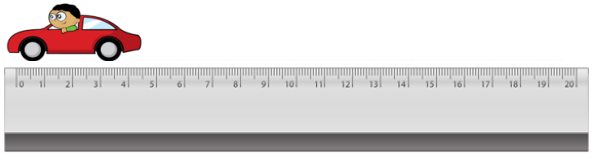
Three children measured the same toy car.

Eva says that the car is 6 cm and 5 mm

Lainey says the car is 5 cm



Macey says the car is 4 cm 5 mm



Who is correct? Who is incorrect? Explain why.

Lainey is correct. The other two have not lined up the ruler correctly.

Equivalent Lengths – m & cm

Notes and Guidance

Children understand that 100 *cm* is equivalent to 1 *m*. Once they are secure with this, they can start to convert between metres and centimetres by partitioning.

Mathematical Talk

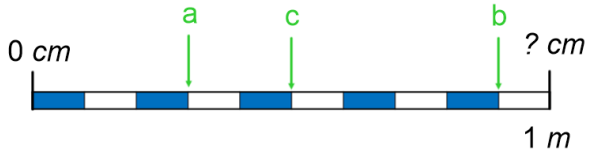
If there are 100 cm in 1 metre, how many centimetres would there be in 2 metres? How many centimetres in 3 metres? How many other equivalents can you think of?

Can you explain how you are partitioning each measurement?

Could you partition it in any other way? Why is it most effective to partition the hundreds and then the tens and ones?

Varied Fluency

1 Use the metre stick to help you fill in the blanks.



1 m = ___ cm a = ___ cm

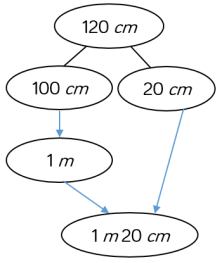
b = ___ cm c = ___ cm

2 Can you match up the equivalent measurements?

100 *cm*	9 *m*
5 *m*	200 *cm*
300 *cm*	500 *cm*
2 *m*	1 metre
900 centimetres	3 *m*

3 Use this method to convert:

- 230 cm
- 470 cm
- 1 m and 60 cm
- 178 cm
- 569 cm



Equivalent Lengths – m & cm

Reasoning and Problem Solving

Max and Anna each have a skipping rope.

Anna: I have the longest skipping rope. Mine is $2\frac{1}{2}$ metres long.

Max: My skipping rope is the longest because it is 220 cm and 220 is a bigger number.

Who is correct? Explain your answer.

Anna is correct because in cm her skipping rope is 250 cm long and this is 30 cm more than 220 cm

Three children are partitioning 754 cm

Child A: 75 m and 4 cm

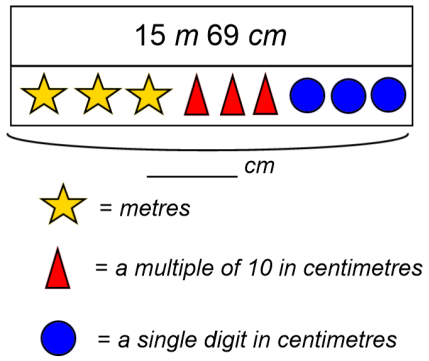
Child B: 7 m 50 cm and 4 cm

Child C: 7 m and 54 cm

Who is correct? Explain why.

Child B and C are both correct. Child A has incorrectly converted from cm to m when partitioning.

Can you work out what each symbol represents?



Kilometres

Notes and Guidance

Here children use their new knowledge of four digit numbers in a real life context.

These contexts could include running, swimming, cycling etc.

Mathematical Talk

If you were to walk for 1km along the road from your school, where would you be?
How can you tell if your answer is sensible?
Explain to a friend how to convert km to m and vice versa?
How far do you travel to school? Do you travel more or less than 1km?
Visualise 1km – can we measure it out on the school field or the playground?

Varied Fluency

1 Complete the statements.

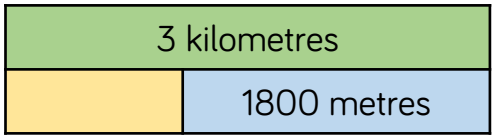
3000m = ☐ km

5km = ☐ m

500m = ☐ km

9500m = ☐ km

2 Complete the bar model.



3 Use <, > or = to make the statements correct.

500m ◯ $\frac{1}{2}$ km

7km ◯ 800m

5km ◯ 500m

Kilometres

Reasoning and Problem Solving

James and Sita do a sponsored walk for charity.

They walk 15km altogether.

James walks double the amount that Sita walks.

How far does Sita walk?

They each raise £1 for every 500m they walk.

How much money do they each make?

James _____ Sita _____

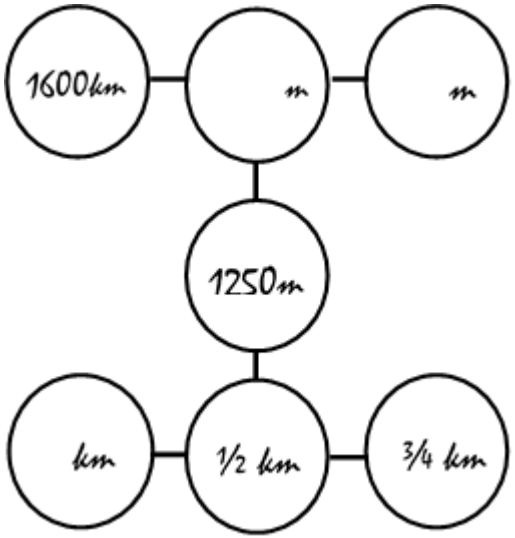
James walks 10km

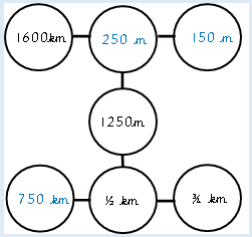
Sita walks 5km

James raises £20

Sita raises £10

Complete the missing measurements so that each line of three gives a total distance of 2km.





Equivalent Lengths – mm & cm

Notes and Guidance

Children understand that 10 mm is equivalent to 1 cm

Once they are secure with this, they can start to convert between centimetres and millimetres by partitioning.

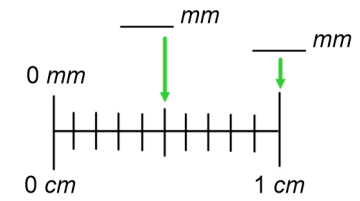
Mathematical Talk

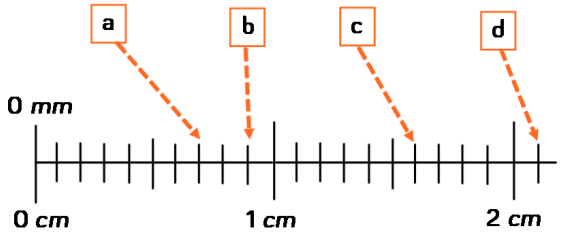
If there are 10 mm in 1 cm, how many mm would there be in 2 cm?

Can you explain how you are partitioning each number?
Can you partition it any other way?
Why is it most effective to partition the hundreds and then the tens and ones?

Varied Fluency

1 Fill in the blanks.

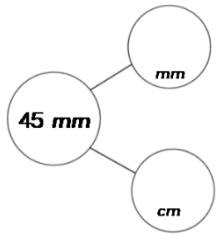


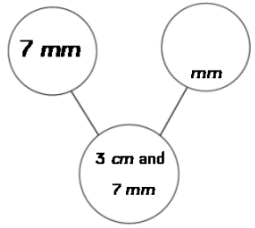


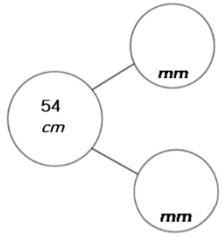
a = ____ cm ____ mm
b = ____ cm ____ mm
c = ____ cm ____ mm
d = ____ cm ____ mm

2 Measure different items around your classroom. Record your answers in a table in cm and mm, and just mm.

3 Complete the part whole models.



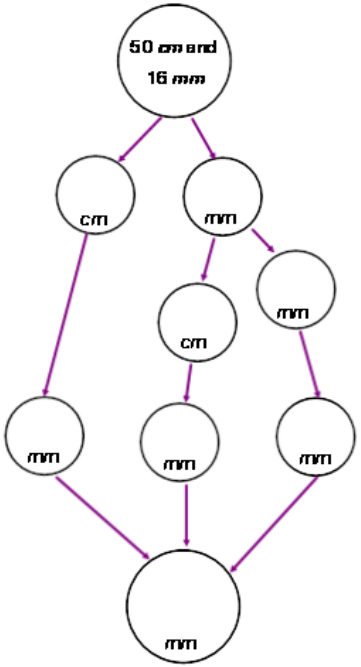




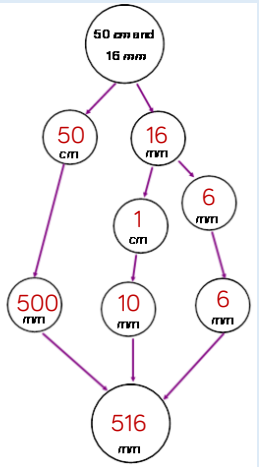
Equivalent Lengths – mm & cm

Reasoning and Problem Solving

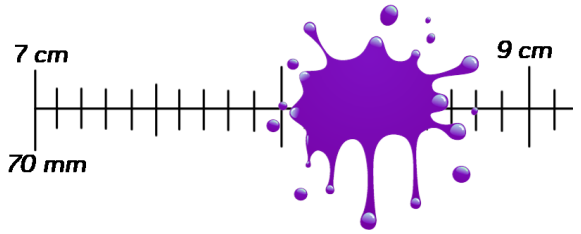
Complete the diagram by converting between mm and cm



Can you make a similar question for your partner?



Louise is thinking of a measurement that has been covered by the splat.
Use her clues to work out which measurement she is thinking of.



- In mm, my measurement is a multiple of 2
- It has 8 cm and some mm
- It's less than 85 mm
- In mm, the digit total is 12

Louise is thinking of 84 mm (8 cm and 4 mm)

Compare Lengths

Notes and Guidance

Children compare and order lengths based on measurements in mm, cm and m.

They use their knowledge of converting between units of measurement to help them compare and order.

Mathematical Talk

Can you order the children's' heights from shortest to tallest?

How could you make it easier to compare and order these measurements?

Estimate whose tower you think will be the tallest. Explain why.

Varied Fluency

1 Complete the sentences.

Child	Height
Jasmine	109 cm
Ahmed	1 m 5 cm
Josh	135 cm
Kate	1m 50 mm

Jasmine is _____ than Josh.

Josh is _____ than Kate.

Ahmed is _____ than Jasmine.

Kate is _____ than Ahmed.

2 Four friends are building towers.
Emma's tower is 22 cm and 7 mm
Calvin's tower is 0 mm and 22 cm
Laura's tower is 205 mm
Saif's tower is 16 cm and 100 mm

Order the children's towers in descending order.

[ ] < [ ] < [ ] < [ ]

3 Using a ruler, measure the width of 5 different books to the nearest mm. Record your results in a table, then compare and order them.

Compare Lengths

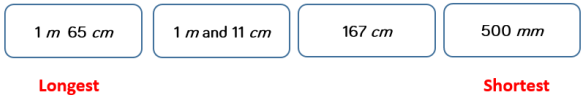
Reasoning and Problem Solving

Agree or Disagree?

mm lengths are smaller than cm lengths.

Possible answer:
I disagree because 100 mm is bigger than 7 cm. It could be true though because 1 mm is less than 1 cm

Faye has ordered the lengths from longest to shortest.



Find an explain any mistakes.

167 cm is longer than 1 m and 11 cm because 1 m and 11 cm is 111 cm, which is shorter than 167 cm

Add Lengths

Notes and Guidance

Children add lengths including examples where there are mixed units and they need to convert.

Children to be encouraged to look for the most efficient way to calculate and develop their mental addition strategies.

Mathematical Talk

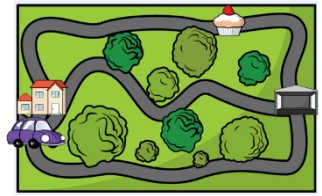
How did you add the distances travelled by Olivia? Can you think of a different way? Which way do you think is the most efficient?

How did you find the total of their heights? Was there a more efficient way of doing this?

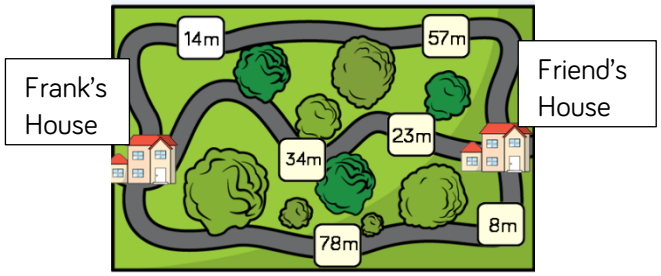
Explain how you added the lengths.

Varied Fluency

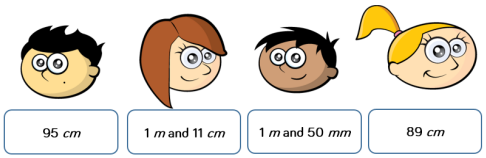
1 Olivia travelled 250 m to the bakery, then went to a concert 75 m away and finally travelled back home the exact same way that she came.
What was the total distance she travelled?



2 Frank needs to travel to his friend's house. He wants to take the shortest possible route. Which way should Frank go?



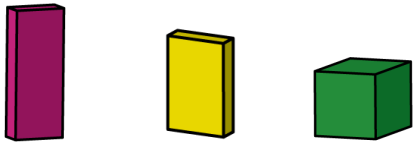
3 Miss Nicholson measured the height of four children in her class. What is their total height?



Add Lengths

Reasoning and Problem Solving

Millie is building a tower using these blocks.



100 mm 80 mm 50 mm

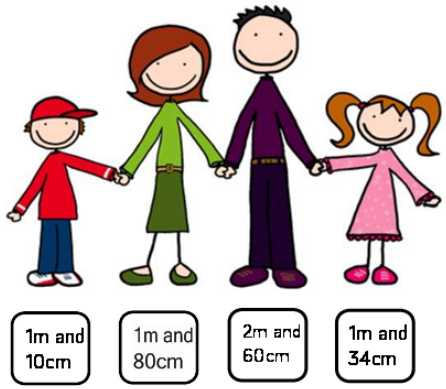
How many different ways can she build a tower measuring 56 cm?

Can you write your calculations in mm and cm?

Possible answer:
Four 100 mm blocks and two 80 mm blocks.

There are other solutions.

Jenny and her brother Alex measured the height of their family.



Jenny thinks their total height is 5 m and 50 cm

Alex thinks their total height is 6 m and 84 cm

Who is correct? Prove it.

Alex is correct. Jenny has not included her own height.

Subtract Lengths

Notes and Guidance

Children subtract lengths including examples where there are mixed units and they need to convert.

Children should be encouraged to look for the most efficient way to calculate and develop their mental subtraction strategies.

Mathematical Talk

What is the difference between the length of the two objects? How would you work it out?

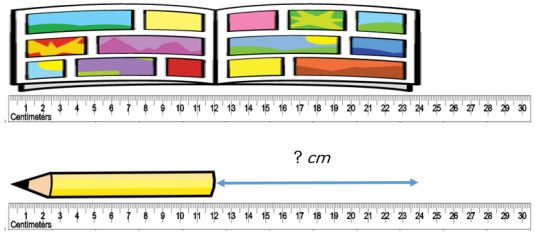
How are Poppy's models different? How are they the same?

Which model do you prefer? Why?

What is the most efficient way to subtract mixed units?

Varied Fluency

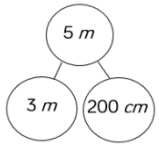
1 Work out the difference in length between the book and the pencil.



2 Poppy had 5 m of rope. She used 1 m and 54 cm of it to make a skipping rope. She worked out how much rope she had left using two different models.

5m	
1m and 54cm	?

5 m – 1 m = 4 m
4 m – 54 cm = 3 m 46 cm



200 cm – 154 cm = 46 cm
3 m + 46 cm = 3 m 46 cm

3 Use the models to solve:

- Mrs Brook's ball of wool was 10 m long. She used 4 m and 28 cm to knit a scarf. How much does she have left?
- A roll of tape is 3 m long. If I use 68 cm of it wrapping presents, how much will I have left?

Subtract Lengths

Reasoning and Problem Solving

A bike race was 160 m long.
Josh cycles 43 m and stopped for a break.
He cycled another 59 m before stopping for another break.
How much further does he need to cycle to complete the race?

Josh has 58 m left to ride in the race.

A train measures 20 m
A car measured 15 m less than the train.
A bike measures 350 cm less than the car.

Work out the length of the car and the bike.

The car is 5 m and the bike is 150 cm or 1 m 50 cm

Megan has a 3 m roll of ribbon.

She is cutting it up into 50 cm lengths.

How many lengths can she cut?
Convince me.

Megan can cut it in to 6 lengths.

Measure Perimeter

Notes and Guidance

Children are introduced to perimeter for the first time.

They explore what perimeter is and what it isn't.

Children measure the perimeter of simple 2D shapes. They may compare different 2D shapes which have the same perimeter.

Children make connections between the properties of 2D shapes and measuring the perimeter.

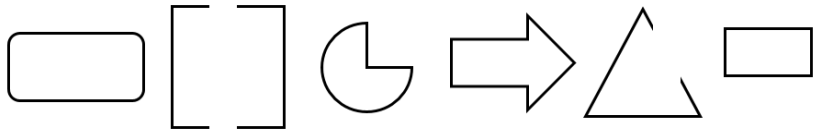
Mathematical Talk

What is perimeter? Show me the perimeter of...
Which of the images can we work out the perimeter for? Which ones can we not? Why?
Which shape do you predict will have the longest perimeter? Why?
Does it matter where you start when you measure the length of the perimeter?
What do you notice about the perimeter of the rectangle and the square?

Varied Fluency

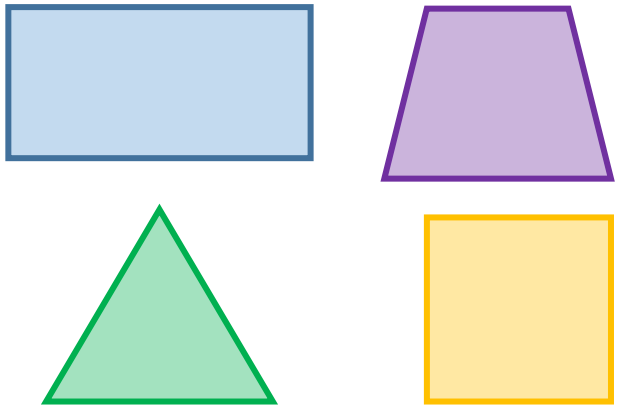
1. Using your finger, show me the perimeter of the table, your book, your whiteboard etc.

2. Tick the images where you can find the perimeter.



Explain why you can't find the perimeter of some of the shapes.

3. Predict then measure the perimeter of the shapes.

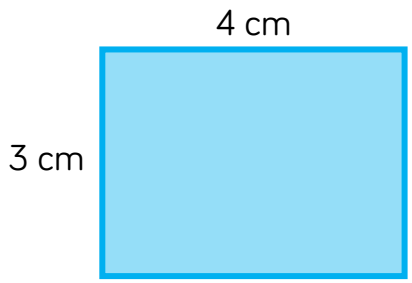


Measure Perimeter

Reasoning and Problem Solving

Aaron is measuring the shape below. He says the perimeter is 7 cm

Can you spot his mistake?

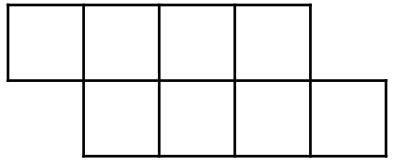


Aaron has only included two of the sides, to find the perimeter he needs all 4 sides. It should be 14 cm

Emily is measuring the perimeter of a square. She says she only needs to measure one side of the square. Do you agree? Explain your answer.

Emily is correct because all four sides of a square are equal in length so if she measures one she can multiply it by 4

Here is a shape made from centimetre squares.
Find the perimeter of the shape.



Can you use 8 centimetre squares to make different shapes? Find the perimeter of each one.

The perimeter is 14 cm

There are various different answers depending on the shape made.

Perimeter on a Grid

Notes and Guidance

Children calculate the perimeter of rectilinear shapes by counting squares on a grid. They can use cm squares or work in pairs and groups on larger grids.

They should be encouraged to explore which arrangements lead to longer perimeters and begin to see patterns linked to the way the squares are arranged.

Mathematical Talk

Can you estimate which of two shapes would have the longer perimeter?

How do you decide where to start counting?

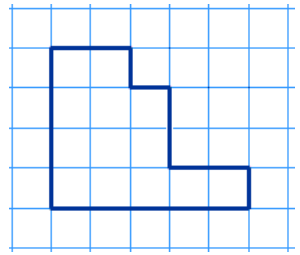
Can you make a shape with double the perimeter?

Can you make a shape with half the perimeter of shape x?

When do you need to find the perimeter of a shape in real life?

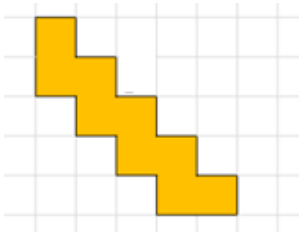
Varied Fluency

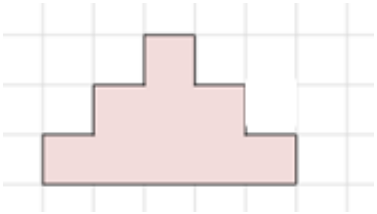
1 Work out the perimeter of the shape.
Can you draw a different shape with :
a) the same perimeter
b) a perimeter which is 5cm longer
c) a perimeter which is double/half the length of this one.



2 Using squared paper draw two rectilinear shapes, each with a perimeter of 28cm
What's the same and what's different about these shapes?

3 Draw and find the perimeter of these shapes in cm.

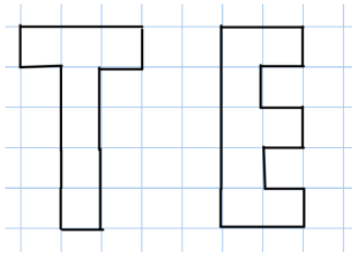




Perimeter on a Grid

Reasoning and Problem Solving

Which of these shapes has the longest perimeter?



Explore other letters which could be drawn as rectilinear shapes.

Put them in order of shortest to longest perimeter.

Can you make a word?

E has a greater perimeter it is 18 compared to 16 for T.

Open ended

Letters which could be drawn include:

B C D F I J L O P

Letters with diagonal lines would be omitted.

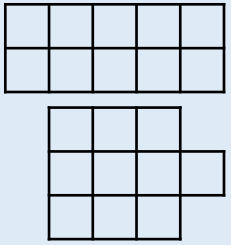
If heights of letters are kept the same, I or L could be the shortest.

You have 10 paving stones to design a patio. The stones are one metre square.

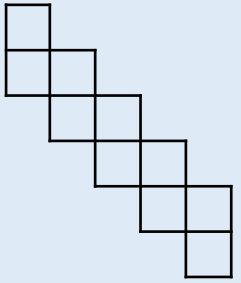
The stones must be joined to each other so that at least one edge is joined corner to corner.

Use squared paper to show which design would give the longest perimeter and which would give the shortest.

The shortest perimeter would be 14m in a 2x5 arrangement or 3x3 square with one added on.



The longest would be 22m.



Calculate Perimeter

Notes and Guidance

Children use their understanding of the properties of shape to calculate the perimeter of simple 2D shapes.

It is important to note they will not explore the formula for a rectangle at this point.

They explore different methods for calculating the perimeter of a shape. For example, they may use repeated addition or they may make connections to multiplication.

Mathematical Talk

How can we calculate the perimeter of each shape?

Can we calculate the perimeter using a different method?

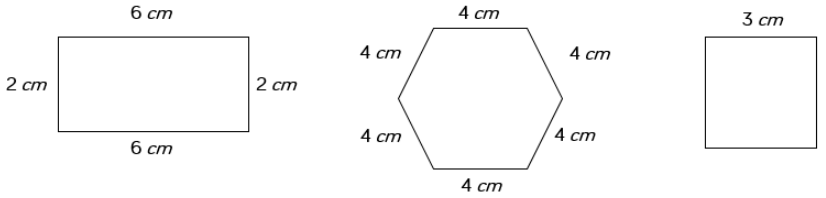
What is the same about the 2 methods?

What is different?

How can we work out the length of the missing side?

Varied Fluency

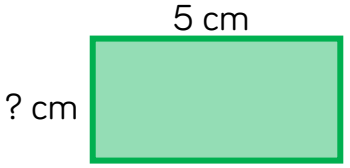
1 Calculate the perimeter of the shapes.



Can you find more than one way to calculate the perimeter?

2 Use two different methods to calculate the perimeter of the squares.

3 What is the length of the missing sides?



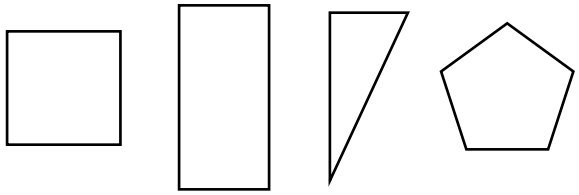
Perimeter = 16 cm

Calculate Perimeter

Reasoning and Problem Solving

Tom says,

You only need to know the length of one side of these 2D shapes to work out the perimeter.



Do you agree with Tom? Explain your answer.

You only need to know one side length for the square and the pentagon as all the sides are the same. However, Tom is wrong because for the rectangle you need to know two lengths and the triangle you need to know all of them.

Each side of this shape is of equal length.
The perimeter is 60 cm.
How long is each side?
Explain how you got your answer.

The shape has 10 sides so the length of each side is 6 cm

How many different rectangles can you draw with a perimeter of 20 cm?

There are 5 different ones:
1 cm by 9 cm
2 cm by 8 cm
3 cm by 7 cm
4 cm by 6 cm
5 cm by 5 cm
May discuss the last one is also a square.

Perimeter of a Rectangle

Notes and Guidance

In this step, children look at rectangles no longer on a square grid where some values may be missing.

They should explore different ways of expressing the calculation using known number facts including multiplication and division.

Mathematical Talk

What do you need to know to work out the perimeter?

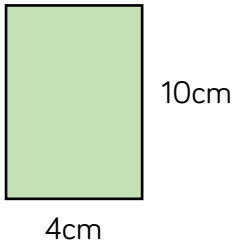
How do you know the value of each side?

What shape is this? (square) If you only have the length of one side, how can you calculate the perimeter?

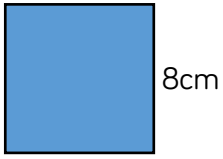
What is a more efficient way of calculating the perimeter?

Varied Fluency

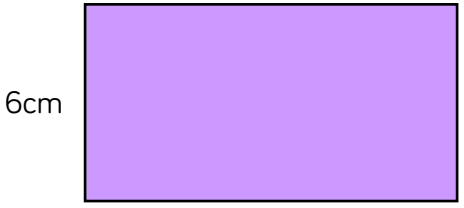
1 Work out the perimeter of the rectangles.



2 Work out the perimeter of the square.



3 The perimeter of the rectangle is 36m. What is the length of the longest side?



Perimeter of a Rectangle

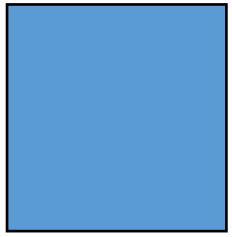
Reasoning and Problem Solving

The width of a rectangle is 2 metres less than the length.
The perimeter of the rectangle is between 20m and 30m.
What could the dimensions of the rectangle be?

Draw all the rectangles that fit these rules.
Use 1cm=1m.

If the perimeter …
20m
Length = 6m
Width = 4m
24m
Length = 7m
Width = 5m
28m
Length = 8m
Width = 6cm

The perimeter of a square is 16cm. How long is each side?



4cm

Always, sometimes, never.
When all the sides of a rectangle are odd numbers, the perimeter is even.
Prove it.

Always because when adding an odd and an odd they always equal an even number.

Here is a square. Each of the sides is whole number of metres.

Which of these lengths could be the perimeter of the shape?
24m, 34m, 44m, 54m, 64m, 74m

Why could the other values not be the perimeter?

24cm

Sides = 6cm

44cm

Sides = 11cm

64cm

Sides 16cm

Perimeter of Rectilinear Shapes

Notes and Guidance

In this step, children will begin to calculate perimeter of rectilinear shapes from diagrams without grids.

They need to apply their knowledge of missing numbers to work out dimensions by finding the difference.

Children need to have experience of drawing their own shapes in this step.

Mathematical Talk

Which measures are missing from the diagram?

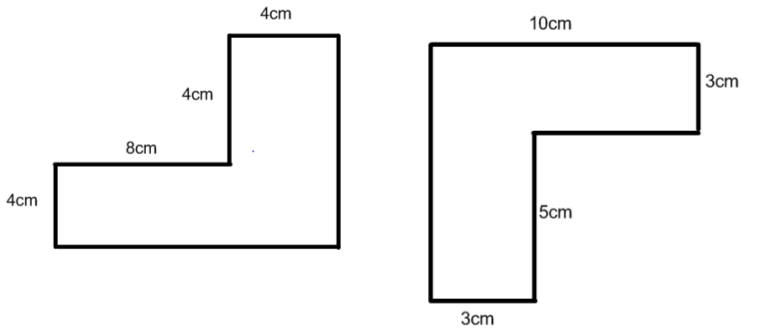
Explain to your partner why you think the line is ____cm long. Can you prove it?

Can you make a rectilinear shape where your partner can work out the perimeter if you miss off the length of one of the sides?

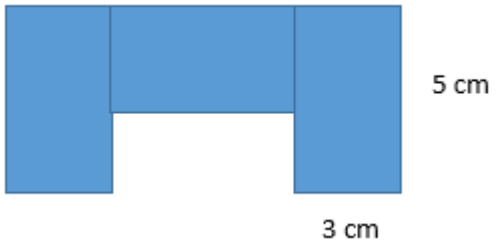
If you know the length of one side and part of the opposite side is known. Could you use a bar model to help?

Varied Fluency

1 Find the perimeter of the shapes.



2 The shape is made from 3 identical rectangles. Find the perimeter of the shape.

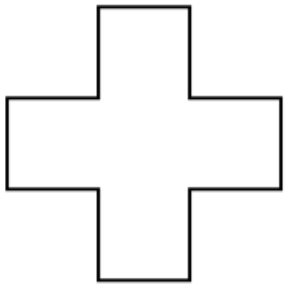


3 How many different shapes can you make with a perimeter of 24cm? How many sides do they have?

Perimeter of Rectilinear Shapes

Reasoning and Problem Solving

Here is a rectilinear shape. All the sides are the same length and are a whole number of centimetres.



Which of these lengths could be the perimeter of the shape?

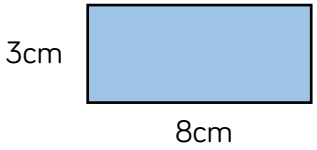
48cm 36cm 80cm 120cm 66cm

Can you think of any other answers which could be correct?

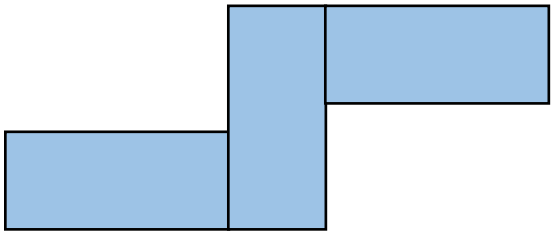
48cm, 36cm or 120cm as there are 12 sides and these numbers are all multiples of 12

Any other answers suggested are correct if they are a multiple of 12

Bob has some rectangles all the same size.

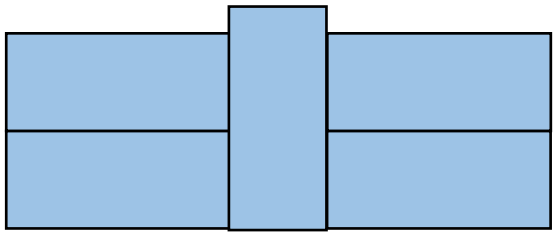


He makes this shape using his rectangles.
What is the perimeter?



54cm

He makes another shape using the same rectangles. Calculate the perimeter of this shape.



54cm

What is Area?

Notes and Guidance

Children are introduced to area for the first time. They will understand that area is how much space is taken up by a 2D shape or surface.

Children recognise why squares are used to measure area and understand why other things such as circles cannot be used (link to gaps between circles).

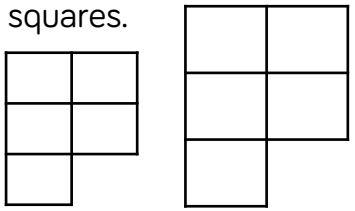
Mathematical Talk

How many post it notes cover your piece of paper?
Using the post it notes what would have a smaller area or larger area than your piece of paper?
Which square is larger/smaller? Which squares will cover a larger/smaller area?
If I wanted to find the surface area of…what size square would I use? Why can we not use other shapes to find the area?

Varied Fluency

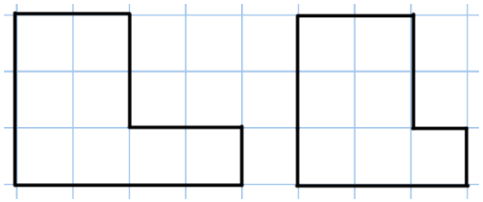
1. Give children a pre-cut piece of paper that measures 15 cm by 15 cm
How many post it notes cover your piece of paper?

2. Give the children 10 squares, 5 measuring one measurement and 5 measuring another (e.g. 5 squares measuring 5 cm by 5 cm and 5 squares measuring 10 cm by 10 cm)
Make the same shape using the smaller squares and the larger squares.
E.g.



Discuss which has the larger area and why.

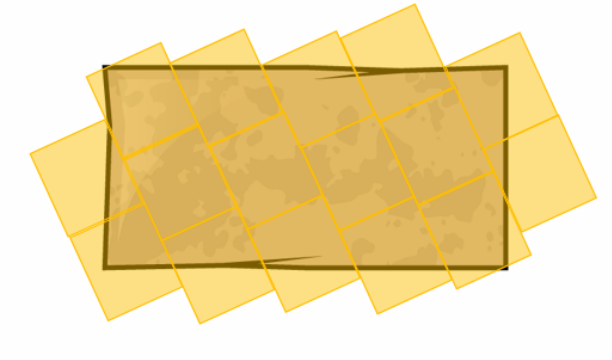
3. Look at the shapes and discuss what's the same and what's different?
Which shape has the largest area?



What is Area?

Reasoning and Problem Solving

Leona is finding the area of a floor tile.



She says the area is 16 squares.

Do you agree?
Explain why.

I disagree. Leona has gone over the edges of the tile. Each square should fit exactly over the tile.

Two children have measured the top of their desk. They used different sized squares.

Nima

The area of the table top is 7 squares.

The area of the table top is 12 squares.

Jen

Who used the biggest squares? How do you know?

Nima needed fewer squares to cover the space, so her squares must have been the bigger ones. If the squares are smaller, you need more of them.

Counting Squares

Notes and Guidance

Once children have recognised that area is measured in squares, they use the strategy of counting the number of squares in a shape to measure and compare the areas of rectilinear shapes.
Children are introduced to the notation cm^2 .They explore the most efficient method of counting squares and link this to their understanding of squares and rectangles.

Mathematical Talk

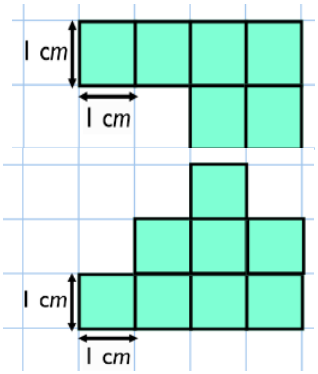
What strategy can you use to ensure you don't count a square twice?

What is the same and different about the two fields?

Are there any shapes that you wouldn't need to count every individual square to calculate the area?
If so, which shapes? Can you write some rules for this?

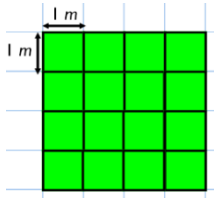
Varied Fluency

1 Work out the area of these shapes.
The shape is made of ___ squares.
The area of the shape
is ___ square centimetres or ___ cm^2
The shape is made of ___ squares.
The area of the shape
is ___ square centimetres or ___ cm^2



2 Farmer Greg and Farmer Brian are measuring their fields in square metres.

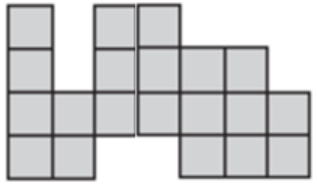
Farmer Greg



Farmer Brian

Whose field is larger?

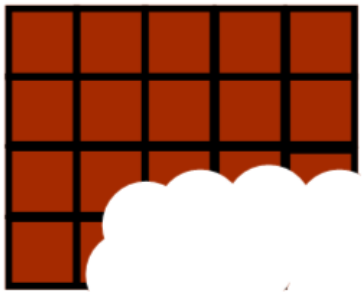
3 What is the area of the playground in square metres?
Each square is worth 1 m^2



Counting Squares

Reasoning and Problem Solving

Mikey has taken a bite of the chocolate bar.



The chocolate bar was a rectangle.
Can you work out how many squares of chocolate there were to start with?

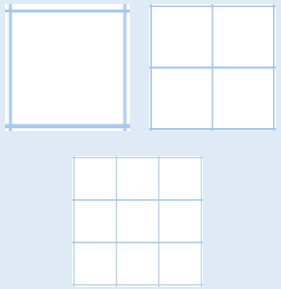
Yes
There were 20 squares. You know this because two sides of the rectangle are shown.

Always, sometimes, never

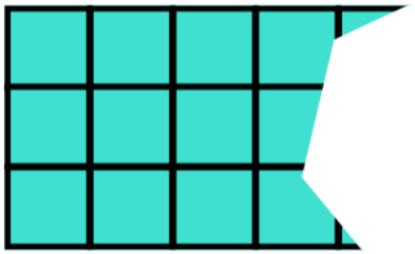
If you draw a square on squared paper it will have an even area.

Prove it

Sometimes



This rectangle has had part of it ripped off.



What is the smallest number of squares it could have had?

What is the largest number of squares it could have had if its width was no more than 5 times larger that its height?

Smallest – 15 squares

Largest – 45 squares

Making Shapes

Notes and Guidance

Children make rectilinear shapes using a given number of squares.

They build on practical experience of constructing rectilinear shapes using squares which they can handle before drawing them.

Mathematical Talk

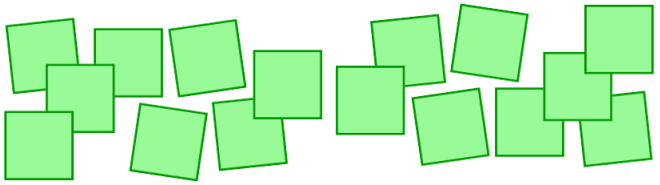
Could you overlap the squares when counting area? Explain your answer.

How many different rectilinear shapes can you make with 8 squares? Will the area always be the same? Why?

Varied Fluency

1. You have 5 square cm tiles. How many different shapes can you make? Draw the shapes on 1 cm squared paper.

2. Use 16 identical squares. Take half of the squares to make a rectangle and the other half to make a different rectilinear shape.



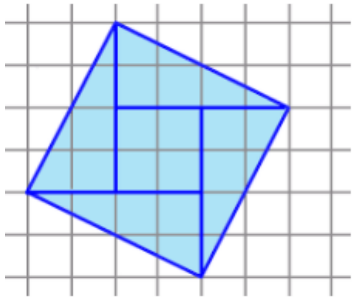
What's the same, what's different?

3. Max is building a patio made of 20 square slabs.
What could the patio look like?
Design it on squared paper.
Max is using 6 coloured square slabs in his design.
None of them are touching each other.
Where could they be in the designs you have made?

Making Shapes

Reasoning and Problem Solving

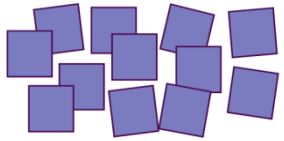
Work out the area of this shape.



Cut out the triangles and squares to make a new shape.
Can you make a rectangle?
Can you make a different rectangle?

There are 20 squares so rectangles could be 20 × 1, 10 × 2, 5 × 4

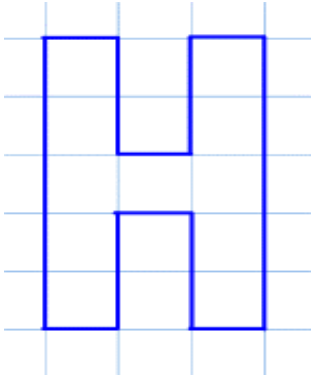
Use 12 plastic or card squares which are all exactly the same size.



How many different ways could you arrange them into a rectilinear shape with an area of 12 squares?

There are many possibilities, including rectangles of 12 × 1, 6 × 2, 3 × 4

Can you make some capital letters on squared paper using less than 20 squares?



Make a word from some and count the total area of the letters.
Which ones have a line of symmetry?
What is the area of half of each letter?

Most letters can be made. They could be drawn on large squared paper or made with square tiles.

Comparing Area

Notes and Guidance

Children compare the area of rectilinear shapes where the same size square has been used.

Children will be able to use < and > with the value of the area to compare shapes.

They will also order shapes based on their area.

Mathematical Talk

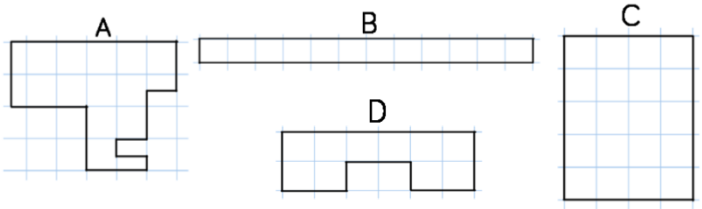
What is the area of the two rectilinear shapes? Which shape has a larger/smaller area?
How much larger/smaller is the area of the shape?
How can we order the shapes?
Can we draw a shape that would have the same area as ___?
Can we draw a shape that would have a larger/smaller area as ___?

Varied Fluency

1 Use the words 'greater than' and 'less than' to compare the rectilinear shapes.
Complete the sentence stems using < and >

____ cm^2 ◯ ____ cm^2 ____ cm^2 ◯ ____ cm^2

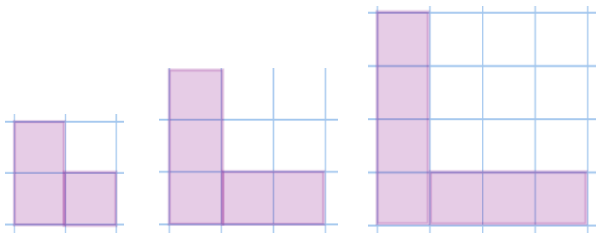
2 Put these shapes in order from largest to smallest area.



3 Here is a shape.
Draw a shape that has a smaller area but an area greater than 7 cm^2.
Draw a shape that has an equal area but looks different.

Comparing Area

Reasoning and Problem Solving



Look at the shapes. Can you spot the pattern and explain how the area is changing each time?

Draw the next shape. What is its area?

Can you predict what the area of the 6th shape would be?

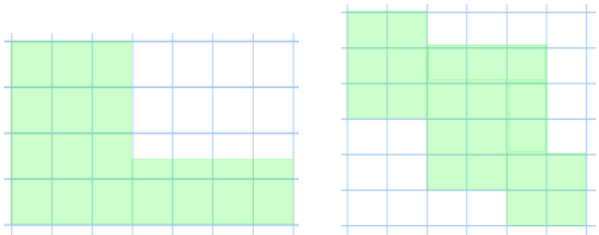
Can you spot any patterns in your answers?

The area increases by 2 each time.
The next shape will have an area of 9.
The 6th shape will have an area of 11.
The answers are all odd numbers and increase by 2 each time.

Shape C has been deleted!

Its area is bigger than B's but smaller than D's.

Can you draw what shape C could look like?



B D

Shape A went missing too.

- It had the smallest area.
- It was symmetrical.

Can you draw what it could have looked like?

Shape B has an area of 18

Shape D has an area of 23

So Shape C can be any shape that has an area of 19 to 22 squares.

Shape A must be less than 18 squares, but can be any symmetrical design.