Extension

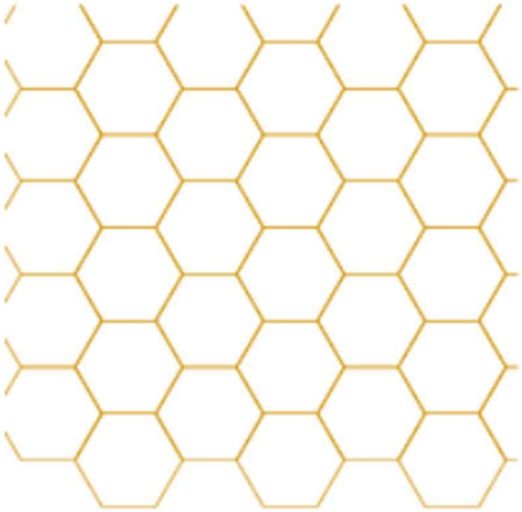
White Rose Maths

Question 1

Reasoning and Problem Solving

Each regular hexagon has a side length of 2 cm

Can you construct a shape with a perimeter of 44 cm?



Extension

White Rose Maths

Question 2

Activity

Investigate different ways you can make composite rectilinear shapes with a perimeter of 54 cm.

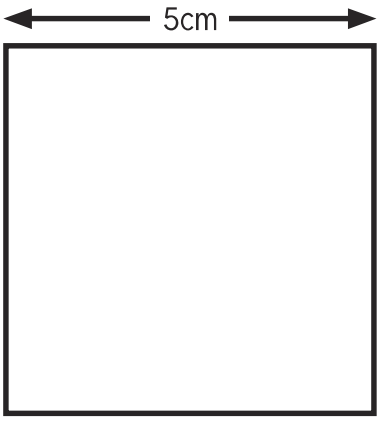
Please make sure that you print this resource at 100% so that all measurements are correct.
To do this, follow the relevant steps below.

Adobe Reader or Adobe Acrobat

- Adobe Reader is a free PDF viewer, from Adobe. To install a copy of Adobe Reader, go to https://get.adobe.com/uk/reader/.
- Once Adobe Reader is installed, open your PDF.
- Go to File>Print.
- Under 'Page Sizing & Handling', select 'Size'.
- From here, make sure that 'Actual Size' is selected.
- Print this page as a test, making sure that the shape below is the correct size once printed.
- If the test print is correct, print your PDF.

Foxit Reader

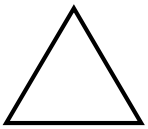
- Go to File>Print.



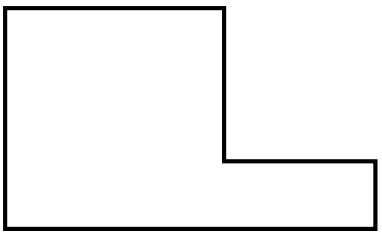
1) Find the perimeter of these shapes in centimetres.
Make sure you use a ruler carefully so that your measurements are accurate.

a) Perimeter = _____

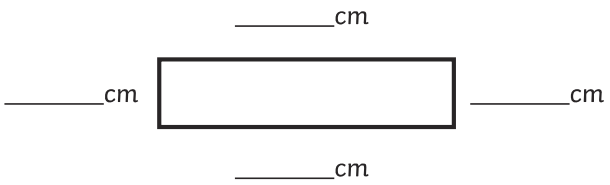
b) Perimeter = _____

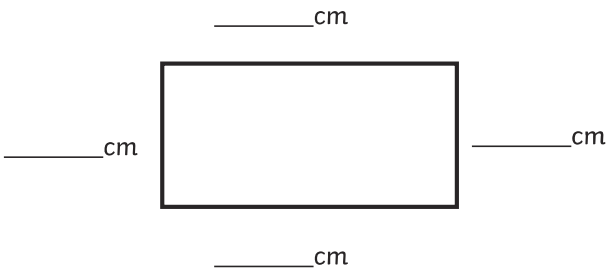


c) Perimeter = _____



2) **a)** Measure and label the sides of these rectangles in centimetres.



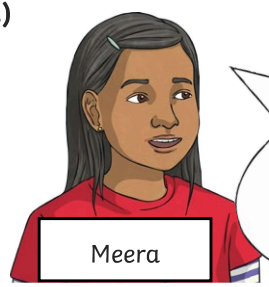


b) Use two rectangles identical to these to draw a compound rectilinear shape.

What is the perimeter of your shape?

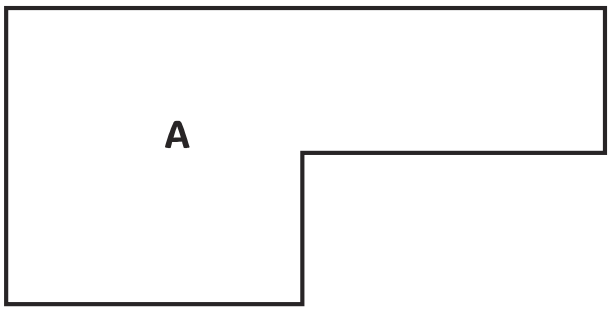
Does the perimeter change when you use the same rectangles to make a different compound rectilinear shape?

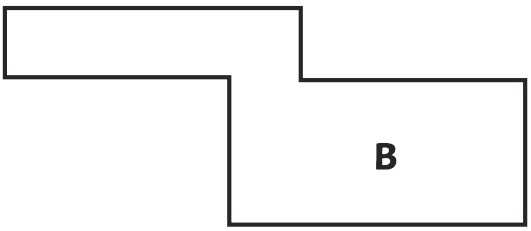
1)



Meera

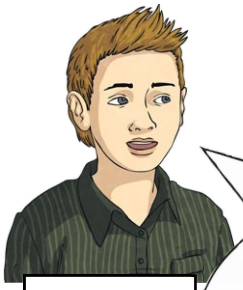
I think shape B has a longer perimeter than shape A because it has more sides.





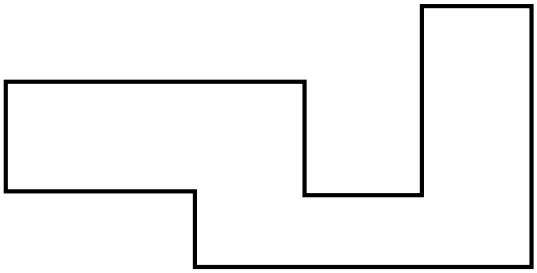
Do you agree with Meera? Explain your reasoning.

2)



David

A rectangle with one side measuring 7.5cm and the adjacent side measuring 4.5cm would have the same perimeter as this compound rectilinear shape.



Do you agree with David? Explain your reasoning.

1) How many different rectangles can you draw that have a perimeter of 60cm? (Each side length needs to be a whole number.)

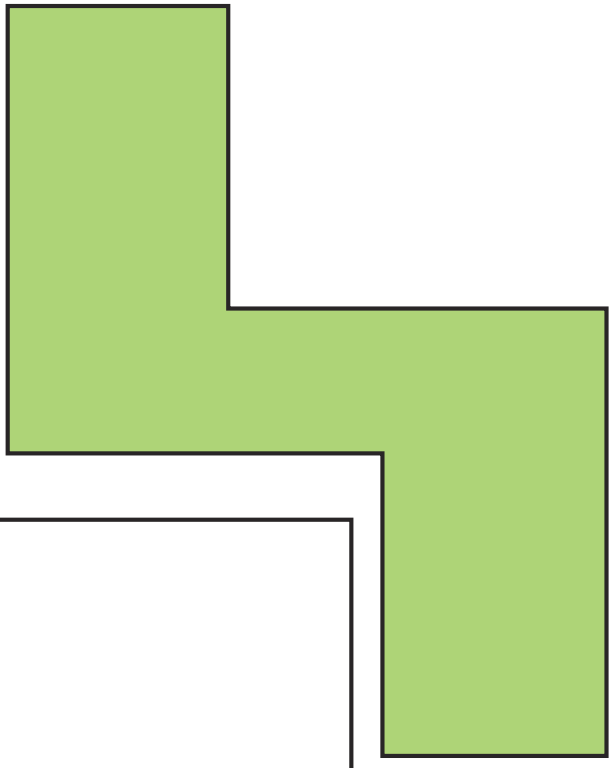
Do you have to draw all your answers or can you find a systematic way of recording the lengths of the sides?

2) Here is the shape of a field. It is drawn to a scale of 1cm:10m. This means that 1cm on the drawing represents 10m in real life.

The farmer has 250m of wooden fencing and 150m of electric fencing to use around the perimeter of the field.

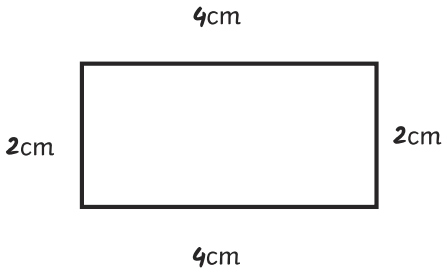
Find all the possible combinations of fencing in multiples of 5m that the farmer can use to completely enclose the field.

Find a systematic way to record your findings.

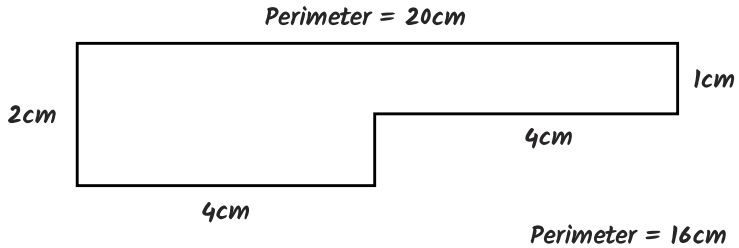


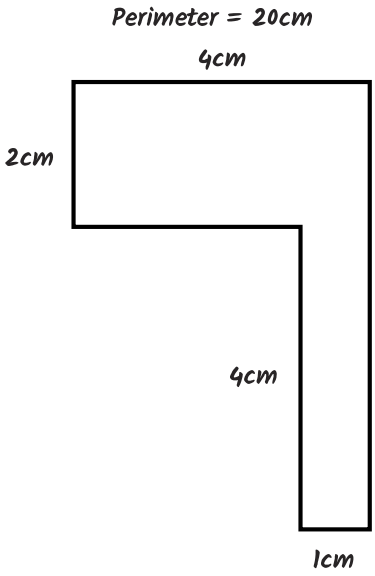
1) a) 10cm
   b) 6cm
   c) 16cm

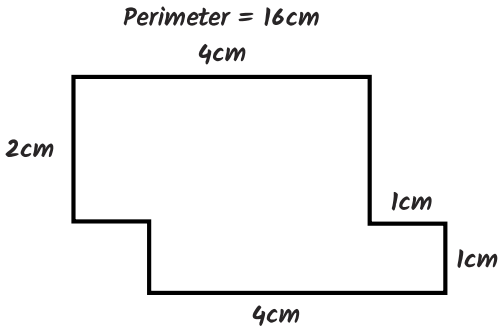
2) a)



b) Example answers:







1) Meera is incorrect as shape A has a perimeter of 24cm and shape B has a perimeter of 19cm.
2) David is correct. The compound shape has a perimeter of 24cm, which is the same as the rectangle he has described.

1) There are 15 different possible rectangles, with the following measurements: 1cm by 29cm, 2cm by 28cm, 3cm by 27cm, 4cm by 26cm, 5cm by 25cm, 6cm by 24cm, 7cm by 23cm, 8cm by 22cm, 9cm by 21cm, 10cm by 20cm, 11cm by 19cm, 12cm by 18cm, 13cm by 17cm, 14cm by 16cm and 15cm by 15cm.
2) The field has a perimeter of 37cm which scales up to 370m.

Wooden Fencing	Electric Fencing
250m	120m
245m	125m
240m	130m
235m	135m
230m	140m
225m	145m
220m	150m