

# Discussion Problems

## Step 1: Shapes Same Area

### National Curriculum Objectives:

Mathematics Year 6: (6M7a) [Recognise that shapes with the same areas can have different perimeters and vice versa](#)

### About this resource:

This resource has been designed for pupils who understand the concepts within [this step](#). It provides pupils with more opportunities to enhance their reasoning and problem solving skills through more challenging problems. Pupils can work in pairs or small groups to discuss with each other about how best to tackle the problem, as there is often more than one answer or more than one way to work through the problem.

There may be various answers for each problem. Where this is the case, we have provided one example answer to guide discussion.

We recommend self or peer marking using the answer page provided to promote discussion and self-correction.

More [Year 6 Perimeter, Area and Volume](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

# Shapes Same Area

1. Tony has created a shape using rectangles, but has hidden the design of it.

He says,



It is a compound shape that is made up of more than 2 rectangles.

One of the rectangles has a width of 3.5cm.

One of the rectangles has a length between 50mm and 135mm, which is also a whole number in cm.

The shape has total area greater than  $50\text{cm}^2$ , but less than  $100\text{cm}^2$ .

Investigate what his shape could look like. Explore different possibilities.

DP

2. Below are a selection of different measurements.

12cm

8cm

90mm

45mm

12cm

1.5cm

25mm

50mm

3cm

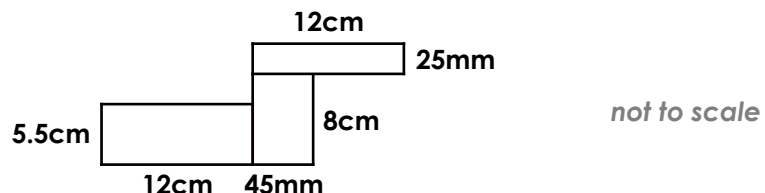
11cm

35mm

5.5cm

Use the different measurements as widths and lengths to create compound shapes that have at least 6 sides. Each measurement can be used more than once.

An example is shown below.



Investigate the possible total area that your shapes produce.

DP

# Shapes Same Area

1. Tony has created a shape using rectangles, but has hidden the design of it.

He says,



It is a compound shape that is made up of more than 2 rectangles.

One of the rectangles has a width of 3.5cm.

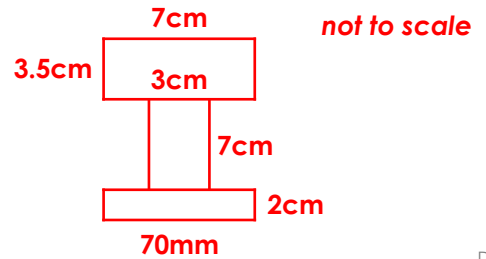
One of the rectangles has a length between 50mm and 135mm, which is also a whole number in cm.

The shape has total area greater than  $50\text{cm}^2$ , but less than  $100\text{cm}^2$ .

Investigate what his shape could look like. Explore different possibilities.

**Various answers, for example: as shown below.**

**The total area for the shape shown is  $59.5\text{cm}^2$ .**



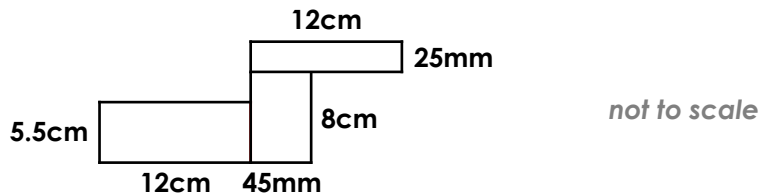
DP

2. Below are a selection of different measurements.

12cm	8cm	90mm	45mm	12cm	1.5cm
25mm	50mm	3cm	11cm	35mm	5.5cm

Use the different measurements as widths and lengths to create compound shapes that have at least 6 sides. Each measurement can be used more than once.

An example is shown below.



Investigate the possible total area that your shapes produce.

**Various answers, for example: for the shape shown above, the total area is  $132\text{cm}^2$ .**

DP