

# Reasoning and Problem Solving

## Step 4: Perimeter of Rectilinear Shapes

### National Curriculum Objectives:

Mathematics Year 4: (4M7a) [Measure and calculate the perimeter of a rectilinear figure \(including squares\) in centimetres and metres](#)

### Differentiation:

Questions 1, 4 and 7 (Reasoning)

**Developing** Explain which shape is the odd one out by calculating the perimeter of each shape. Includes single-digit numbers. Measurements are given in cm.

**Expected** Explain which shape is the odd one out by calculating the perimeter of each shape. Includes single-digit numbers and missing measurements. Measurements are given in cm or mm (no conversion needed).

**Greater Depth** Explain which shape is the odd one out by calculating the perimeter of each shape. Includes some double-digit numbers and missing measurements. Measurements are given in cm and mm (conversion needed).

Questions 2, 5 and 8 (Problem Solving)

**Developing** Using the perimeter, find the missing measurement for up to two sides of the rectilinear shape. Includes single-digit numbers. Measurements are given in cm.

**Expected** Using the perimeter, find the measurements for each side of the rectilinear shape with up to three measurements given. Includes single-digit numbers. Measurements are given in cm and mm (no conversion needed).

**Greater Depth** Using the perimeter, find the measurements for each side of the rectilinear shape with up to three measurements given. Includes some double-digit numbers. Measurements are given in cm and mm (conversion needed).

Questions 3, 6 and 9 (Reasoning)

**Developing** Explain if a statement about the perimeter of a shape is correct. No missing measurements. Measurements are given in cm.

**Expected** Explain whether a statement is correct. Using a rectilinear shape with up to two missing measurements. Includes single-digit numbers. Measurements are given in cm or mm (no conversion needed).

**Greater Depth** Explain if a statement about the perimeter of a shape with three or more missing measurements is correct. Includes some double-digit numbers. Measurements are given in cm and mm (conversion needed).

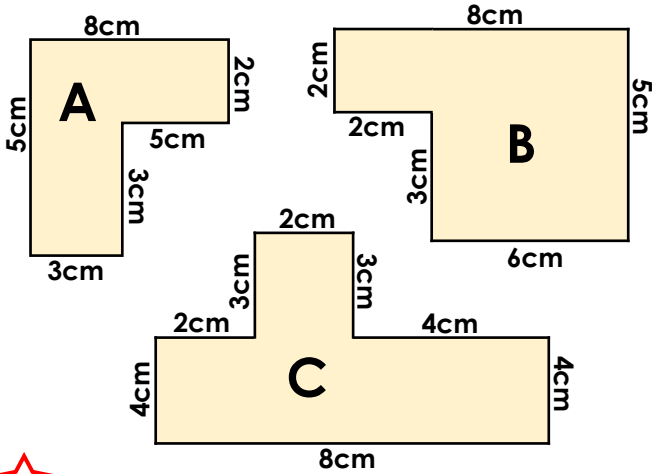
More [Year 4 Length and Perimeter](#) resources.

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# Perimeter of Rectilinear Shapes

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1a. Which shape is the odd one out? Explain how you know.

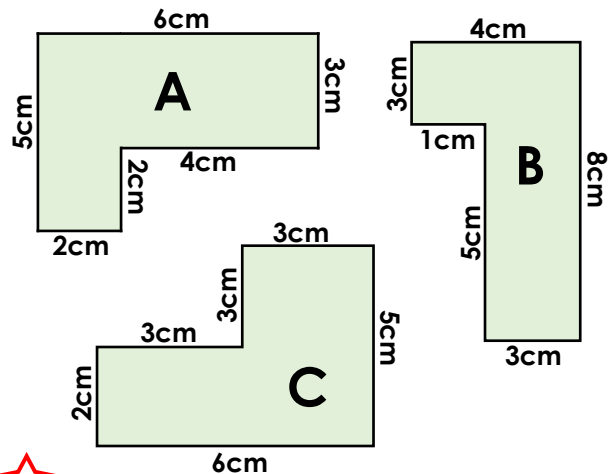


Not to scale



R

1b. Which shape is the odd one out? Explain how you know.

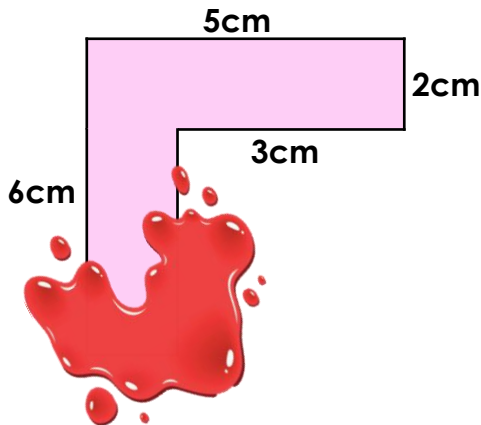


Not to scale



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2a. The six sided shape below has a perimeter of 22cm. What are the possible missing measurements?

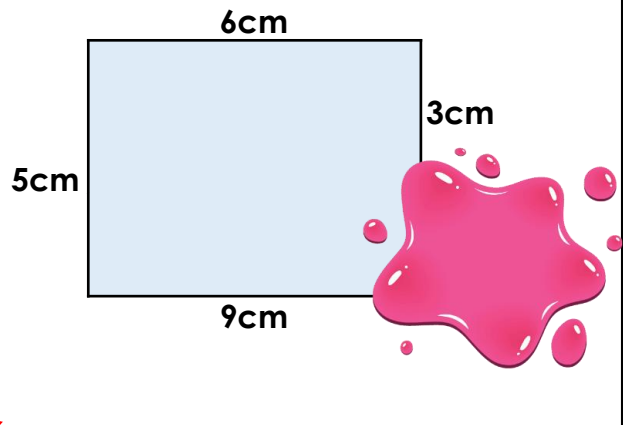


Not to scale



PS

2b. The six sided shape below has a perimeter of 28cm. What are the possible missing measurements?

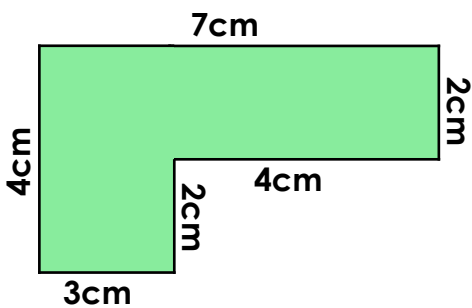


Not to scale



PS

3a. Ben thinks that this shape has a perimeter of 32cm.

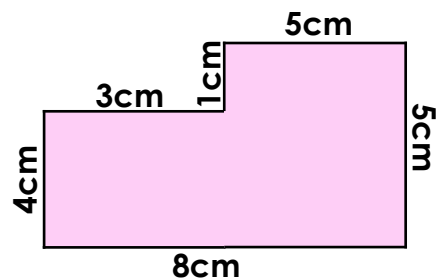


Not to scale



R

3b. Carly thinks that this shape has a perimeter of 30cm.



Not to scale



R

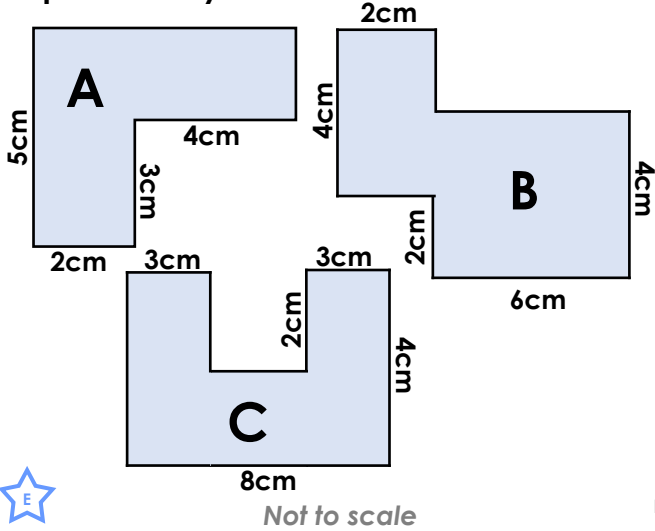
Do you agree? Convince me.

Do you agree? Convince me.

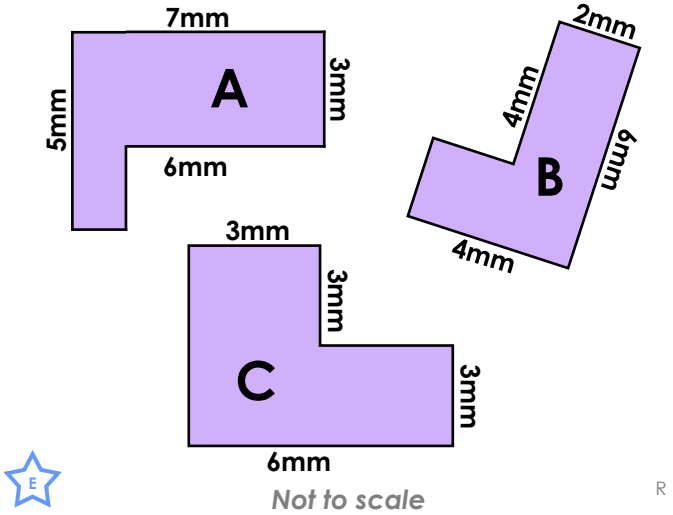
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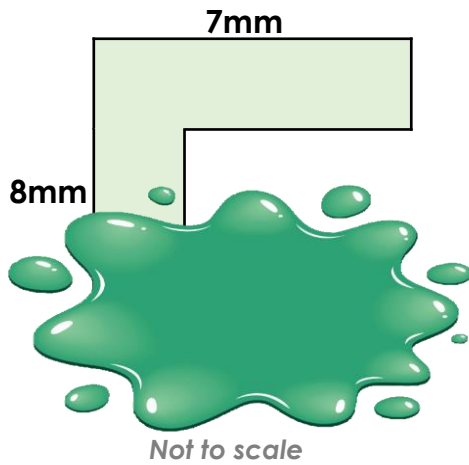
4a. Which shape is the odd one out? Explain how you know.



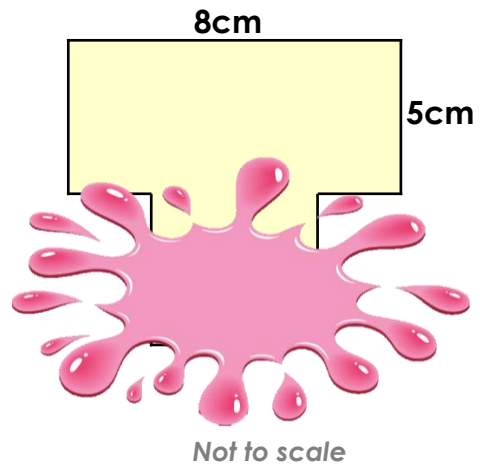
4b. Which shape is the odd one out? Explain how you know.



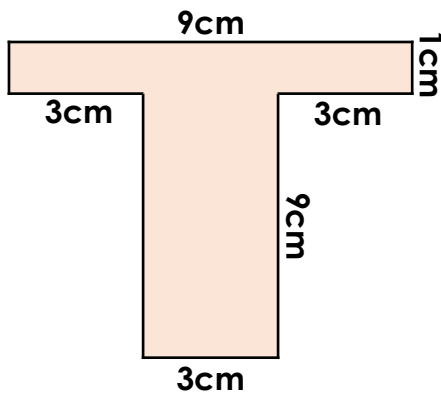
5a. The eight sided shape below has a perimeter of 38mm. What are the possible missing measurements?



5b. The eight sided shape below has a perimeter of 34cm. What are the possible missing measurements?

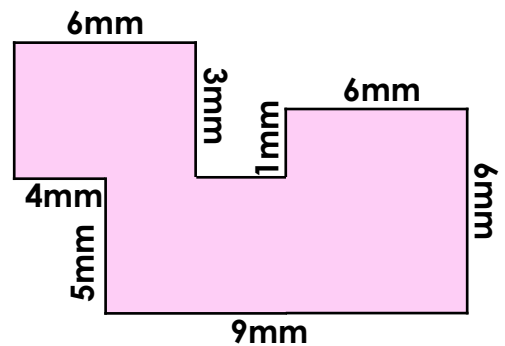


6a. Harry thinks that this shape has a perimeter of 40cm.



Do you agree? Convince me.

6b. Carly thinks that this shape has a perimeter of 46mm.

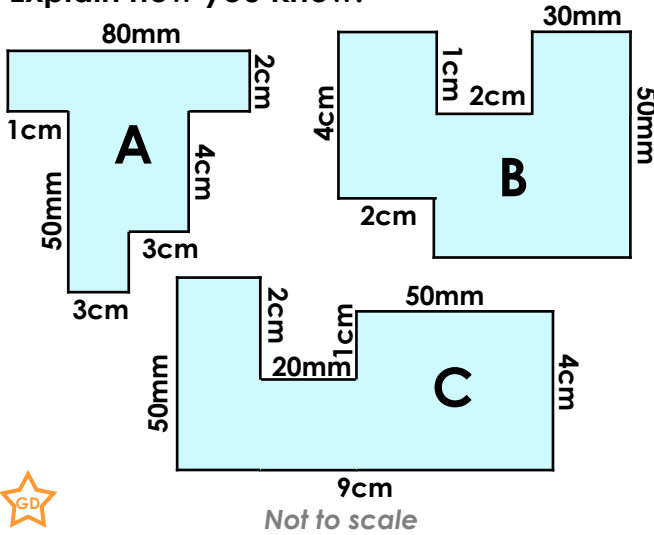


Do you agree? Convince me.

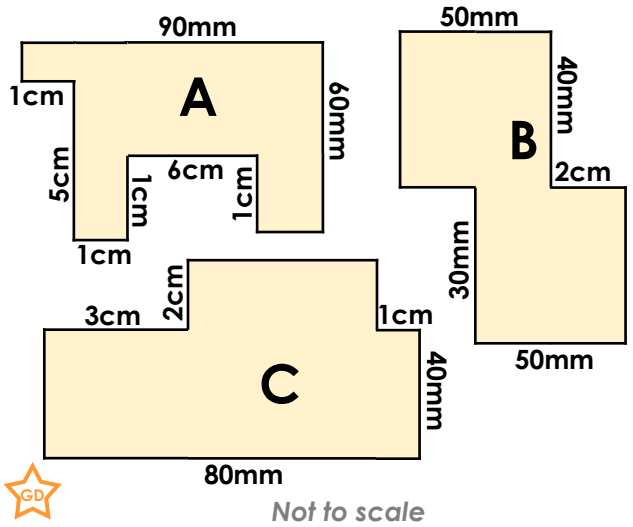
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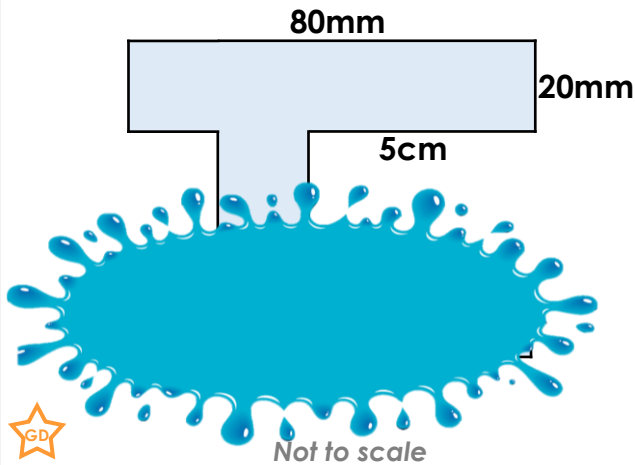
7a. Which shape is the odd one out? Explain how you know.



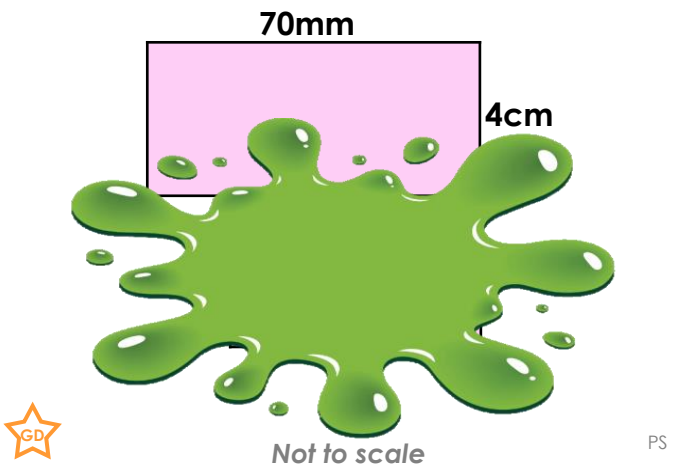
7b. Which shape is the odd one out? Explain how you know.



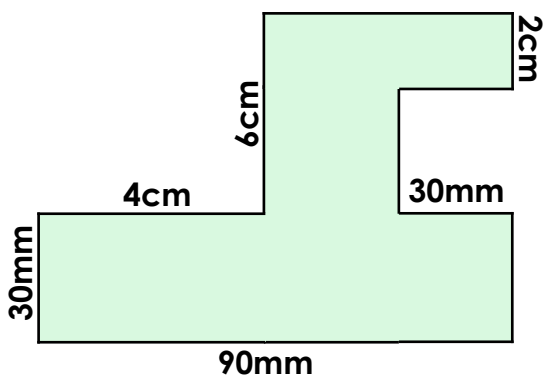
8a. The twelve sided shape below has a perimeter of 44cm. What are the possible missing measurements?



8b. The ten sided shape below has a perimeter of 32cm. What are the possible missing measurements?

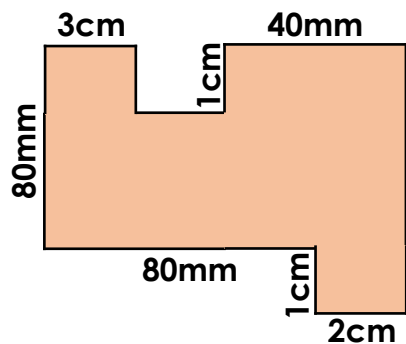


9a. Imran thinks that this shape has a perimeter of 40cm.



Do you agree? Convince me.

9b. Nina thinks that this shape has a perimeter of 42cm.



Do you agree? Convince me.

## Reasoning and Problem Solving Perimeter of Rectilinear Shapes

### Developing

- 1a. C. The perimeter of C = 30cm, but both A and B have a perimeter of 26cm.  
2a. 4cm and 2cm.  
3a. No; when added together all the sides total 22cm.

### Expected

- 4a. A. The perimeter of A = 22cm, but both B and C have a perimeter of 28cm.  
5a. Various answers, for example: 4mm, 4mm, 4mm, 2mm, 2mm and 7mm.  
6a. No; the missing measurements are 9cm and 1cm, so the perimeter is 38cm.

### Greater Depth

- 7a. B. The perimeter of B = 26cm, but both A and C have a perimeter of 30cm.  
8a. Various answers, for example: 3cm, 5cm, 2cm, 8cm, 2cm, 2cm, 3cm, 2cm, 2cm.  
9a. No; the missing measurements are 5cm, 3cm, 4cm and 3cm, so the perimeter is 42cm.

## Reasoning and Problem Solving Perimeter of Rectilinear Shapes

### Developing

- 1b. B. The perimeter of B = 24cm, but both A and C have a perimeter of 22cm.  
2b. 3cm and 2cm.  
3b. No; when added together all the sides total 26cm.

### Expected

- 4b. B. The perimeter of B = 20mm, but both A and C have a perimeter of 24mm.  
5b. Various answers, for example: 5cm, 1cm, 1cm, 6cm, 4cm and 4cm.  
6b. No; the missing measurements are 3mm and 1mm so the perimeter is 44mm.

### Greater Depth

- 7b. A. The perimeter of A = 32cm, but both B and C have a perimeter of 28cm.  
8b. Various answers, for example: 2cm, 2cm, 2cm, 2cm, 3cm, 4cm, 2cm, 4cm.  
9b. No; the missing measurements are 1cm, 3cm and 9cm, so the perimeter is 40cm.