

Reasoning and Problem Solving

Step 3: Calculate Perimeter

National Curriculum Objectives:

Mathematics Year 5: (5M7a) [Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres](#)

Differentiation:

Questions 1, 4 and 7 (Problem Solving)

Developing Investigate the perimeter of a square using the given information. Whole numbers only and no conversion of units.

Expected Investigate the perimeter of a shape using the given information. Using knowledge of all table facts and whole numbers.

Greater Depth Investigate the perimeter of a shape using the given information. using knowledge of all table facts and decimal numbers.

Questions 2, 5 and 8 (Problem Solving)

Developing Calculate a new perimeter when a shape is altered from square to rectangle, using whole numbers.

Expected Calculate a new perimeter when a shape is altered, using 2-digits and some decimals.

Greater Depth Calculate a new perimeter when a shape is altered using multiplication and including decimals and fractions.

Questions 3, 6 and 9 (Reasoning)

Developing Use knowledge of calculating the perimeter of a shape to explain why an answer is or is not possible. Includes whole numbers with no conversion of units.

Expected Use knowledge of calculating the perimeter of a shape to explain why an answer is or is not possible. Includes some fractions and decimals with no conversion of units.

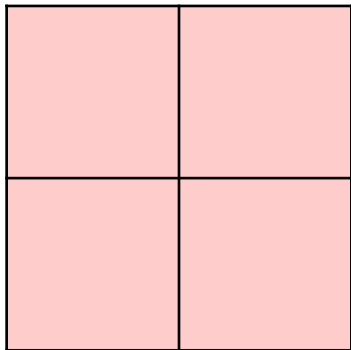
Greater Depth Use knowledge of calculating the perimeter of a shape to explain why an answer is or is not possible. Includes fractions, decimals and some conversion of units.

More [Year 5 and Year 6 Perimeter, Area and Volume](#) resources.

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

Calculate Perimeter

1a. This shape has been made using identical squares. One square has a perimeter of 12cm. What is the perimeter of the whole shape?

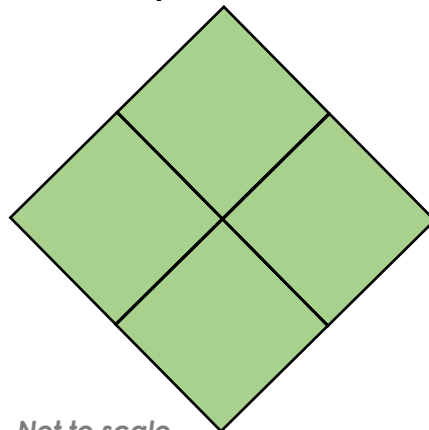


Not to scale

5 PS

Calculate Perimeter

1b. This shape has been made using identical squares. One square has a perimeter of 20cm. What is the perimeter of the whole shape?



Not to scale

5 PS

2a. Mr Barnes needs to increase the size of his allotment. Currently the allotment is square shaped and has a perimeter of 12m. It needs to be turned into a rectangle with a perimeter of 20m.

What could the dimensions of his new allotment be?



5 PS

2b. The council need to increase the size of a local playground. Currently the playground is square shaped and has a perimeter of 16m. It needs to be turned into a rectangle with a perimeter of 24m.

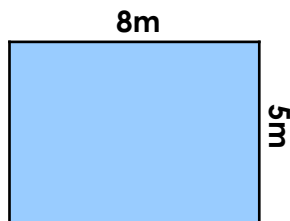
What could the dimensions of the new playground be?



5 PS

3a. Cherry is working out the perimeter of this shape.

The perimeter is 40m.



Is Cherry right? Explain your answer.

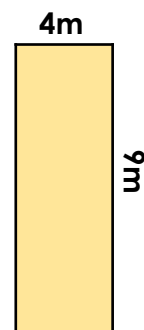


Not to scale

5 R

3b. Oliver is working out the perimeter of this shape.

The perimeter is 26m.



Is Oliver right? Explain your answer.

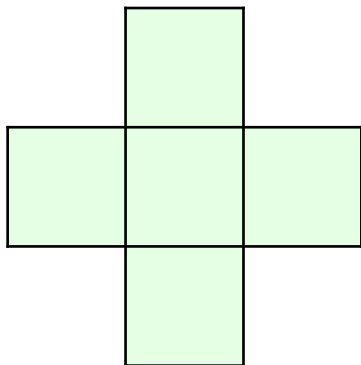


Not to scale

5 R

Calculate Perimeter

4a. This shape has been made using identical squares. One square has a perimeter of 32cm. What is the perimeter of the whole shape?

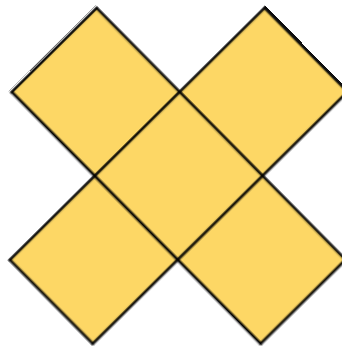


Not to scale

5 PS

Calculate Perimeter

4b. This shape has been made using identical squares. The middle square has a perimeter of 48cm. What is the perimeter of the whole shape?



Not to scale

5 PS

5a. A supermarket needs to increase the size of its trolley bay. Currently the trolley bay is square shaped and has a perimeter of 48m. It needs to be turned into a rectangle with a perimeter of 60m.

What could the dimensions of the new trolley bay be? Can you include a decimal?



5 PS

5b. A school needs to increase the size of the staff car park. Currently the car park is a rectangle with a perimeter of 30m. It needs to be a rectangle with a perimeter that is three times bigger.

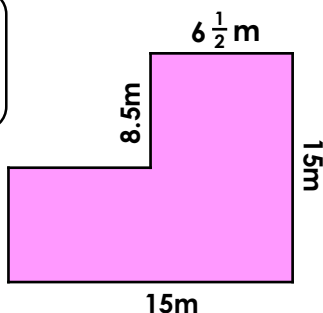
What could the dimensions of the new car park be? Can you include a decimal?



5 PS

6a. Lucy says,

The perimeter is 45m.



Is Lucy right? Explain your answer.

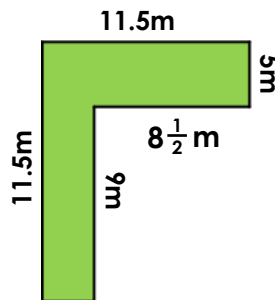


Not to scale

5 R

6b. Tahir says,

The perimeter is 45.5cm.



Is Tahir right? Explain your answer.

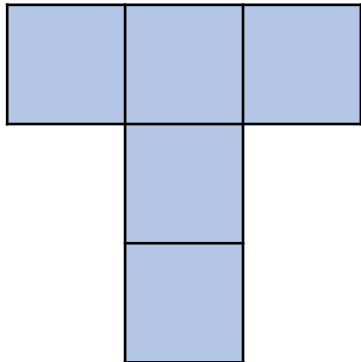


Not to scale

5 R

Calculate Perimeter

7a. This shape has been made using identical squares. One square has a perimeter of 82cm. What is the perimeter of the whole shape?

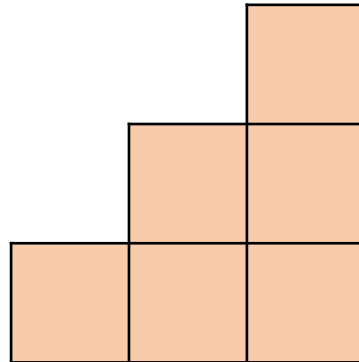


Not to scale

5 PS

Calculate Perimeter

7b. This shape has been made using identical squares. One square has a perimeter of 2cm. What is the perimeter of the whole shape?

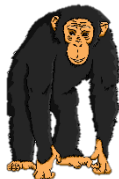


Not to scale

5 PS

8a. Chessup Zoo needs to increase the size of its Chimpanzee enclosure. Currently the enclosure is square shaped and has a perimeter of 200m. It needs to be turned into a rectangle with a perimeter of 600.5m.

Investigate the possible dimensions for the new enclosure. Can you include a fraction?



5 PS

8b. A shopping centre needs to increase the size of its eating area. Currently the eating area is square shaped and has a perimeter of 242m. It needs to be turned into a rectangle with a perimeter that is twice as big.

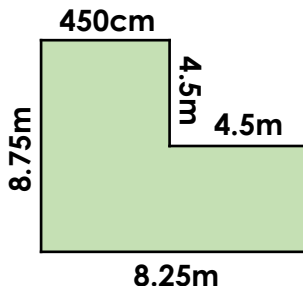
Investigate the possible dimensions for the new eating area. Can you include a fraction?



5 PS

9a. Colin says,

The perimeter is $34\frac{3}{4}$ m.



Is Colin right? Explain your answer.

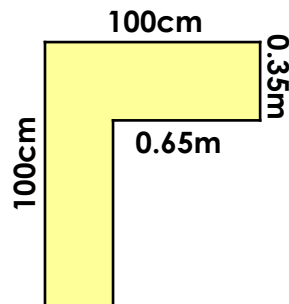


Not to scale

5 R

9b. Connie says,

The perimeter is 201m.



Is Connie right? Explain your answer.



Not to scale

5 R

Reasoning and Problem Solving Calculate Perimeter

Developing

1a. **24cm**

2a. **Various answers, for example:**

$$7m + 3m + 7m + 3m$$

3a. **No; the missing sides are 5m and 8m, so the perimeter is 26m.**

Expected

4a. **96cm**

5a. **Various answers, for example:**

$$12.5m + 17.5m + 12.5m + 17.5m$$

6a. **No; the missing sides are 6.5m and 8.5m, so the perimeter is 60m.**

Greater Depth

7a. **246cm**

8a. **Various answers, for example:**

$$200.25m + 100m + 200.25m + 100m$$

9a. **Yes; the missing side is 4.25m, so the perimeter is 34.75m.**

Reasoning and Problem Solving Calculate Perimeter

Developing

1b. **40cm**

2b. **Various answers, for example:**

$$8m + 4m + 8m + 4m$$

3b. **Yes; the missing sides are 4cm and 9m, so the perimeter is 26cm.**

Expected

4b. **144cm**

5b. **Various answers, for example:**

$$34.5m + 10.5m + 34.5m + 10.5m$$

6b. **No; the missing side is 3m, so the perimeter is 48.5m.**

Greater Depth

7b. **6cm**

8b. **Various answers, for example:**

$$141.5m + 100.5m + 141.5m + 100.5m$$

9b. **No; the missing sides are 0.65m and 0.35m, so the perimeter is 4m.**