# Worksheet - Perimeter and area

Year: Year 4 · 20

Show your working.

## Question 1

**Question 1 – Perimeter of rectangles** *(Section A · Practice)*

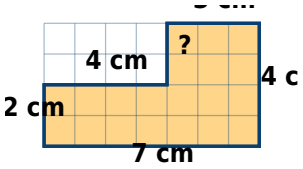
Find the perimeter of each rectangle. Show your working.

a. A rectangle 8 cm long and 5 cm wide.
b. A rectangle 12 m long and 7 m wide.
c. A square with sides of 9 cm.
d. A rectangle 15 cm long and 9 cm wide.

## Question 2

**Question 2 – Perimeter of an L-shape** *(Section A · Practice)*

Look at the shape. Each side is shown. Find the missing sides and then the perimeter.

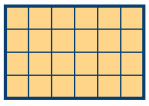



a. Find the length of the side marked ?.
b. Work out the perimeter of the shape.
c. What is the perimeter of the smallest rectangle that goes round the shape?

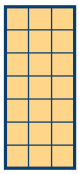
## Question 3

**Question 3 – Counting squares** *(Section A · Practice)*

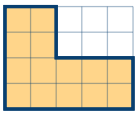
Each small square has an area of 1 cm². Count the squares to find the area of each shape.



a. A rectangle 6 squares wide and 4 squares high:



b. A rectangle 3 squares wide and 7 squares high:



c. This L-shaped figure:

## Question 4

**Question 4 – Area of rectangles** *(Section A · Practice)*

Use the rule area = length × width to find the area of each rectangle.

a. 9 cm by 4 cm
b. 12 m by 6 m
c. 15 cm by 8 cm
d. A square with sides 11 m

## Question 5

**Question 5 – Missing sides** *(Section A · Practice)*

Find the missing length in each rectangle.

a. The area is 36 cm² and the length is 9 cm. What is the width?
b. The perimeter is 34 m and the width is 5 m. What is the length?
c. The area is 72 m² and the width is 8 m. What is the length?
d. The perimeter of a square is 28 cm. How long is one side?

## Question 6

**Question 6 – Same perimeter, different area** *(Section A · Practice)*

Here are rectangles that all have a perimeter of 24 cm. The lengths are given in the table. The width of each rectangle is half of 24 minus the length.

| Length | Width | Area |
|---|---|---|
| 11 cm | ? | ? |
| 9 cm | ? | ? |
| 6 cm | ? | ? |

a. Complete the table.
b. Which rectangle has the biggest area? What kind of rectangle is it?

c. What is the area of the rectangle with length 11 cm compared with 6 cm?

## Question 7

**Question 7 – The garden fence** *(Section B · Real-life practice)*

Mr Patel is putting a fence round his rectangular garden. The garden is 14 m long and 9 m wide. Fence panels are 2 m long and cost £18 each.

a. What is the perimeter of the garden?
b. How many fence panels does he need?
c. What is the total cost of the panels?
d. He decides to leave a 2 m gap for a gate. How many fewer panels does he need? What does he now pay for the panels?

## Question 8

**Question 8 – Carpet for the bedroom** *(Section B · Real-life practice)*

Layla's bedroom is a rectangle 5 m long and 4 m wide. She wants new carpet for the whole floor and a strip of wood, called a skirting board, round the edge of the room.

a. What is the area of the floor?
b. Carpet costs £12 per square metre. What does the carpet cost?
c. What length of skirting board goes round the room? (Ignore the door.)
d. Skirting board costs £3 per metre. What does it cost?

## Question 9

**Question 9 – Picture frame** *(Section B · Real-life practice)*

Sam makes a wooden picture frame for a photograph. The photograph is 20 cm long and 15 cm wide. The frame goes round the edge of the photograph.

a. What is the area of the photograph?
b. What length of wood goes round the photograph?
c. Sam wants to put a gold ribbon round the edge of the photograph. The ribbon costs 20p per 10 cm. How much does it cost?
d. Sam puts the photograph on a square card with sides of 25 cm. What is the area of the card? How much of the card is not covered by the photograph?

## Question 10

**Question 10 – School playground** *(Section B · Real-life practice)*

The school playground is a rectangle 40 m long and 25 m wide. Part of it, a square of side 10 m, is a sandpit.

a. What is the area of the whole playground?

b. What is the area of the sandpit?
c. What area is left for the children to play on?
d. A teacher walks round the edge of the playground twice every morning. How far does she walk?

## Question 11

**Question 11 – Tiling the bathroom** *(Section B · Real-life practice)*

Mrs Evans is tiling the floor of her bathroom with square tiles. The floor is 3 m long and 2 m wide. Each tile has a side of 50 cm, so 4 tiles cover 1 square metre.

a. What is the area of the floor in square metres?
b. How many tiles does she need to cover the floor?
c. Tiles are sold in boxes of 10 tiles. How many boxes does she need to buy?
d. A box costs £15. What is the cost of the boxes? How many tiles will be left over?

## Question 12

**Question 12 – Vegetable beds** *(Section B · Real-life practice)*

Mr Jones has two rectangular vegetable beds. Bed A is 8 m by 3 m. Bed B is 6 m by 4 m.

a. Find the area of each bed.
b. Which bed has the bigger area? By how much?
c. Find the perimeter of each bed.
d. Mr Jones says "The bed with the bigger area also has the bigger perimeter." Is he right?

## Question 13

**Question 13 – Football pitch and the pool** *(Section B · Real-life practice)*

A school football pitch is a rectangle 60 m long and 40 m wide. The school swimming pool is a rectangle 25 m long and 10 m wide. A rope round the pool is held up by posts. A post is placed every 5 m.

a. What is the perimeter of the football pitch?
b. What is the area of the football pitch?
c. What is the perimeter of the pool?
d. How many posts are needed around the pool?

## Question 14

**Question 14 – Building a sandpit** *(Section B · Real-life practice)*

The school is building a rectangular sandpit 4 m long and 3 m wide. A wooden border

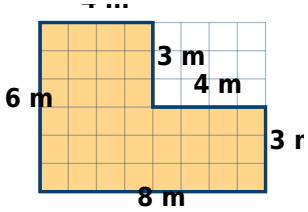
goes round the edge and the pit is filled with sand 1 square metre at a time.

a. What is the area of the sandpit?
b. What length of wooden border goes round the edge?
c. Wood costs £5 per metre. What does the border cost?
d. One bag of sand covers 2 m². How many bags are needed?

## Question 15

**Question 15 – The L-shaped room** *(Section C · Problem solving)*

A living room is L-shaped. The plan is shown. All the corners are right angles.




a. Check the perimeter: the sides are 8, 3, 4, 3, 4 and 6 m. What is the perimeter?
b. Split the room into two rectangles and find the area of each.
c. What is the area of the whole room?
d. Carpet costs £14 per square metre. What does it cost to carpet the whole room?
e. A skirting board costs £4 per metre. What does it cost to put skirting boards round the whole room? Ignore doors.

## Question 16

**Question 16 – Designing a garden** *(Section C · Problem solving)*

Zara wants to make a rectangular vegetable patch using 24 metres of fencing for the perimeter. The sides must be a whole number of metres.

a. List all the possible rectangles (length and width) with a perimeter of 24 m. Use a table.
b. Find the area of each rectangle.
c. Which rectangle gives the biggest area? Which gives the smallest area?
d. Zara needs an area of at least 30 m². Which rectangles are big enough?
e. Zara chooses a rectangle that is 8 m long. What is the area? What does 1 m² of soil cost if the whole patch costs £128?

## Question 17

**Question 17 – Painting the wall** *(Section C · Problem solving)*

Ben is painting a wall in his bedroom. The wall is 4 m wide and 3 m high. There is a rectangular window 2 m wide and 1 m high in the wall, which Ben will not paint. One tin of paint covers 6 m².

a. What is the area of the whole wall?
b. What is the area of the window?
c. What area of wall does Ben need to paint?
d. How many tins of paint does he need?
e. Each tin costs £8. What is the total cost?

## Question 18

**Question 18 – Farmer's fields** *(Section C · Problem solving)*

A farmer has two fields. Field A is a rectangle 90 m by 40 m. Field B is a square with sides of 60 m.

a. Work out the area of each field.
b. Which field has the bigger area? By how much?
c. Work out the perimeter of each field.
d. A fence costs £6 per metre. Which field is cheaper to fence? How much cheaper?
e. Sheep need 100 m² of grass each. How many sheep can graze in the bigger field?

## Question 19

**Question 19 – Posters for the school fair** *(Section C · Problem solving)*

The school council makes posters. Each poster is a rectangle 60 cm long and 40 cm wide. They put a border of ribbon round the edge. They make 8 posters.

| Item | Price |
|---|---|
| Ribbon | £1.50 per metre |
| Card for one poster | £0.80 |
| Glitter pens (set) | £4.00 |

a. What is the perimeter of one poster, in cm and in metres?
b. How much ribbon is needed for 8 posters? Give your answer in metres.
c. What is the cost of the ribbon?
d. What is the total cost of the card and the ribbon for 8 posters?
e. The council has £25. How much is left after buying the card, the ribbon and one set of glitter pens?

## Question 20

**Question 20 – Challenge: rectangles with area 36** *(Section D · Challenge)*

Find all the rectangles with whole-number sides and an area of 36 cm². (A 4 by 9 rectangle is the same as a 9 by 4 rectangle.)

a. List them all and find the perimeter of each.
b. Which has the smallest perimeter? What shape is it?
c. A farmer has 36 square metres of land and wants to use as little fence as

possible. Which rectangle should he use? How much fence does he need?