



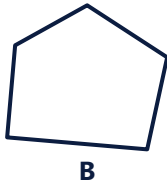
- 1** Write down the mathematical name of a polygon with exactly five sides.

(1 mark)

A polygon with five sides is called a pentagon
pentagon

- 2** Here are four polygons, A, B, C and D.

For each polygon, write down its name and whether it is regular or irregular.



(4 marks)

count the sides, then check if all sides and angles are equal

A: 6 sides, all equal

A regular hexagon

B: 5 sides, not equal

B irregular pentagon

C: 3 sides, all equal

C regular (equilateral) triangle

D: 6 sides, not equal

D irregular hexagon

3

A rectangle has length 9 cm and width 4 cm.

- Work out the area of the rectangle.
- Work out the perimeter of the rectangle.

(2 marks)

Perimeter is the total distance around the boundary. Area counts the unit squares inside the shape, so its units are squared

$$\text{Area} = \text{length} \times \text{width} = 9 \times 4 = 36 \text{ cm}^2$$

$$\text{Perimeter} = 2 \times (9 + 4) = 2 \times 13 = 26 \text{ cm}$$

4

- A regular octagon has sides of length 7 cm. Work out its perimeter.
- Work out the perimeter of the pentagon in the diagram.
- A regular hexagon has a perimeter of 45 cm. Work out the length of one side.

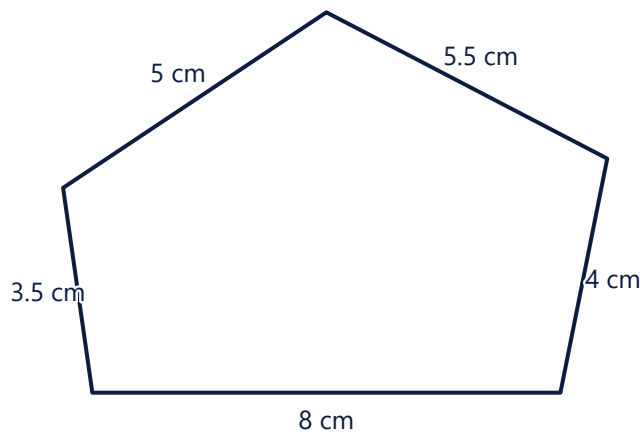


Diagram NOT accurately drawn

(3 marks)

a) 8 equal sides

$$8 \times 7 = 56$$

56 cm

b) add all 5 sides

$$8 + 4 + 5.5 + 5 + 3.5 = 26$$

26 cm

c) 6 equal sides

$$45 \div 6 = 7.5$$

7.5 cm

- 5 A triangle has base 12 cm and perpendicular height 5 cm.

Work out the area of the triangle.

(2 marks)

Two identical copies of a triangle make a parallelogram with the same base and perpendicular height. The triangle has half that area

Area of a triangle = $\frac{1}{2} \times \text{base} \times \text{perpendicular height}$

$$\text{Area} = \frac{1}{2} \times 12 \times 5 = 30 \text{ cm}^2$$

30 cm²

- 6 The diagram shows a parallelogram A and a trapezium B.

a. Work out the area of parallelogram A.

b. Work out the area of trapezium B.

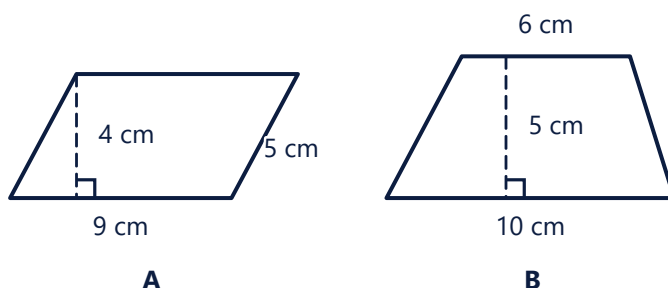


Diagram NOT accurately drawn

(4 marks)

a) base $\times$ perpendicular height

$$A = 9 \times 4$$

$$A = 36$$

36 cm²

b) half the sum of the parallel sides $\times$ height

$$A = \frac{1}{2} \times (10 + 6) \times 5$$

$$A = 8 \times 5$$

$$A = 40$$

40 cm²

7

An L-shape is made by joining a rectangle 8 cm by 5 cm to a rectangle 4 cm by 3 cm. The two rectangles do not overlap.

Work out the total area of the L-shape.

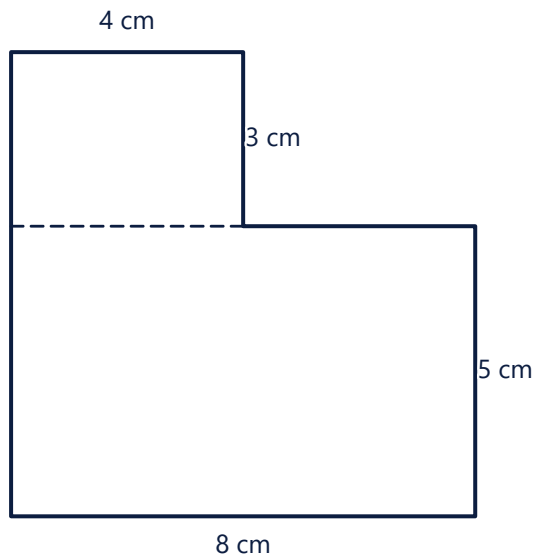


Diagram NOT accurately drawn

(2 marks)

$$\text{Area of the first rectangle} = 8 \times 5 = 40 \text{ cm}^2$$

$$\text{Area of the second rectangle} = 4 \times 3 = 12 \text{ cm}^2$$

$$\text{Total area} = 40 + 12 = 52 \text{ cm}^2$$

$$\boxed{52 \text{ cm}^2}$$

8

An L-shape is made by removing a rectangle 3 cm by 2 cm from one corner of a rectangle 8 cm by 6 cm.

Work out the perimeter of the L-shape.

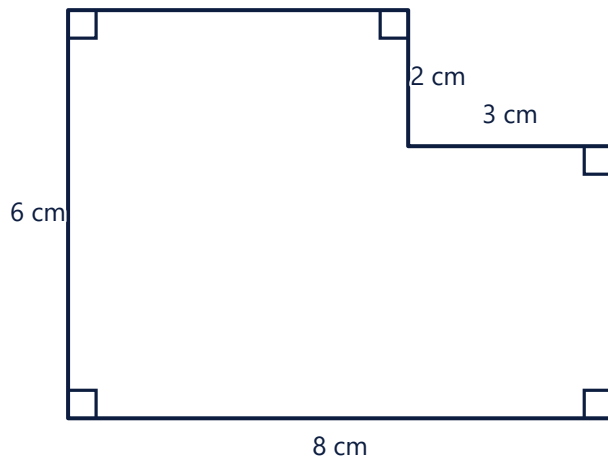


Diagram NOT accurately drawn

(3 marks)

The two cut edges of the removed corner are 3 cm and 2 cm long

The missing parts of the original sides are also 3 cm and 2 cm, so the total distance around the L-shape is the same as the perimeter of the full 8 cm by 6 cm rectangle

$$\text{Perimeter} = 8 + 6 + 3 + 2 + (8 - 3) + (6 - 2) = 8 + 6 + 3 + 2 + 5 + 4 \\ = 28 \text{ cm}$$

Check

$$2 \times (8 + 6) = 28 \text{ cm}$$

28 cm

The diagram shows a shape made from rectangles. All the corners are right angles.

-
- The diagram shows a composite figure made of two rectangles. The top rectangle has a width of 7 cm and a height of 9 cm. The bottom rectangle has a width of 12 cm and a height of 5 cm. A dashed green line is drawn from the top-left corner of the bottom rectangle to the top-right corner of the top rectangle, indicating a horizontal segment of 7 cm.

(4 marks)

$$12 - 7 = 5$$

$$9 - 5 = 4$$

$$\rho = 12 + 5 + 5 + 4 + 7 + 9$$

$\rho = 42$

b) split into two rectangles

$$12 \times 5 = 60$$

$$7 \times 4 = 28$$

$$60 + 28 = 88$$

Page 6 of 7

- 10 A rectangle is made from three identical squares placed side by side in a row.
The perimeter of the rectangle is 48 cm.
Work out the area of the rectangle.

(3 marks)

Let each square have side s cm. The rectangle is $3s$ cm long and s cm wide

$$\text{Perimeter} = 2 \times (3s + s) = 8s, \text{ so } 8s = 48 \text{ and } s = 6$$

The rectangle is 18 cm by 6 cm, so its area = $18 \times 6 = 108 \text{ cm}^2$

$$\boxed{108 \text{ cm}^2}$$

- 11 Kemi's bedroom floor is a rectangle 4.5 m long and 3.2 m wide.
Carpet costs £12.50 per square metre. Carpet can only be bought in whole square metres.
Work out the cost of carpet for the floor.

(4 marks)

area of the floor

$$4.5 \times 3.2 = 14.4$$

round up to a whole square metre

buy 15 m^2

$$15 \times 12.50 = 187.50$$

$$\boxed{£187.50}$$

- 12 A school lawn is in the shape of a trapezium.
The parallel sides are 8 m and 14 m long. The perpendicular distance between them is 6 m.
The caretaker is going to sow grass seed on the whole lawn. One box of grass seed covers 20 m^2 and costs £8.75.
Work out the cost of the grass seed.

(4 marks)

area of the lawn

$$A = \frac{1}{2} \times (8 + 14) \times 6$$

$$A = 11 \times 6$$

$$A = 66$$

number of boxes

$$66 \div 20 = 3.3$$

3 boxes is not enough, so 4 boxes

$$4 \times 8.75 = 35$$

$$\boxed{£35}$$