

PERIMETER AND AREA

CLASS 7

CHAPTER 11

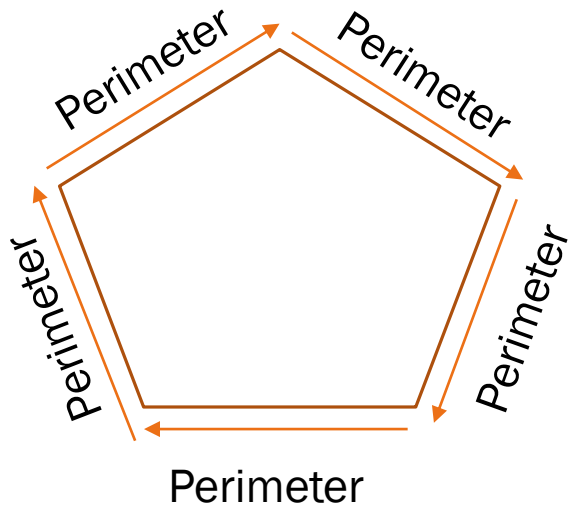


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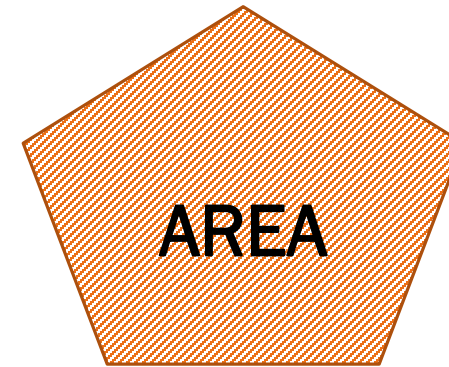
PERIMETER AND AREA

Perimeter: The total length of the boundary of a closed rectilinear figure is called its perimeter.



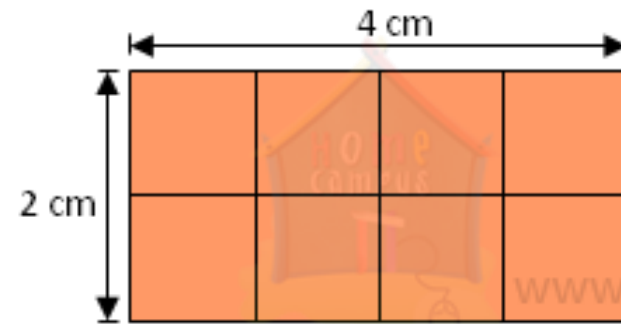
Perimeter of a regular polygon = number of sides \times length of one side

Area: The measurement of the region enclosed by a plane figure is called its area

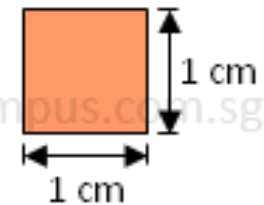


SQUARES AND RECTANGLES

- (a) Perimeter of a square = $4 \times \text{side}$
- (b) Perimeter of a rectangle = $2 \times (\text{length} + \text{breadth})$
- (c) Area of a square = $\text{side} \times \text{side}$
- (d) Area of a rectangle = $\text{length} \times \text{breadth}$



A one-centimetre square



What would you need to find, area or perimeter, to answer the following?



How much space does a blackboard occupy?



What is the length of a wire required to fence a rectangular flower bed?



What distance would you cover by taking two rounds of a triangular park?



How much plastic sheet do you need to cover a rectangular swimming pool?

Increase of Perimeter need not lead to Increase in Area

Case 1:

Length of rectangle1 = 4cm

Breadth of rectangle1 = 3cm

Area = $4 \times 3 = 12\text{cm}^2$

Perimeter = $2 (4 + 3) = 14\text{cm}$

Case 2:

Length of rectangle2 = 6cm

Breadth of rectangle2 = 2cm

Area = $6 \times 2 = 12\text{cm}^2$

Perimeter = $2 (6 + 2) = 16\text{cm}$

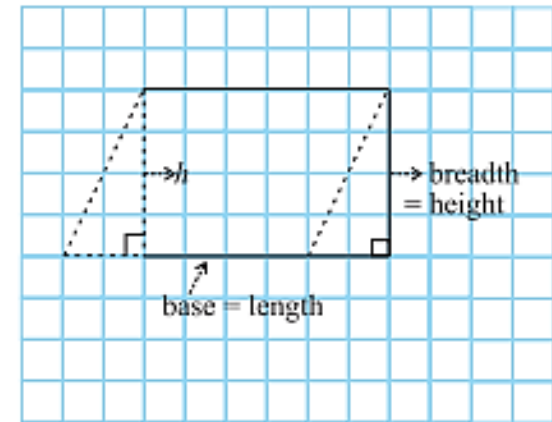
Here perimeter increases from 14cm to 16cm, but the area remains the same. i.e., 12 cm^2

PARALLELOGRAM

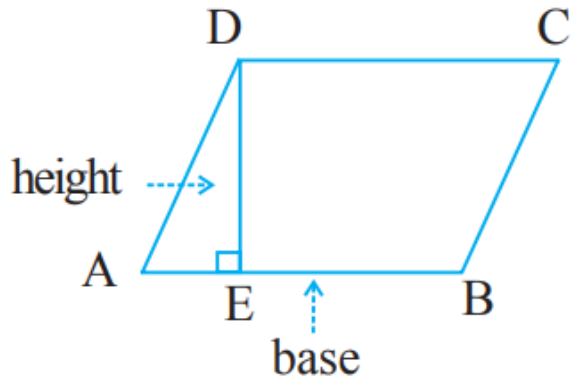
A parallelogram is a quadrilateral in which both the pairs of opposite sides are parallel.

Area of parallelogram = Area of rectangle

= length \times breadth = $l \times b$

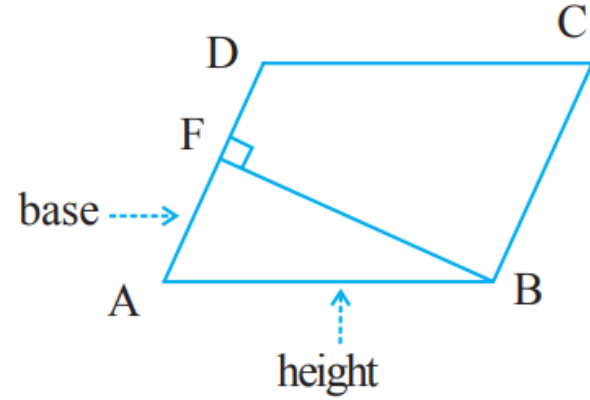


Any side of a parallelogram can be chosen as base of the parallelogram. The perpendicular dropped on that side from the opposite vertex is known as a height.



In figure1, AB is the base and DE is the height.

$$\text{Area of parallelogram} = AB \times DE$$



In figure2, AD is the base and BF is the height.

$$\text{Area of parallelogram} = AD \times BF$$

Note :

1. Parallelograms may have different areas but equal perimeters.
2. Parallelograms may have different perimeters but equal areas.

AREA OF TRIANGLES

Consider a triangle ABC. Triangle DEF is congruent to triangle ABC.

The two triangles are superimposed so that their corresponding sides match.

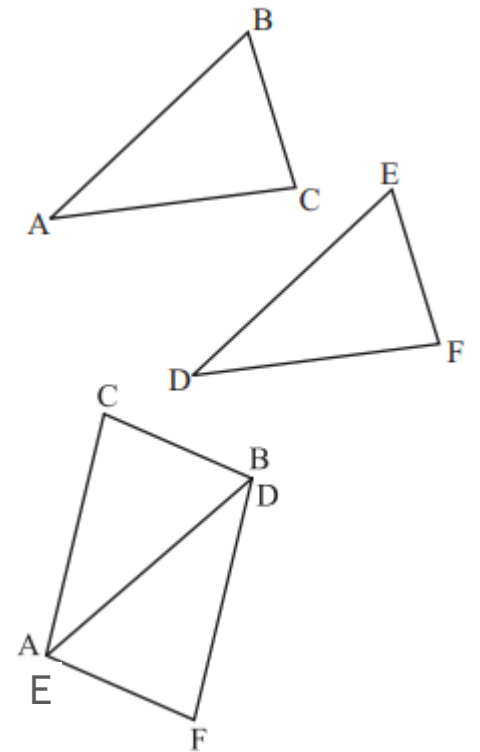
Rotate one of the two triangles. The resultant is a parallelogram.

The sum of the areas of two triangles is the area of the parallelogram.

Area of each triangle

- $= \frac{1}{2} \times \text{Area of parallelogram}$
- $= \frac{1}{2} \times \text{base} \times \text{height}$
- $= \frac{1}{2} \times bh$

Note: All the congruent triangles are equal in area but the triangles equal in area need not be congruent



Answer the following

Find the missing values:

S.No	Base	Height	Area of the parallelogram
1	20 cm		246 cm ²
2		15 cm	154.5 cm ²
3		8.4 cm	48.72 cm ²
4	15.6 cm		16.38 cm ²

Answer the following

Find the missing values:

S.No	Base	Height	Area of the triangle
1	15 cm		87 cm ²
2		31.4 mm	1256 mm ²
3	22 cm		170.5 cm ²