Perimeter of an equilateral triangle = $3 \times \text{length}$ of a side Perimeter of a square = $4 \times \text{length}$ of a side In general, perimeter of a regular closed polygon = Number of sides of the polygon \times length of each side

Example:

If a farmer wants to fence a square field of length 50 m with 5 rounds of wire then what is the length of the wire required?

Solution:

Length of wire required = $5 \times (\text{perimeter of square field})$

$$= 5 \times (4 \times \text{side})$$
$$= 5 \times [(4 \times 50) \text{ m}]$$
$$= 1000 \text{ m}$$

• Perimeter of a rectangle = 2 (length + breadth)

Example:

What is the perimeter of a rectangular field whose length and breadth are 15 m and 8 m respectively?

Solution:

Perimeter of rectangular field = 2 (15 m + 8 m) = (2×23) m = 46 m

• Area of a rectangle is given by the formula:

Area of a rectangle = length × breadth Example: How much carpet is required to cover a rectangular floor of length 25 m and breadth 18 m? Solution: Area of the carpet required = Area of rectangular floor $= 25 \text{ m} \times 18 \text{ m} = 450 \text{ m}^2$

• Area of a square is given by the formula:

Area of a square = side × side Example: What is the area of a square park of side 10 m 20 cm?

Solution: Length of park = 10 m 20 cm = 10.2 m

Area of park = $10.2 \text{ m} \times 10.2 \text{ m} = 104.04 \text{ m}^2$

- Area of a parallelogram:
- The perpendicular dropped on a side from its opposite vertex is known as the height and the side is known as the base.
- \circ Area of a parallelogram = Base \times Height



Example:

Find the height of the parallelogram PQRS corresponding to the base RQ.



Solution:

Let the height corresponding to the base RQ be *x* cm. Area of the parallelogram $PQRS = PQ \times ST$

= $10 \text{ cm} \times 7.2 \text{ cm}$ = 72 cm^2 Area of the parallelogram = $\mathbb{R}\mathbb{Q} \times x$ = 8 cm × x cm = 8x cm² $\Rightarrow x = 9$ Thus, the beight of the parallelogram correspondent

Thus, the height of the parallelogram corresponding to the base RQ is 9 cm.

- Area of a triangle:
- Area of a triangle = $\frac{1}{2} \times Base \times Altitude$
- All the congruent triangles are equal in area, but the triangles having equal areas may or may not be congruent.

Example: $\triangle ABC$ is isosceles with AC = BC = 6 cm. AE and BD are the medians and AF = 4 cm. What is the area of $\triangle ABD$?



Solution: In $\triangle ABE$ and $\triangle BAD$, we have $BE = AD \qquad [AC = BC \Rightarrow \frac{1}{2}AC = \frac{1}{2}BC]_{]}$ $\angle ABE = \angle BAD \qquad [Angles opposite to equal sides]$ $AB = AB \qquad [Common]$ $\Rightarrow \triangle ABE \cong \triangle BAD \qquad [By SAS congruency criterion]$ $Area (\triangle ABE) = Area (\triangle BAD)$ Now, $Area \triangle ABE = \frac{1}{2} \times Base \times Altitude$ $= \frac{1}{2} \times BE \times AF$ $= \frac{1}{2} \times (\frac{6 \text{ cm}}{2}) \times 4 \text{ cm}$ $= 6 \text{ cm}^2$ $\Rightarrow Area \triangle ABD = 6 \text{ cm}^2$

- The distance around a circular region is known as its circumference.
- The circumference of a circle = $\pi \times$ Diameter = $2\pi \times$ Radius

The value of pi (π) is $\frac{22}{7}$ or 3.14.

• Area of a circle = $\pi \times (\text{Radius})^2$

Example: What is the area of a circle whose circumference is 44 cm? $\left(\pi = \frac{22}{7}\right)$

Solution: Circumference = $2\pi r = 44$ cm $\Rightarrow 2 \times \frac{22}{7} \times r = 44$ cm $\Rightarrow r = 44 \times \frac{7}{22 \times 2} = 7$ cm \therefore Area of the circle = $\pi r^2 = \frac{22}{7} \times 7 \times 7 = 154$ cm²