Board –ICSE	Class – 7th	Topic – Perimeter and Area

Q1. In a rectangle :

(i) length = 10 cm and breadth = 6 cm, find its area and its perimeter.

(ii) area = 240 cm^2 and length = 20 cm, find its breadth and perimeter.

(iii) length = 8 cm and breadth = 8 cm, find its area and perimeter.

Soln. (i) Given : l = 10 cm and b = 6 cm

$$\text{Area} = l \times b = 10 \text{ cm} \times 6 \text{ cm} = 60 \text{ cm}^2$$

$$\text{And, perimeter} = 2(l + b) = 2(10 + 6) \text{ cm} = 2 \times 16 \text{ cm} = 32 \text{ cm}$$

(ii) Given: A = 240 cm^2 and l = 20 cm

$$\therefore A = l \times b \Rightarrow \text{breadth, } b = \frac{A}{l}$$

$$= \frac{240}{20} \text{ cm} = 12 \text{ cm}$$

and, perimeter

$$= 2(l + b)$$

$$= 2(20 + 12)\text{cm} = 2 \times 32 \text{ cm} = 64 \text{ cm}$$

(iii) Here l = 8 cm and b = 8 cm

[Since, l = b, its a square]

$$\therefore \text{Area} = l^2$$

$$= 8 \text{ cm} \times 8 \text{ cm} = 64 \text{ cm}^2$$

and,

$$\text{perimeter} = 4l$$

$$= 4 \times 8 \text{ cm} = 32 \text{ cm}$$

Q2. The length of a rectangular field is 200 m and its width is 100 m.

Find:

(i) the cost of ploughing it at the rate of ₹10 per m^2.

(ii) the cost of fencing it with wire at the rate of ₹ **15** per metre.

Soln. (i) For ploughing, we need to calculate the area (A),

Since,

l = 200 m and b = 100 m

$$\therefore \text{Area of the field} = 200 \text{ m} \times 100 \text{ m} = 20{,}000 \text{ m}^2$$

And, cost of ploughing the field

$$= \text{Area} \times \text{Rate}$$

$$= 20{,}000 \times ₹10 = ₹2{,}00{,}000$$

(ii)

Length of fence $=$ Perimeter
$= 2(l + b)$
$= 2(200 + 100)\text{m} = 600\text{ m}$

$\therefore$ Cost of fencing $=$ Length of fence $\times$ Rate
$= 600 \times ₹15$
$= ₹9{,}000$

Q.4 Find the area and the perimeter of the given figure. All measurements are in cm and the angle at each vertex is 90°.

Soln. For such figures, first of all draw dotted lines to divide the figure in convenient parts of squares and rectangles.

As shown in the figure, the three parts obtained are marked as (1), (2) and (3).

Now, find the area of each part.

Area of rectangle shown by part (1) $= 2\text{ cm} \times 1\text{ cm} = 2\text{ cm}^2$

Area of rectangle shown by part(2) $= 2\text{ cm} \times 3\text{ cm} = 6\text{ cm}^2$

Area of rectangle shown by part (3) $= 2\text{ cm} \times 1\text{ cm} = 2\text{ cm}^2$

$\therefore$ Total required area $= 2\text{ cm}^2 + 6\text{ cm}^2 + 2\text{ cm}^2 = 10\text{ cm}^2$

For finding the perimeter, we have to add the outer boundary lines (not the dotted lines).

For this, the simplest way is to start adding the sides, starting from any point of its boundary and then reach to the same point again.

Here, if we start from A and move to right (in the anticlockwise direction), we get

Perimeter $= (2 + 1 + 2 + 1 + 2 + 1 + 2 + 1 + 2 + 1 + 2 + 1)\text{ cm} = 18\text{ cm}$

Q.5 A triangle has a base of 4 cm and the corresponding altitude (height) is 6 cm . Find its area.

Soln. Given : base, $b = 4$ cm and height, $h = 6$ cm

$\therefore$ Area, $A = \frac{1}{2} \times b \times h$

$= \frac{1}{2} \times 4\text{ cm} \times 6\text{ cm} = 12\text{ cm}^2$

Q6. The area of a triangle is 96 cm^2 and its base is 16 cm . Find its height.

Soln. Given : Area, $A = 96\text{ cm}^2$ and base, $b = 16$ cm

$\therefore$ Area, A $= \frac{1}{2} \times b \times h$

$\Rightarrow 96 = \frac{1}{2} \times 16 \times h$

$\Rightarrow 8\,h = 96$

$\Rightarrow$ Height, h $= \frac{96}{8}$ cm $= 12$ cm

Q7. If length of a rectangle is 40 cm and its perimeter is 130 cm ; find its breadth and area.

Soln. Given, perimeter $= 130$ cm

$\Rightarrow 2l + 2b = 130$ cm

$\Rightarrow 2 \times 40$ cm $+ 2b = 130$ cm [Since, $P = 2l + 2b$]

$\Rightarrow 2b = 130$ cm $- 80$ cm $= 50$ cm

$\therefore$ Breadth, b $= \frac{50}{2}$ cm $= 25$ cm

And, area $= l \times b = 40$ cm $\times 25$ cm $= 1{,}000$ cm^2

Q8. The base and the height of a triangle are in the ratio 3: 4. If its area is 150 cm^2, find its base and the height.

Soln. Let the base $= 3x$ cm and the height $= 4x$ cm

$\therefore$ Area $= \frac{1}{2} \times 3x \times 4x$ [$\because$ Area $= \frac{1}{2} \times$ base $\times$ height]

$\Rightarrow 150 = 6x^2$

or $6x^2 = 150$

$\Rightarrow x^2 = \frac{150}{6} = 25$

$\Rightarrow x = \sqrt{25} \Rightarrow x = 5$

Therefore, base $= 3x$ cm $= 3 \times 5$ cm $= 15$ cm

and, height $= 4 \times$ cm $= 4 \times 5$ cm $= 20$ cm