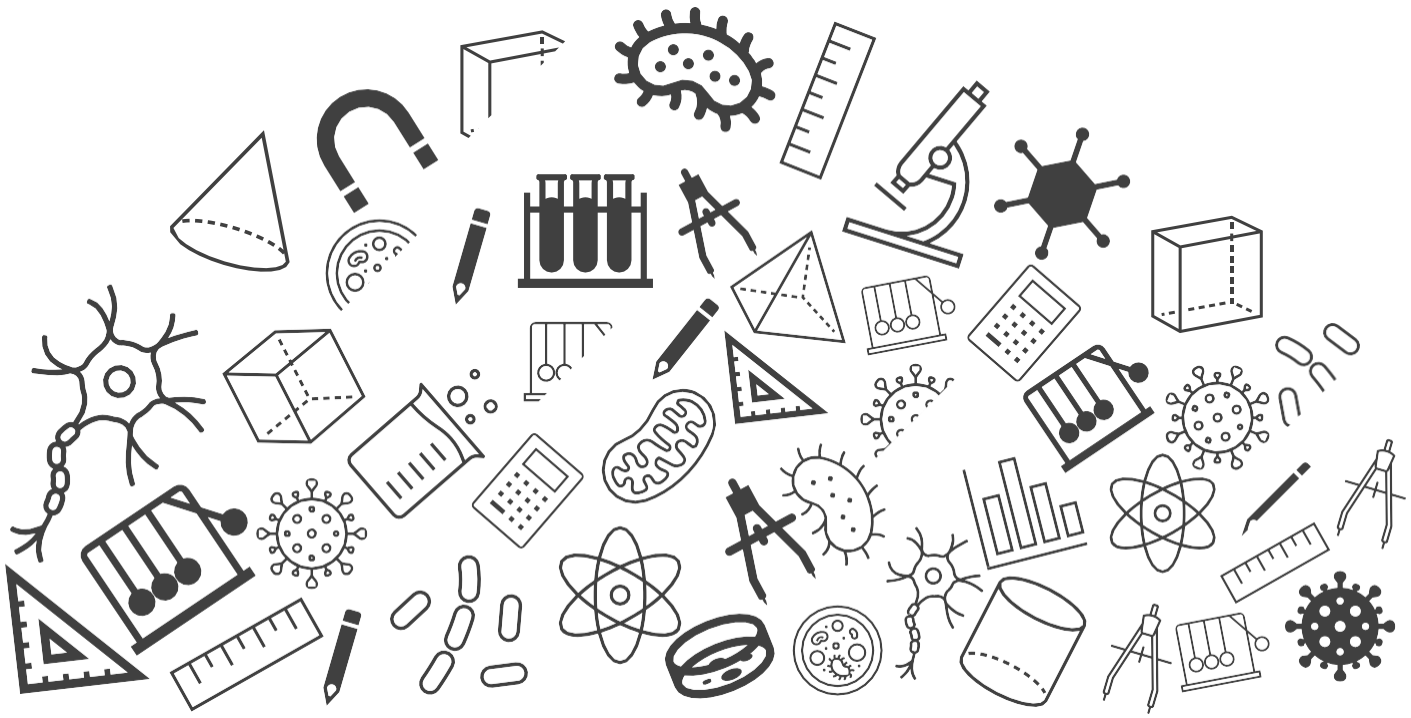
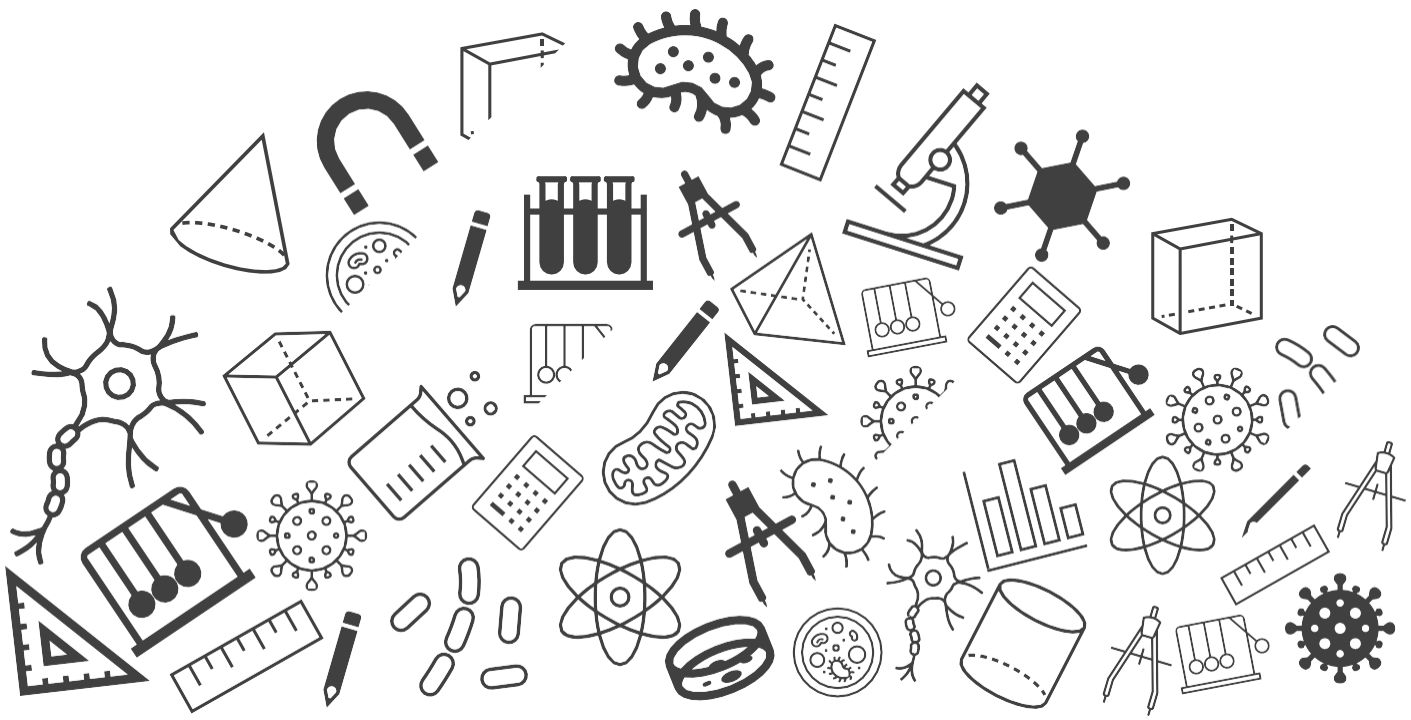
Grade 07: Maths
Exam Important Questions



Perimeter and Area



Perimeter and Area

Topic : Exam Important Questions

1. If the circumference of a circular sheet is 154 m, find its radius. also find the area of the sheet. (Take $\pi = \frac{22}{7}$)

   [2 marks]

   Given that,
   The circumference of a circle is 154 m
   We need to find the radius and the area of the circle
   We know that, the circumference of the circle $= 2\pi$r

   154 m $= 2 \times \frac{22}{7} \times$ r

   r $= \frac{154 \text{ m} \times 7}{2 \times 22}$

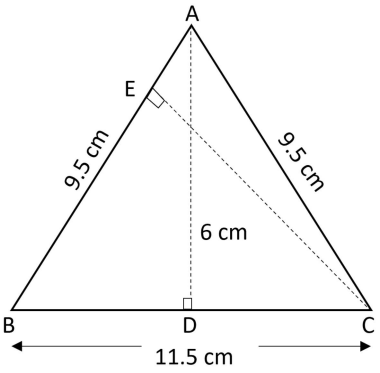
   r $= 24.5$ m [1 mark]

   Area of the circle $= \pi r^2$

   $= \frac{22}{7} \times 24.5$ m $\times 24.5$ m

   $= 1886.5$ m [1 mark]

2. ΔABC is isosceles with AB = AC = 9.5 cm and BC = 11.5 cm. The height AD from A to BC, is 6 cm. Find the area of ΔABC. What will be the height from C to AB i.e., CE?



[4 Marks]

In triangle ABC, AD $= 6$ cm and BC $= 11.5$ cm

Area of triangle ABC $= \frac{1}{2} \times$ Base $\times$ Height

$= \frac{1}{2} \times$ BC $\times$ AD

[1 mark]

$= \frac{1}{2} \times 11.5$ cm $\times 6$ cm

$= 34.5$ cm^2

[1.5 marks]

Now, Area of triangle ABC $= \frac{1}{2} \times$ AB $\times$ CE

[1 mark]

34.5 cm$^2 = \frac{1}{2} \times 9.5$ cm $\times$ CE

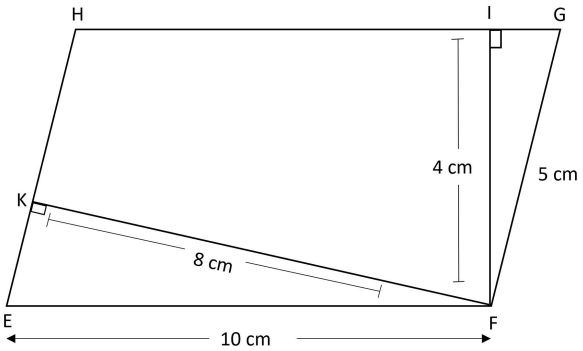
$$\text{CE} = \frac{2 \times 34.5 \text{ cm}^2}{9.5 \text{ cm}}$$

$$\text{CE} = \frac{69 \text{ cm}^2}{9.5 \text{ cm}}$$

CE $= 7.26$ cm

[1.5 marks]

3. In Fig.given below, EFGH is a parallelogram, altitudes FK and FI are 8 cm and 4cm respectively. If EF = 10 cm, then area of EFGH is. [2 marks]



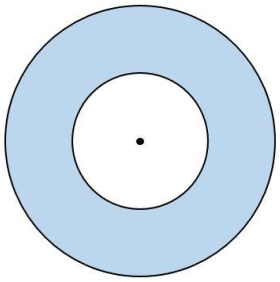
From the figure,

Consider the parallelogram EFGH, EF $=$ HG $=10$ cm
[1 mark]

We know that,

Area of parallelogram EFGH $=$ Base $\times$ height $=10\times 4=40$ cm^2 [1 mark]

4. The adjoining figure shows two circles with the same centre. The radius of the larger circle is 14 cm and the radius of the smaller circle is 6 cm.
Find: [3 marks]
(a) the area of the larger circle.
(b) the area of the smaller circle.
(c) the shaded area between the two circles. (Take $\pi = 3.14$)

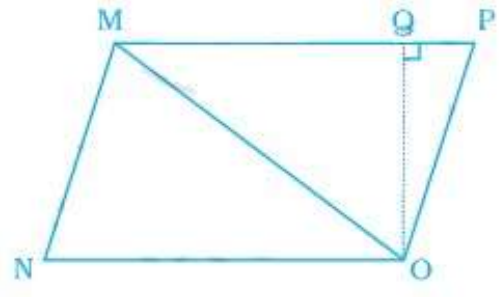


(a) Radius of the larger circle $= 14$ cm
So, area of the larger circle $= \pi r^2$
$= 3.14 \times 14 \times 14 = 615.44$ cm^2 [1 mark]

(b) Radius of the smaller circle $= 6$ cm
Area of the smaller circle $= \pi r^2$
$= 3.14 \times 6 \times 6 = 113.04$ cm^2 [1 mark]

(c) Area of the shaded region
$= (615.44 - 113.04)$ cm^2
$= 502.4$ cm^2 [1 mark]

5. What is the ratio of area of ΔMNO to the area of parallelogram MNOP in the following figure? [3 marks]



In a parallelogram, each diagonal divides it into two triangles of equal area. So, the diagonal MO divides the parallelogram MNOP in two triangles, MNO and MPO which are equal in area. [1 mark]

Area of parallelogram MNOP = area of ΔMNO + area of ΔMPO [0.5 mark]

Now, area of ΔMNO = area of ΔMPO [0.5 mark]

So, Area of parallelogram MNOP = area of ΔMNO + area of ΔMNO [0.5 mark]

Area of parallelogram MNOP = 2(area of ΔMNO)

Or $\frac{Area\ of\ \Delta\ MNO}{Area\ of\ parallelogram\ MNOP} = \frac{1}{2}$ [0.5 mark]

Therefore, the ratio of area of ΔMNO to the area of parallelogram MNOP is 1 : 2.

6. Find the missing values:

$Base$	$Height$	$Area\ of\ triangle$
$15\ cm$	...	$87\ cm^2$
...	$31.4\ mm$	$1256\ mm^2$
$22\ cm$	...	$170.5\ cm^2$

[3 Marks]

We know that the area of triangle = $\frac{1}{2} \times base \times height$

In first row, base = 15 cm and area = $87 cm^2$

$\therefore 87 = \frac{1}{2} \times 15 \times height \Rightarrow \quad height = \frac{87 \times 2}{15} = 11.6\ cm$

[1 Mark]

In second row, height = 31.4 mm and area = 1256 mm^2

$\therefore 1256 = \frac{1}{2} \times base \times 31.4 \Rightarrow \quad base = \frac{1256 \times 2}{31.4} = 80\ mm$

[1 Mark]

In third row, base = 22 cm and area = 170.5 cm^2

$\therefore 170.5 = \frac{1}{2} \times 22 \times height$

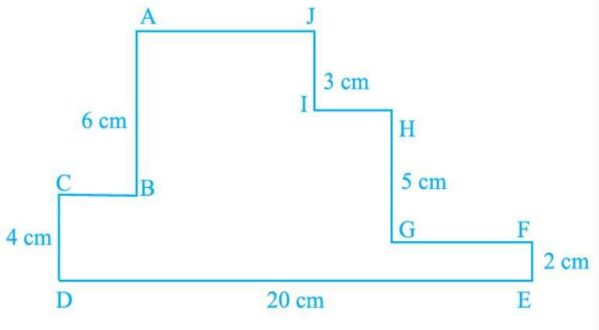
$\Rightarrow height = \frac{170.5 \times 2}{22} = 15.5\ cm$

[1 Mark]

Thus, the missing values are:

$Base$	$Height$	$Area\ of\ triangle$
$15\ cm$	$11.6\ cm$	$87\ cm^2$
$80\ mm$	$31.4\ mm$	$1256\ mm^2$
$22\ cm$	$15.5\ cm$	$170.5\ cm^2$

7. Find the perimeter of the figure ABCDEFGHIJ.



[2 marks]

Perimeter of the given figure = AB + BC + CD + DE + EF + FG + GH + IH + IJ + AJ
[0.5 marks]

From the figure, AJ + IH + GF + BC = DE = 20 cm
[1 mark]

= DE + 3 cm + 5 cm + 2 cm + 20 cm + 4 cm + 6 cm
= 20 cm + 40 cm
= 60 cm
[0.5 marks]

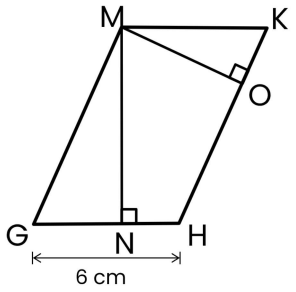
8. Anu wants to fence the garden in front of her house, on three sides with lengths 20 m, 12 m and 12 m. Find the cost of fencing at the rate of ₹150 per metre.
[2 marks]

The length of the fence required is the perimeter of the garden = sum of all sides
[0.5 marks]

= 20 m + 12 m + 12 m
= 44 m
[0.5 marks]

Cost of fencing = ₹150 × 44
= ₹6,600
[1 mark]

9. The altitudes MN and MO of parallelogram MGHK are 8 cm and 4 cm long respectively. One side GH is 6 cm long. Find the perimeter of MGHK.



[3 Marks]

Solution:
In the parallelogram MGHK,
MN $= 8$ cm
MO $= 4$ cm
GH $= 6$ cm

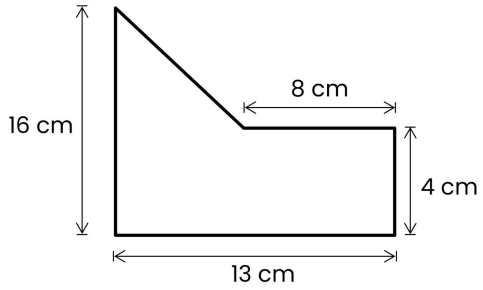
Now, area of parallelogram MGHK. when the base is GH
$=$ GH $\times$ MN
$= 6 \times 8$
$= 48$ cm^2
[1 Mark]

Now, the area of parallelogram MGHK when the base is HK.
$\Rightarrow 48$ cm$^2 =$ HK $\times 4$ cm
$\Rightarrow$HK $= \frac{48}{4} = 12$ cm
[1 Mark]

In a parallelogram, opposite sides are equal
Thus, GH $= 6$ cm $=$ MK, and MG $=$ HK $= 12$ cm

Therefore,
The perimeter of the parallelogram MGHK
$=$ GH $+$ MK $+$ MG $+$ HK
$= 6 + 6 + 12 + 12 = 36$ cm
[1 Mark]

10. What is the area enclosed by the figure (not drawn to scale) given below?



[3 Marks]

A. $88\ \text{cm}^2$

B. $86\ \text{cm}^2$

C. $84\ \text{cm}^2$

D. $82\ \text{cm}^2$

The given figure consists of a triangle and a rectangle.

Area of the given figure $=$ Area of a triangle $+$ Area of a rectangle

$$\text{Area of the triangle} = \frac{1}{2} \times \text{Base} \times \text{Height}$$
$$= \frac{1}{2} \times 5\ \text{cm} \times 12\ \text{cm}$$
$$= 30\ \text{cm}^2$$

[1 Mark]

$$\text{Area of the rectangle} = \text{Length} \times \text{Breadth}$$
$$= 13\ \text{cm} \times 4\ \text{cm}$$
$$= 52\ \text{cm}^2$$

[1 Mark]

$$\text{Area of the figure} = 30\ \text{cm}^2 + 52\ \text{cm}^2$$
$$= 82\ \text{cm}^2$$

[1 Mark]