TickMark.Ai
Mumbai

Class: EM - CLASS 10 **Subject:** Mathematics - Part 2 (Geometry) **Time:**2 hrs
Date: 18-11-2025 **Paper:** Pre-Board 1 **Marks:**40

Q1(A) Four alternative answer are given for every subquestion. Select the correct alternative and write the alphabet of that answer : **(4)**

(1) Co-ordinates of origin are ....
a) (0,0) c) (0,1)
b) (1,0) d) (1,1)

(2) If a, b, c are sides of a triangle and $a^2 + b^2 = c^2$, name the type of triangle.
a) Obtuse angled triangle c) Acute angled triangle
b) Right angled triangle d) Equilateral triangle

(3) Chrods AB and CD of a circle intersect inside the circle at point E. If AE = 4, EB = 10, CE = 8 then find ED.
a) 7 c) 5
b) 8 d) 9

(4) If radius of the base of cone is 7 cm and height is 24 cm, then find its slant height.
a) 23 cm c) 26 cm
b) 31 cm d) 25 cm

(B) Solve the following subquestions : **(4)**

(1) If radius of a circle is 5 cm, then find the length of longest chord of a circle.

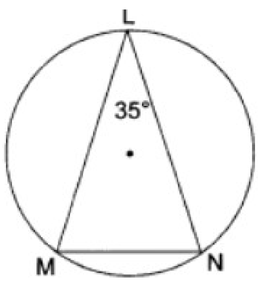
(2) If $\Delta ABC \sim \Delta PQR$ and $\frac{A(\Delta ABC)}{A(\Delta PQR)} = \frac{16}{25}$, then find AB : PQ.

(3) Find the distance between the points O(0,0) and P(3,4).

(4) In $\triangle$ RST, $\angle S = 90°$, $\angle T = 30°$, RT = 12 cm then find RS.

Q2(A) Complete the following activities and rewrite it (any two) : **(4)**

(1)



In the above figure, $\angle L = 35°$, find:
(i) m(arc MN)
(ii) m(arc MLN)
Solution

i. $\angle L = \frac{1}{2}$ m(arc MN) ....(By inscribed angle theorem)

$\therefore \square = \frac{1}{2}$ m(arc MN)

$\therefore 2 \times 35 =$ m(arc MN)

$\therefore$ m(arc MN) = $\square$

ii. m(arc MLN) = $\square$ – m(arc MN) ....[Definition of measure of arc]

$= 360° - 70°$

$\therefore$ m(arc MLN) = $\square$

(2) Find the surface area of a sphere of radius 7 cm.

The surface area of the sphere = $4\pi r^2$

$= 4 \times \frac{22}{7} \times \square^2$

$= 4 \times \frac{22}{7} \times \square$

$= \square \times 7$

$\therefore$ The surface area of the sphere = $\square$ sq.cm.

(3) Show that, cot θ + tan θ = cosec θ × sec θ.

Activity:

L.H.S = $\square$

$= \frac{\square}{\sin\theta} + \frac{\sin\theta}{\cos\theta}$

$= \frac{\cos^2\theta + \sin^2\theta}{\square}$

$= \frac{1}{\sin\theta \cdot \cos\theta}$ ......$[\cos^2\theta + \sin^2\theta = \square]$

$= \frac{1}{\sin\theta} \times \frac{1}{\square}$

$= \square$

= R.H.S

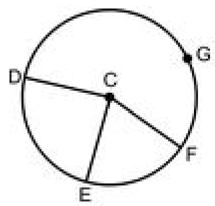
(B) Solve the following subquestions (any four) : **(8)**

(1) A person is standing at a distance of 50 m from a temple looking at its top. The angle of elevation is 45°. Find the height of the temple.

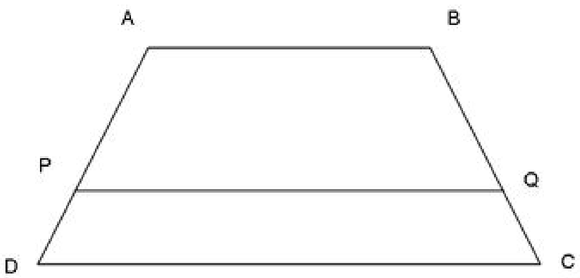
(2) Show that points A(-1 , -1), B(0 , 1), C(1 , 3) are collinear.

(3) Find the diagonal of a rectangle whose length is 35 cm and breadth is 12 cm.

(4) In the figure, points G, D, E, F are concyclic points of circle with centre C. ∠ECF = 70°, m(arc DGF) = 200°. Find m(arc DE) and m(arc DEF).



(5) In trapezium ABCD, side AB || side PQ || side DC, AP = 15, PD = 12, QC = 14, find BQ.

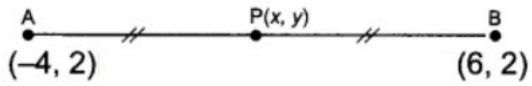


Q3(A) Complete the following activity and rewrite it (any one) : **(3)**

(1) Find the co-ordinates of point P where P is the midpoint of a line segment AB with A(-4,2) and B(6,2).

Solution:

Solution:



Suppose, (- 4,2) = (x_1, y_1) and (6,2) = (x_2, y_2), and co-ordinates of P are (x, y)

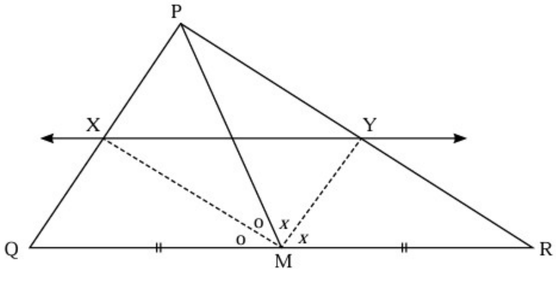
∴ According to midpoint theorem

$$x = \frac{x_1 + x_2}{2} = \frac{\square + 6}{2} = \frac{\square}{2} = \square$$

$$y = \frac{y_1 + y_2}{2} = \frac{2 + \square}{2} = \frac{4}{2} = \square$$

∴ **Co-ordinates of midpoint P are** $\square$

(2) In ΔPQR, seg PM is a median. Angle bisectors of ∠PMQ and ∠PMR intersect side PQ and side PR in points X and Y respectively. Prove that XY || QR. Complete the proof by filling in the boxes.



Ray MX is the bisector of ∠PMQ

∴ $\frac{MP}{MQ} = \frac{\square}{\square}$ ....(I) [Theorem of angle bisector]

Similarly, in ΔPMR, Ray MY is bisector of ∠PMR

∴ $\frac{MP}{MR} = \frac{\square}{\square}$ ..... (II) [Theorem of angle bisector]

But $\frac{MP}{MQ} = \frac{MP}{MR}$ ....(III) [As M is the midpoint of QR]

Hence, MQ = MR

∴ $\frac{PX}{\square} = \frac{\square}{YR}$ .... [From (I), (II) and (III)]

∴ XY || QR ......[Converse of basic proportionality theorem]

(B) Solve the following subquestions (any two) : **(6)**

(1) In △ ABC seg AP is a median. If BC = 18, $AB^2 + AC^2 = 260$. Find AP.

(2) Prove that, "Angles inscribed in the same arc are congruent".

(3) Draw a circle of radius 3.3 cm. Draw a chord PQ of length 6.6 cm. Draw tangents to the circle at points P and Q.

(4) The radii of circular ends of a frustum are 14 cm and 6 cm respectively and its height is 6 cm. Find its curved surface area. ($\pi = 3.14$)

Q4) Solve the following subquestions (any two) : **(8)**

(1) An ice-cream pot has a right circular cylindrical shape. The radius of the base is 12 cm and height is 7 cm. This pot is completely filled with ice-cream. The entire ice-cream is given to the students in the form of right circular ice-cream cones, having diameter 4 cm and height is 3.5 cm. If each student is given one cone, how many students can be served ?

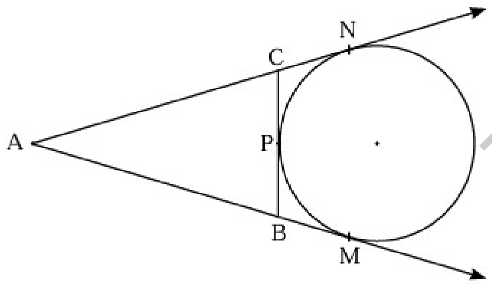
(2) Δ SHR ~ Δ SVU. In Δ SHR, SH = 4.5 cm, HR = 5.2 cm, SR = 5.8 cm and $\frac{SH}{SV} = \frac{5}{3}$ then draw Δ SVU.

(3) In ΔABC, seg DE || side BC. If 2A(ΔADE) = A(□DBCE), find AB : AD and show that $BC = \sqrt{3}DE$.

Q5) Solve the following subquestions (any one) : **(3)**

(1) Eliminate θ if $x = r\cos\theta$ and $y = r\sin\theta$.

(2) A circle touches side BC at point P of the ΔABC, from outside of the triangle. Further extended lines AC and AB are tangents to the circle at N and M respectively. Prove that : AM = $\frac{1}{2}$(Perimeter of ABC).



All the Best