MS-CIT
World-class Comprehensive Computer Course

Question Paper
Set- I
Std. – 10th EM/Semi
Subject – Geometry

MKCL KLiC Courses
Gateway to Knowledge Lit Careers

Time : 2 Hrs. **Marks : 40**

Q.1 A) Solve Multiple choice questions. **(4)**

1) Using Euler's formula, find V, if E = 30, F = 12.
a. 42 b. 18 c. 21 d. 20

2) To draw a tangent to a circle without using its centre we use .....
(a) inscribed angle theorem
(b) isosceles triangle theorem
(c) property of alternate angle test
(d) property of angles in alternate segment

3) The longest chord of a circle is 7.8 cm. What is the radius of the circle?
a. 3.9 b. 7.8 c. 15.6 d. 8

4) Slope of a line parallel to x-axis is ..... .
a. Zero b. One c. Not defined d. None of these

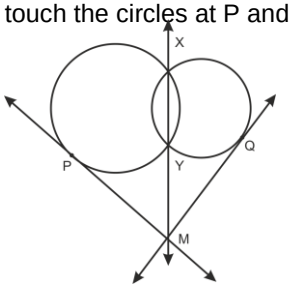
B) Solve the following questions. **(4)**

1) If $\sin\theta = \frac{20}{29}$ then find $\cos\theta$

2) Show that points P(- 2, 3), Q(1, 2), R(4, 1) are collinear.

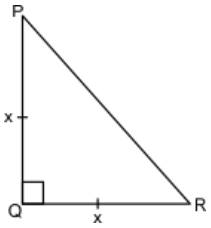
3) Ratio of corresponding sides of two similar triangles is 4:7 then find the ratio of their reas = ?

4) In figure, two circles intersect each other in points X and Y. Tangents drawn from a point M on line XY touch the circles at P and Q. Prove that, seg PM $\cong$ seg QM.



Q.2 A) Complete the following Activities. (Any two) **(4)**

1) A side of an isosceles right angled triangle is x. Find its hypotenuse.



In $\triangle PQR$, $\angle PQR = 90°$
and PQ = QR = x
$\therefore$ PR^2 = _____ ... [Pythagoras theorem]
= _____
$\therefore$ PR^2 = _____

∴ PR = _____units ... [Taking square root]

∴ The length of hypotenuse is _____units.

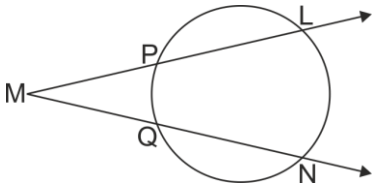
2) In the figure m (arc LN) = 110°, m (arc PQ) = 50° then complete the following activity to find ∠LMN.

$\angle LMN = \frac{1}{2}$ [m (arc LN) - [_____]

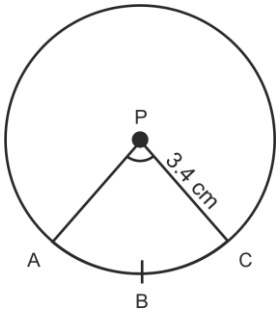
∴ $\angle LMN = \frac{1}{2}$ [_____- 50°]

∴ $\angle LMN = \frac{1}{2} \times$ _____

∴ ∠LMN = _____



3)



In figure, radius of circle is 3.4 cm and perimeter of sector P-ABC is 12.8 cm. Find A(P-ABC).

Given : Radius of circle = r = 3.4 cm

Perimeter of sector = 12.8 cm

: Perimeter = length of the arc + 2r

∴ Length of arc = 12.8 - 2×3.4

∴ l = 12.8 - 6.8

∴ l = _____cm

area of sector = _____

= _____

= 3 × 3.4

=_____ cm^2

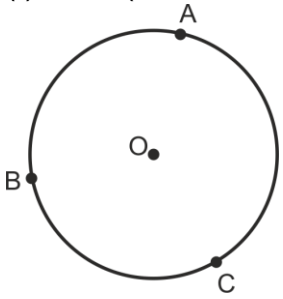
A(P-ABC) is _____cm^2

B) Solve the following questions. (Any four) **(8)**

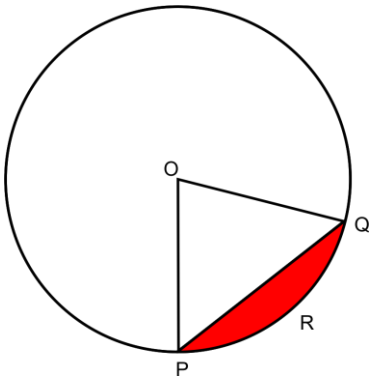
1) A, B, C are any points on the circle with centre O.

(i) Write the names of all arcs formed due to these points.

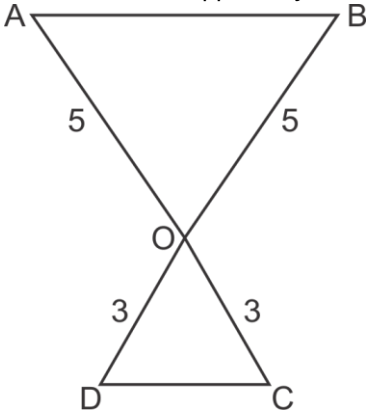
(ii) If m arc(BC = 110^o and m arc(AB) = 125^o, find measures of all remaining arcs.



2) In the figure, if O is the centre of the circle, PQ is a chord. ∠POQ = 90°, area of shaded region is 114 cm^2, find the radius of the circle. (π = 3.14)



3) In the following figure, indicate whether the triangle are similar or not.
Give reason in support of your answer.

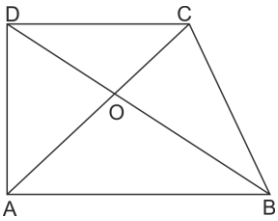


4) If A(3, 5), B(7, 9) and point Q divides seg AB in the ratio 2 : 3 then find co-ordinates of point Q.

5) In △LMN ,l = 5, m = 13, n = 12. State whether △LMN is a right-angled triangle or not.

Q.3 A) Complete the following activity. (Any one) **(3)**

1)



In the given figure, ABCD is a trapezium in which AB ∥ DC. If 2AB = 3DC, find the ratio of the areas of △AOB and △COD.

$\frac{AB}{DC} = \frac{3}{2}$

To find : area △AOB : area of △COD

Proof : In △AOB and △COD

∠AOB = ∠COD

∠OAB = _____ _____ (alternate angles)

∴ △AOB ~ △COD _____

∴ $\frac{\text{area } \triangle AOB}{\text{area } \triangle COD}$ = _____ = $\frac{3^2}{2^2}$ = _____

Ratio in the areas of 𝕒AOB and 𝕒COD_____

2) Some plastic balls of radius 1 cm were melted and cast into a tube. The thickness, length and outer radius of the tube were 2 cm, 90 cm and 30 cm respectively. How many balls were melted to make the tube?

Tube = _____

Radius = _____

∴ = 30 - 2

∴ = _____

Number of balls = _____

∴

$$= \frac{\pi(r_1^2 - r_2^2)h}{\frac{4}{3}\pi r^3}$$

$\therefore$ $= \_\_\_\_\_$

$\therefore$ $= \frac{(900 - 784) \times 90 \times 3}{4}$

$\therefore$ $= \_\_\_\_\_$

B) Solve the following questions. (Any two) **(6)**

1) Construct tangents to a circle from a point outside the circle.

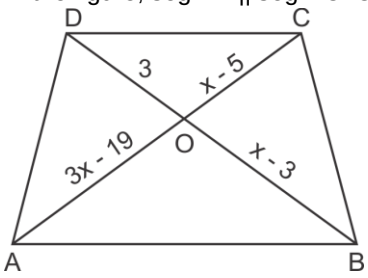
2) If point (x, y) is equidistant from points (7, 1) and (3, 5), show that y = x - 2.

3) Prove that $\frac{\sin\theta - 2\sin^3\theta}{2\cos^3\theta - \cos\theta} = \tan\theta$

4) ΔABC is an equilateral triangle. Point P is on base BC such that PC = $\frac{1}{3}$BC, if AB = 6 cm find AP.

Q.4 Solve the following questions. (Any two) **(8)**

1) In the figure, seg AB || seg DC. Using the information given find the value of x.



2) $\Delta XYZ \sim \Delta PYR$; In ΔXYZ, $\angle Y = 60^\circ$, XY = 4.5 cm, YZ = 5.1 cm and $\frac{XY}{PY} = \frac{4}{7}$ Construct ΔXYZ and ΔPYR.

3) Draw circles with centres A, B and C each of radius 3 cm, such that each circle touches the other two circles.

Q.5 Solve the following questions. (Any one) **(3)**

1) The diameter and length of a roller is 120 cm and 84 cm respectively. To level the ground, 200 rotations of the roller are required. Find the expenditure to level the ground at the rate of Rs. 10 per sq.m.

2) **Prove :** $\frac{\operatorname{cosec}\theta}{\operatorname{cosec}\theta - 1} + \frac{\operatorname{cosec}\theta}{\operatorname{cosec}\theta + 1} = 2\sec^2\theta$