EDUTECH ACADEMY ®
Classes 5 to 10 — NURTURING THE FUTURE...

SET A

N 926

Seat No.

2025 XII 30 1100   – N 926 –   MATHEMATICS (71)   GEOMETRY– PART II (E)

(NEW COURSE)

Time : 2 Hours   (Pages 6)   Max. Marks : 40
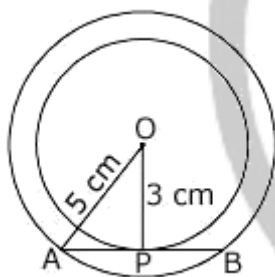

Note :- (i)   All questions are compulsory.
          (ii) Use of calculator is not allowed.
          (iii) Total marks are shown on the right side of the question.

Q.1(A) Choose the correct alternative: **4**

(1) A flag pole 18 m high casts a shadow 9.6 m long. Find the distance of the top of the pole from the far end of the shadow.
(a) 25.6   (b) 20.4   (c) 23.7   (d) 32.5

(2) Two congruent triangles are actually similar triangles with the ratio of corresponding sides as.
(a) 1: 2   (b) 1: 1   (c) 1: 3   (d) 2 : 1

(3) Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.
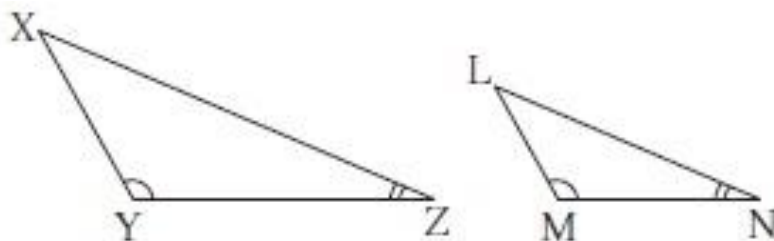

(a) 4 cm   (b) 6 cm   (c) 8 cm   (d) 10 cm

(4) To draw the circumcircle of ΔABC, we bisect _____ of ΔABC.
(a) side AB   (b) all sides   (c) any two sides   (d) any two angles
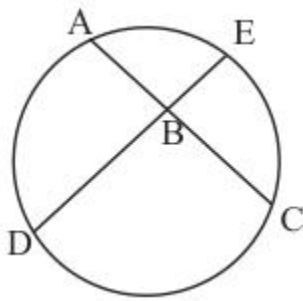
(B) Solve the following: **4**

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

(2) Do sides 7 cm, 24 cm, 25 cm form a right angled triangle ? Give reason.

(3) In Δ XYZ, ∠ Y = 100°, ∠ Z = 30°, In Δ LMN, ∠M = 100°, ∠ N = 30°, Are Δ XYZ and Δ LMN similar? If yes, by which test?

(4) In figure below, chords AC and DE intersect at B. If ∠ABE = 108°, m(arc AE) = 95°, find m(arc DC).

Q.2(A) Complete the following activities:(Any TWO) **4**

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

P(−2, 3), Q(1, 2) and R(4, 1) are given points

slope of line PQ = $\dfrac{y_2 - y_1}{x_2 - x_1}$ = $\dfrac{2-3}{1-\boxed{}}$ = $\boxed{}$
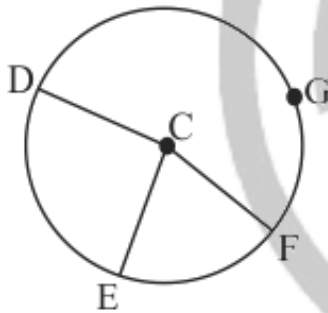
Slope of line QR = $\dfrac{y_2 - y_1}{x_2 - x_1}$ = $\dfrac{1-2}{4-1}$ = $\boxed{}$

Slope of line PQ and line QR is equal.

But point $\boxed{}$ lies on both the lines.

∴ Point P, Q, R are collinear.

(2) In figure given below, points G, D, E, F are concyclic points of a circle with centre C. ∠ECF = 70°, m(arc DGF) = 200° find m(arc DE) and m(arc DEF).

Measure of minor arc = Measure of corresponding central angle

∴ m (arc EF) = m ∠ECF

∴ m (arc EF) = 70° 1

M (arc DE) + m (arc EF) + m (arc DGF) = $\boxed{}$ [Measure of a circle is 360°]

∴ m (arc DE) + 70° + $\boxed{}$ = 360°
            [From 1 & given]

∴ m (arc DE) = 360° - 270

∴ m (arc DE) = $\boxed{}$

M (arc DEF) = m (arc DE) + m (arc EF)
            [Arc addition property]

∴ m (arc DEF) = 90° + 70° [From 1 & given]

M (arc DEF) = $\boxed{}$

(3) Find the value of sin² θ + cos² θ

Sol. In Δ ABC, ∠ABC = 90°, ∠C = θ°

$AB^2 + BC^2 = \boxed{}$ ......(Pythagoras theorem)

Divide both sides by AC^2

$$\frac{AB^2}{AC^2} = \frac{BC^2}{AC^2} = \frac{AC^2}{AC^2}$$

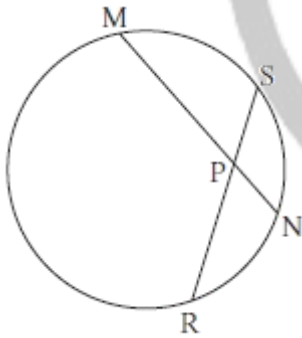$$\therefore \left(\frac{AB^2}{AC^2}\right) + \left(\frac{BC^2}{AC^2}\right) = 1$$

But $\dfrac{AB}{AC} = \boxed{}$ and $\dfrac{BC}{AC} = \boxed{}$

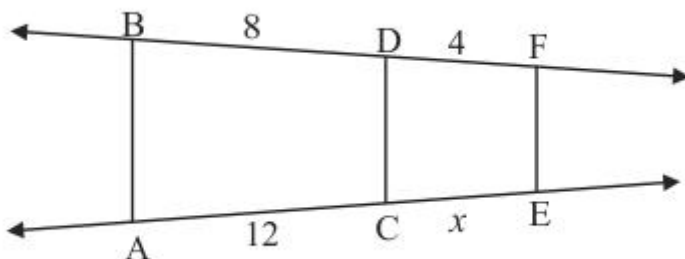$\therefore \sin^2 \theta + \cos^2 \theta = \boxed{}$

(B) Solve the following: (Any FOUR)   8

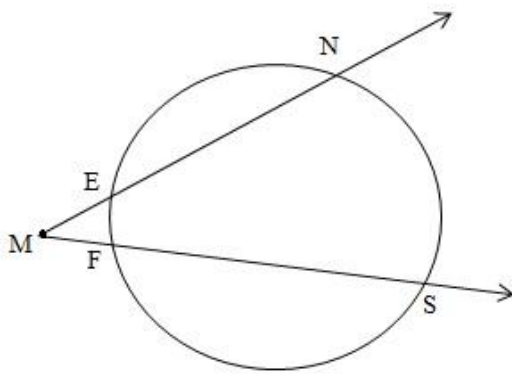**(1)** A person is standing at a distance of 50 m from a temple looking at its top The angel of elevation is of 45°. Find the height of the temple.

(2) In figure below, chord MN and chord RS intersect each other at point P. If PR = 6, PS = 4, MN = 11 find PN.

(3) In the figure given below, if AB ‖ CD ‖ FE then find x and AE.

(4) Find the centroids of the triangles whose vertices are given below: (-7, 6), (2, -2), (8, 5)

(5) In the given figure, m(arc NS) = 125°, m(arc EF) = 37°, find the measure ∠NMS.

Q.3(A) Complete the following activity:(Any ONE)   3

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

We have

$\sin^2\theta + \boxed{} = 1$

$\boxed{} + \cos^2\theta = 1$

$\boxed{} + \cos^2\theta = 1$

$\cos^2\theta = 1 - \boxed{}$

$= \boxed{}$

Taking square root of both sides.

$\cos\theta = \boxed{}$

(2) In the figure below, O is the centre of the sector. ∠ROQ = ∠MON = 60°. QR = 7 cm, and OM = 21 cm. Find the length of arc RXQ and arc MYN. (π = 22/7)

(i) For arc RXQ, $\theta = \angle ROQ = 60°$
OR (r) = $\boxed{}$

Length of arc RXQ = $\boxed{}$ x $2\pi r$

$= \dfrac{60}{360}$ x 2 x $\dfrac{22}{7}$ x 7

$= \boxed{}$

Length of arc RXQ is $\boxed{}$

(ii) For arc MYN, OM(r) = 21 cm, $\theta = \angle MON$
$= 60°$

Length of arc MYN = $\dfrac{60}{360}$ x 2 x $\dfrac{22}{7}$ x 21
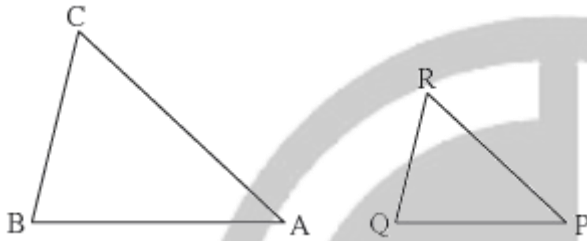
$= \boxed{}$

Length of arc(MYN) is $\boxed{}$

(B) Solve the following: (Any TWO) **6**

(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) In the figure below, O is the centre of the circle. m(arc PQR) = 60° OP = 10 cm. Find the area of the shaded region. (π = 3.14, √3 = 1.73)
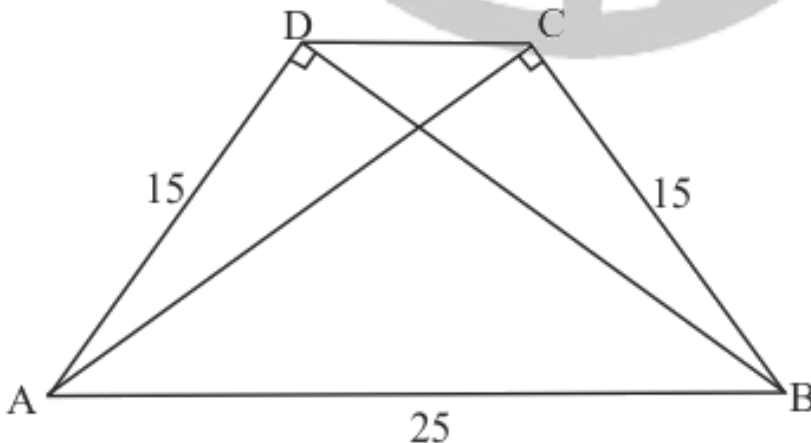

(3) Δ ABC ~ Δ PQR, in Δ ABC, AB = 5.4 cm, BC = 4.2 cm, AC = 6.0 cm. AB: PQ = 3:2. Construct Δ ABC and Δ PQR

(4) Show that ABCD formed by the vertices A(-4,-7), B(-1,2), C(8,5) and D(5,-4) is a rhombus.
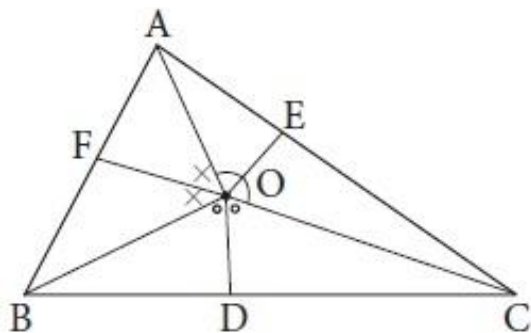
Q.4   Solve the following: (Any TWO) **8**

(1) The diagonal of a rectangle makes an angle of 48° with its smaller side. If the length of the smaller side is 16cm, what is the length of the greater side? (sin 48° = 0.743)

(2) Find the lengths of the median of ABC whose vertices are A(7, -3), B(5,3), C(3, -1).

(3) In a trapezium ABCD, seg AB ‖seg DC seg BD ⊥ seg AD, seg AC ⊥ seg BC, If AD = 15, BC = 15 and AB = 25. Find A(≅ABCD)

Q.5   Solve the following: (Any ONE) **3**

(1) Draw a triangle ABC with side BC = 6 cm, ∠B = 45° and ∠A = 100°, then construct a triangle whose sides are 4/7 times the corresponding sides of ΔABC.

(2) O is any point in the interior of ∆ABC. Bisectors of ∠AOB, ∠BOC and ∠AOC intersect side AB, side BC, side AC in F, D and E respectively.

Prove that BF × AE × CD = AF × CE × BD

....**All The Best**....