Mathematics - II
Practice Paper - II
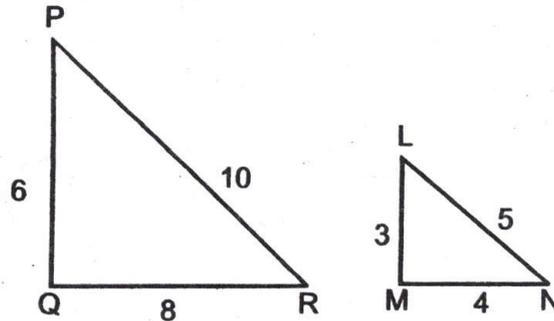
Time : 2 Hours   **Max. Marks : 40**

Q. 1 (A) : Solve the following questions. (Any Four)   [4 Marks]
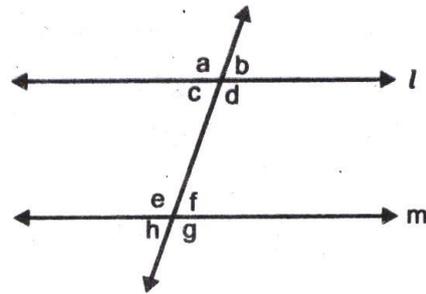
1. Are the triangles in the given figure similar ? If similar, by which test.

2. In a right angle triangle, the longest side is known as .... and the angle opposite to it is m ∠ ....

3. In the given figure, line *l* is parallel to line *m* and line *n* is transversal. a, b, c, d, e, f, g, h are the measures of angles. Write the equation using property of interior angles.

4. If radii of two circles touching each other are 5.5 cm and 4.2 cm, then find the distance between their centres.

5. Point P (–2, 2) in the plane XY is in the .... quadrant.

6. Write the values of the following trigonometric ratios.

    (i) $\sin 30° = \boxed{}$ (ii) $\cos 60° = \boxed{}$

(B) Solve the following questions. (Any Two)   [4 Marks]

1. Draw the circle with centre O and diameter AC. Take points B, D, E on the circle. Find the values of ∠ABC, ∠ADC, ∠AEC and write the result.

2. Prove that $\dfrac{\sin^2\theta}{\cos\theta} + \cos\theta = \sec\theta$.

3. (–7, 6), (2, –2) and (8, 5) are the vertices of triangle. Find co-ordinates of centroid of the triangle.

Q. 2 (A) : Choose the correct alternative.   [4 Marks]

1. If measure of an arc having length 44 cm is 160°, then find the circumference of that circle.

    (A) 66 cm   (B) 44 cm   (C) 160 cm   (D) 99 cm

2. If a line makes an angle of 30° with the positive direction of x-axis, then the slope of the line is ....

(A) $\dfrac{1}{2}$ (B) $\dfrac{\sqrt{3}}{2}$ (C) $\dfrac{1}{\sqrt{3}}$ (D) $\sqrt{3}$

3. The number of tangents drawn through a point on a circle is ....

4. Y is a point in the interior of a circle with diameter XZ. Which of the following statement/s is/are true ?

(i) ∠XYZ cannot be an acute angle. (ii) ∠XYZ cannot be a right angle.

(iii) ∠XYZ is an obtuse angle.

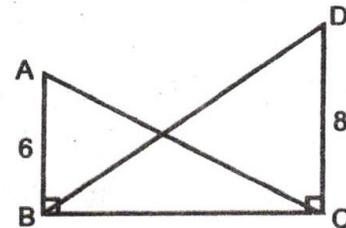(iv) We cannot make a definite statement for measure of ∠XYZ.

(A) (i) (B) (ii) (C) (iii) (D) All (i), (ii) and (iii)

(B) Solve the following questions. (Any Two) **[4 Marks]**
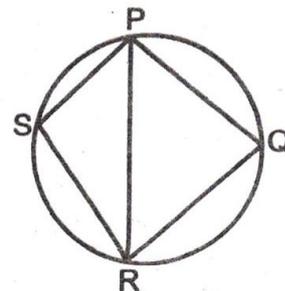
1. In the given figure ∠ABC = ∠DCB = 90°.

AB = 6, DC = 8 then $\dfrac{A\ (\Delta ABC)}{A\ (\Delta DCB)}$ = ?

2. The side of an equilateral triangle is 2a. Find the height of a triangle.

3. In the given figure, ▢PQRS is cyclic quadrilateral. seg PQ ≅ seg RQ. ∠PSR = 110°, then

(1) ∠PQR = ...
(2) m (arc PQR) = ...
(3) m (arc QR) = ...
(4) ∠PRQ = ...

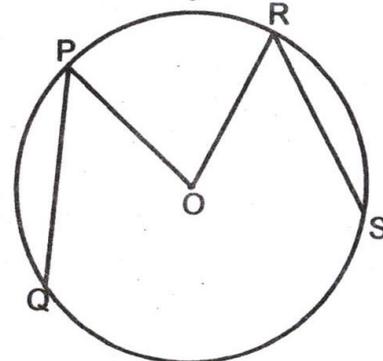**Q. 3 (A) : Solve following questions. (Any Two)** **[4 Marks]**

1. From the given figure, check whether Ray MP is an angle bisector of ∠KMN or not ?
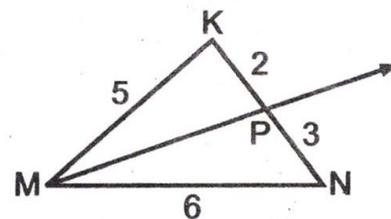
2. In the figure alongside, O is centre of a circle and chord PQ ≅ chord PS.

If ∠PQR = 70° and (arc RS) = 80°
Then

(1) m (arc PR) = ...
(2) m (arc QS) = ...
(3) m (arc QSR) = ...

3. Fill in the blanks.

   (i)   Volume of cone = ☐

   (ii) Curved surface area of cone = ☐

**(B) Solve the following questions. (Any Two)**   **[4 Marks]**

1. If an arc of length 4π cm inscribes angle of 40° at the cenre, then find the radius of the arc.

2. If point P (–4, 6) divides the line segment joining point A (–6, 10) and B (r, s) in the ratio 2 : 1, then find the co-ordinates of point B.

3. A person is standing at a distance of 80 m from a church looking at its top. The angle of elevation is 45°. Find the height of the church.

Q. 4 (A) : Solve the following questions. (Any Three)   **[9 Marks]**

1. In circle of radius 3.3 cm draw chord PQ of length 6.6 cm. Draw tangents at points P and Q. Write the observation about tangents.

2. Square of two adjacent sides of a parallelogram is 130 cm and one diagonal is 14 cm. Find the length of the other diagonal.

3. In the adjoining figure, XY ∥ side AC. If 2AX = 3BX and XY = 9. Complete the activity to find the value of AC.
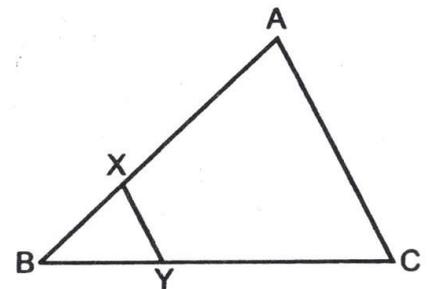
Activity : $2AX = 3BX$ $\therefore \dfrac{AX}{BX} = \dfrac{\boxed{}}{\boxed{}}$

$\dfrac{AX + BX}{BX} = \dfrac{\boxed{} + \boxed{}}{\boxed{}}$ ... (By componendo)

$\dfrac{AB}{BX} = \dfrac{\boxed{}}{\boxed{}}$ ... (I)

ΔBCA ∼ ΔBYX   ... (☐ test of similarity)

$\therefore \dfrac{BA}{BX} = \dfrac{AC}{XY}$ ... (Corresponding sides of similar triangles)

$\therefore \dfrac{\boxed{}}{\boxed{}} = \dfrac{AC}{9}$ $\therefore AC = \boxed{}$ ... [From equation (I)]

4. In the adjoining figure, chord EF ∥ chord GH.

Prove that chord EG ≅ chord FH.

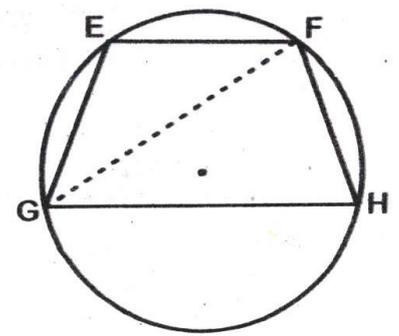Fill in the blanks and complete the proof.

Proof : Draw seg GF

$\angle EFG = \angle FGH$ ... [ ] (I)

$\angle EFG =$ [ ] ... (Inscribed angle theorem) (II)

$\angle FGH =$ [ ] ... (Inscribed angle theorem) (III)

∴ m (arc EG) = [ ] ... [From (I), (II) and (III)]

Chord EG ≅ Chord FH ... ([ ])

Q. 5 : Solve the following questions : (Any One) [4 Marks]

1. ΔLMN is an equilateral triangle. LM = 14 cm. As shown in figure, three sectors are drawn with vertices as centres and radius 7 cm.
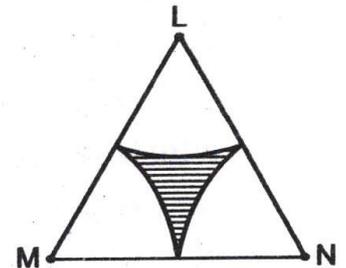
   Find : (i) A (ΔLMN)

   (ii) Area of any one of the sectors.

   (iii) Total area of all the three sectors.

   (iv) Area of the shaded region.

2. In a building there are 8 pillars of diameter 1 cm and height 4.2 m. Find the cost to colour the pillars by the rate of ₹ 24 /m^2.

Q. 6 : Solve the following questions. (Any One) [3 Marks]

1. In an isosceles triangle, length of the congruent sides is 13 cm, and its base is 10 cm. Find the distance between the vertex opposite the base and the centroid.

2. Show that $\sec x + \tan x = \sqrt{\dfrac{1 + \sin x}{1 - \sin x}}$

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