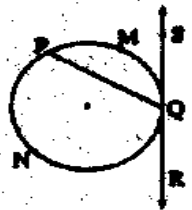


1. Solve any six sub - questions :

12

(i) A circle of radius 6 cm has two tangents AB and CD parallel to each other. What is the distance between these tangents ?

(ii) In the given figure,
 $m(\text{arc PMQ}) = 120^\circ$.
 Find $m\angle PQS$ and $m\angle PQR$.



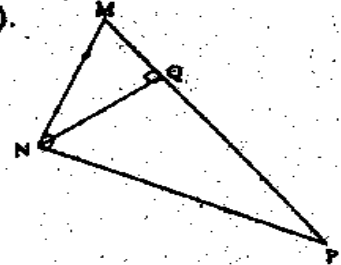
(iii) $\triangle ABC \sim \triangle PQR$, then :

(a) State which ratios of sides are equal to $\frac{AB}{PQ}$.

(b) State which angles are congruent to $\angle B$ and $\angle R$ respectively.

(iv) Find the distance between the points A (0, 0) and B (-5, 12).

(v) In the given figure,
 $m\angle MNP = 90^\circ$,
 seg NQ \perp side MP,
 $MQ = 4$, $PQ = 16$.
 Find NQ.



(vi) Draw a tangent to a circle of radius 3.5 cm at a point P on it. (Do not write the steps of construction.)

(vii) If $\cos A = \frac{3}{5}$, then find the value of $\sin A$.

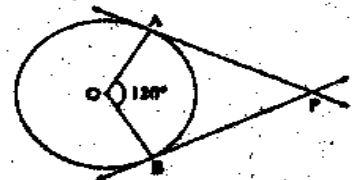
(viii) The length, breadth and height of a cuboid are 20 cm, 18 cm and 10 cm respectively. Find its volume.

2. Solve any four sub-questions :

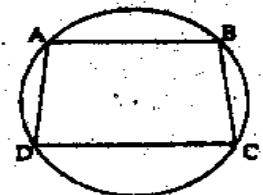
12

(i) In $\triangle ABC$, $AB^2 + AC^2 = 122$, $BC = 10$. Find the length of the median on side BC.

(ii) In the given figure, angle between two radii of a circle is 120° . Tangents to the circle are drawn at the outer ends of these radii. Find the measure of the angle between the tangents.



(iii) In the given figure,
 $\square ABCD$ is cyclic.
 Prove that :
 $m\angle ABC + m\angle ADC = 180^\circ$



(iv) Draw the circumcircle of $\triangle ABC$, such that $m\angle B = 90^\circ$,
 $BC = 5.4$ cm, $AB = 6$ cm. (Do not write the steps of construction.)

(v) Evaluate: $\operatorname{cosec}^2 67^\circ - \tan^2 23^\circ$.

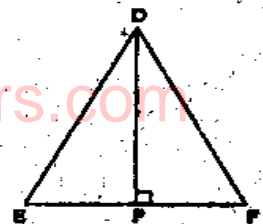
(vi) The volume of a cube is 512 cm^3 . Find the total surface area of the cube.

3. Solve any four sub-questions :

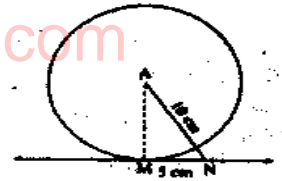
12

(i) The sides of the smaller triangle out of two similar triangles are 4, 5 and 6. If the perimeter of a larger triangle is 90, then what are the lengths of the sides of the larger triangle?

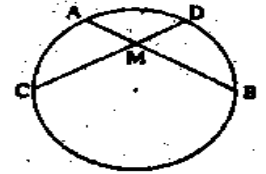
(ii) In the given figure,
 $\triangle DEF$ is an equilateral triangle.
 seg DP \perp side EF and E - P - F.
 Prove that : $DP^2 = 3EP^2$.



- (iii) In the given figure, A is the centre of the circle, AN = 10 cm. Line NM is tangent at M. Determine the radius of the circle, if MN = 5 cm.



- (iv) In the given figure, point M in the interior of the circle, is a point of intersection of two chords AB and CD of the same circle. Show that :
 $CM \times MD = BM \times MA$

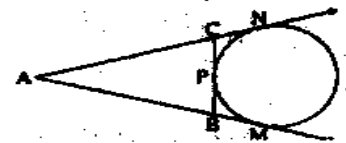


- (v) Show that : $(\sec \theta + \tan \theta)(1 - \sin \theta) = \cos \theta$.
 (vi) If A = (6, 8), B = (3, 2) and P divides seg AB internally in the ratio 4 : 3, find the coordinates of P.

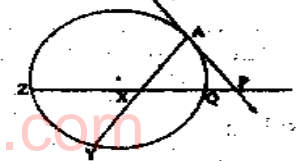
Solve any three sub questions :

12

- (i) Prove : In a right-angled triangle, the square of the hypotenuse is equal to the sum of the squares of the remaining two sides.
 (ii) Construct ΔABC such that $BC = 8$ cm, $m\angle BAC = 40^\circ$ and altitude AD is of length 3 cm. (Do not write the steps of construction.)
 (iii) In the given figure, a circle touches side BC of the ΔABC from outside of the triangle at point P. Further extended lines AC and AB are tangents to the circle at N and M respectively. Prove that : $AM = \frac{1}{2}(\text{Perimeter of } \Delta ABC)$.



- (iv) In the given figure, line AP is a tangent to the circle at A, secant through P intersects chord AY in a point X such that $AP = PX = XY$. If $PQ = 1$ and $QZ = 8$, find AX.



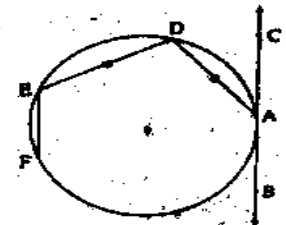
- (v) A road roller of diameter 0.9 m and length 1.8 m is used to press the ground. Find the area of the ground pressed by it in 500 revolutions. (Given : $\pi = 3.14$)
 (vi) If the area of two similar triangles are equal, then prove that they are congruent.

Solve any three sub-questions :

12

- (i) Prove : If a line parallel to a side of a triangle intersects other two sides in two distinct points then the other sides are divided in the same ratio by it.
 (ii) G (x, y) is the centroid of ΔABC , where A = (-1, -7), B = (3, 5) and C = (-14, -19). Find the coordinates of G. Also find the distance between the points B and G.
 (iii) A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground making an angle of 60° with the ground. The distance from the foot of the tree to the point where the top touches the ground is 20 metres. Find the height of the tree.
 (iv) A cylindrical ice-cream pot of radius 20 cm and height 60 cm is filled completely with ice-cream. It was packaged in ready to sell cones of radius 2 cm and height 10 cm. How many such cones can be filled ?

- (v) In the given figure, points B and C lie on tangent to the circle drawn at point A. Chord $AD \cong$ Chord ED . If $m(\text{arc } EF) = \frac{1}{2}m(\text{arc } AD)$ and $m(\text{arc } DE) = 84^\circ$, then determine :
 (a) $m\angle DAC$ (b) $m\angle FDA$ (c) $m\angle FED$ (d) $m\angle BAF$.



- (vi) Draw a circle with centre M and radius 2.7 cm. Take a point P such that length of seg PM is 7.5 cm. Draw tangents to the circle through P. Draw a circle that touches the circle and the tangents. (Do not write the steps of construction.)