

Maharashtra State Board
Class X Maths Part-II
Geometry Question Paper Set-3

Tiem : 2 Hours

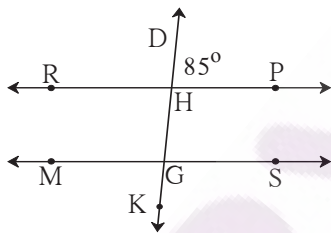
Marks : 40

Notes

- (i) All questions are compulsory.
- (ii) Use of calculator is not allowed.
- (iii) Total marks are shown to the right side of the question.
- (iv) Draw a figure near the answer wherever necessary.
- (v) Marks of constructions should be distinct and clear. Do not erase them.

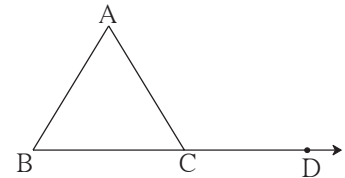
Q. 1 (A) Solve **any four** of the following (4)

- (1) The co-ordinates of point A and B are 4 and -8 respectively. Find $d(A, B)$



- (2) In the adjoining figure line $RP \parallel$ line MS , line DK is a transversal. If $\angle DHP = 85^\circ$ find $\angle RHG$ and $\angle HGS$.

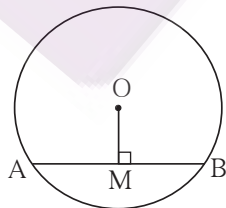
- (3) $\angle ACD$ is an exterior angle of ΔABC .
 If $\angle B = 40^\circ$, $\angle A = 70^\circ$ find $\angle ACD$.



- (4) Diagonals of parallelogram $WXYZ$ intersect at point O . If $OY = 5$, find WY .
- (5) In which quadrant does point $A(-3, 2)$ lie?
 On which axis does point $B(12, 0)$ lie?
- (6) Find the curved surface area of a sphere of radius 1 cm. ($\pi = 3.14$)

Q. 1 (B) Solve **any two** of the following (4)

- (1) Simplify : $2 \sin 30 + 3 \tan 45$



- (2) In the adjoining figure, point O is the centre of the circle, seg $OM \perp$ chord AB .
 If $OM = 8$ cm, $AB = 12$ cm, then find OB .

- (3) In ΔPQR , $PQ = 10$ cm, $QR = 12$ cm, $PR = 8$ cm, find the biggest and the smallest angle of the triangle.

Q 2 (A) Select the correct alternative answer and write. (4)

(1) How many common tangents can be drawn to two circles which touch each other internally?

(A) One (B) Two (C) Three (D) Four

(2) Distance of point (-3, 4) from the origin is

(A) 7 (B) 1 (C) 5 (D) 4

(3) $\sin\theta \times \operatorname{cosec}\theta = ?$

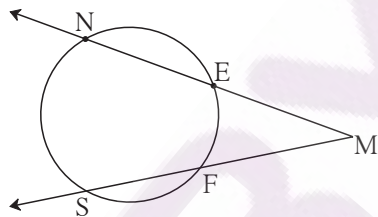
(A) 1 (B) 0 (C) $\frac{1}{2}$ (D) $\sqrt{2}$

(4) Measure of an arc of a sector of a circle is 90° and its radius is 7cm. Find the perimeter of the sector.

(A) 44 cm (B) 25 cm (C) 36 cm (D) 56 cm

Q 2 (B) Solve **any two** of the following (4)

(1) $\triangle ABC \sim \triangle DEF$ and $A(\triangle ABC) : A(\triangle DEF) = 1 : 2$ If $AB = 4$ find DE

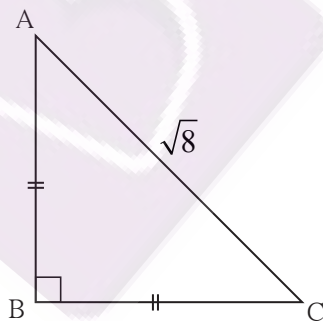


(2) In the adjoining figure, $m(\text{arc } NS) = 125^\circ$
 $m(\text{arc } EF) = 37^\circ$, find $\angle NMS$.

(3) Find the co-ordinates of the midpoint of the line segment joining $P(0, 6)$ and $Q(12, 20)$

Q 3 (A) Carry on **any two** activities of the following. (4)

(1)



With the help of the information given in the figure, fill in the boxes to find AB and BC .

$$AB = BC \quad (\text{Given})$$

$$\therefore \angle BAC = \angle BCA = \square$$

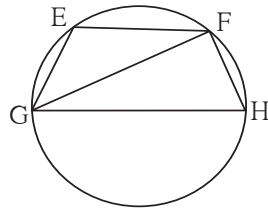
$$\therefore AB = BC = \square \times AC$$

$$= \square \times \sqrt{8}$$

$$= \square \times 2\sqrt{2}$$

$$= 2$$

(2)



In the adjoining figure

chord $EF \parallel$ chord GH .

Prove that chord $EG \cong$ chord FH .

Fill in the boxes and write the complete proof.

Proof : $\angle EFG = \angle FGH$ (I)

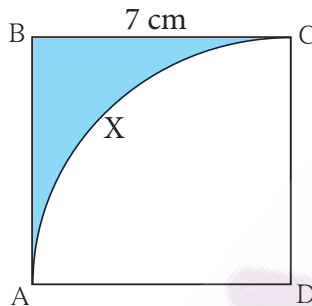
$\angle EFG =$ (inscribed angle theorem) (II)

$\angle FGH =$ (inscribed angle theorem) (III)

$\therefore m(\text{arc } EG) =$ from [(I), (II), (III)]

\therefore chord $EG \cong$ chord FH (corresponding chords of congruent arcs)

(3)



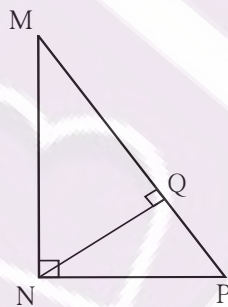
Side of square ABCD is 7 cm. With D as the centre and DA as radius, arc AXC is drawn. Find the area of the shaded region with the help of the following flow chart .



Q 3 (B) Solve **any two** of the following.

(4)

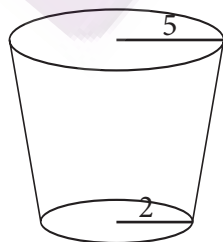
(1)



In $\triangle MNP$, $\angle MNP = 90^\circ$,
seg $NQ \perp$ seg MP , $MQ = 9$,
 $QP = 4$, find NQ .

(2) Prove that $\sec\theta + \tan\theta = \frac{\cos\theta}{1-\sin\theta}$

(3)



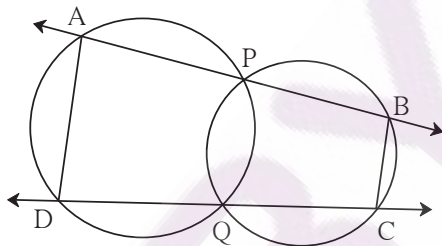
Radii of the top and the base of a frustum of a cone are 5 cm and 2 cm respectively. Its height is 9 cm. Find its volume. ($\pi = 3.14$)

Q. 4 Solve **any three** of the following (9)

- (1) Prove that :
 “If a line parallel to a side of a triangle intersects the remaining sides in two distance points, then the line divides the sides in the same proportion.”
- (2) Draw a circle with centre O and radius 3.5 cm. Take point P at a distance of 5.7 cm. from the centre. Draw a tangent to the circle from point P.
- (3) Line PQ is parallel to line RS where points P,Q,R and S have co-ordinates (2, 4), (3, 6), (3, 1) and (5, k) respectively. Find value of k.
- (4) From the top of a light house, an observer looking at a boat makes an angle of depression of 60° . If the height of the lighthouse is 90 m then find how far is the boat from the lighthouse. ($\sqrt{3} = 1.73$)

Q. 5 Solve **any one** of the following. (4)

(1)



Two circles intersect each other at points P and Q. Secants drawn through P and Q intersect the circles at points A,B and D,C.

Prove that : $\angle ADC + \angle BCD = 180^\circ$

- (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 .

Q. 6 Solve **any one** of the following. (3)

- (1) O is any point in the interior of ΔABC . Bisectors of $\angle AOB$, $\angle BOC$ and $\angle AOC$ intersect side AB, side BC, side AC in F, D and E respectively.

Prove that

$$BF \times AE \times CD = AF \times CE \times BD$$

- (2) There is a hemispherical bowl. A cone is to be made such that, if it is filled with water twice and the water is poured in the bowl, it will be filled just completely. State how will you decide the radius and perpendicular height of the cone.

