Maharashtra State Board

Class X Maths Part-II

Geometry Question Paper Set-2

Time : 2 Hours. **Marks : 40**

Note :

(i) All questions are compulsory.

(ii) Use of calculator is not allowed.

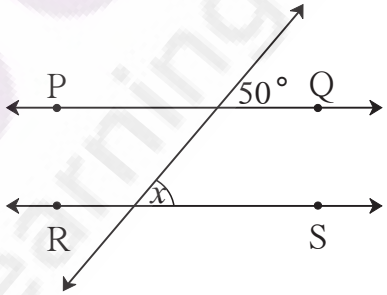
(iii) Total marks are shown to the right of the question.

(iv) Draw a figure near the answer wherever necessary.

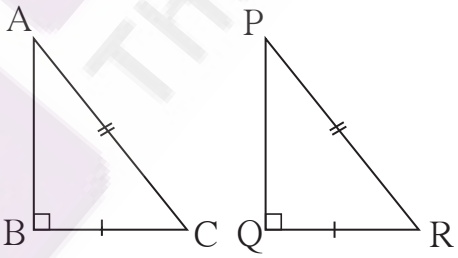
(v) Marks of constructions should be distinct and clear. Do not erase them.

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

(1) In the figure, line PQ $\parallel$ line RS. Using the information given in the figure find the value of x.



(2) In the figure, parts of the two triangles bearing identical marks are congruent. State the test by which the triangles are congruent.



(3) In Δ ABC, if $\angle A = 65°$; $\angle B = 40°$ then find the measure of $\angle C$.

(4) $\square$PQRS is a parallelogram. Write the sum of measures of $\angle P$ and $\angle Q$.

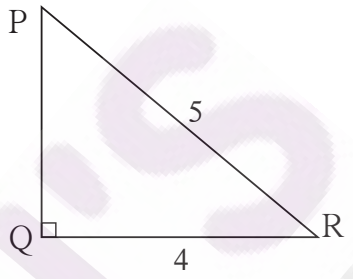
(5) If hypotenuse of a right angled triangle is 5 cm, find the radius of the circle passing through all vertices of the triangle.

(6) Write the co-ordinates of the point of intersection of graphs of equations $x = 2$ and $y = -3$.

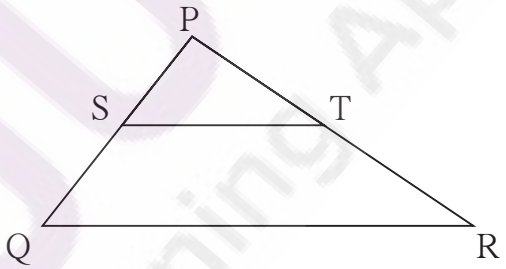
Q. 1 (B) Solve **any two** of the following. **4**

(1) Length of a rectangular tank is twice its breadth. If the depth of the tank is 3 m and area of its four walls is 108 m^2, find the length of the tank.

(2) In right angled triangle PQR, if $\angle Q = 90°$, PR = 5, QR = 4 then find PQ and hence find tan R.



(3) In ΔPQR, points S and T are the midpoints of sides PQ and PR respectively. If ST = 6.2 then find the length of QR.

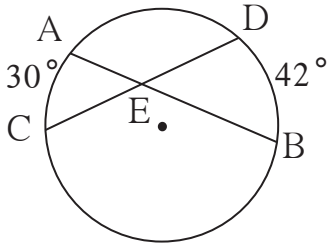


Q. 2 (A) Select the appropriate alternative and write it. **4**

(1) $\Delta ABC \sim \Delta PQR$. If $A(\Delta ABC)=25$, $A(\Delta PQR)=16$, find AB : PQ.

(A) 25:16 (B) 4:5 (C) 16:25 (D) 5:4

(2) From the information given in the figure, find the measure of $\angle AEC$.



(A) 42° (B) 30°

(C) 36° (D) 72°

(3) Point P is the midpoint of seg AB. If co-ordinates of A and B are (−4, 2) and (6, 2) respectively then find the co-ordinates of point P.

(A) (−1,2) (B) (1,2) (C) (1,−2) (D) (−1,−2)

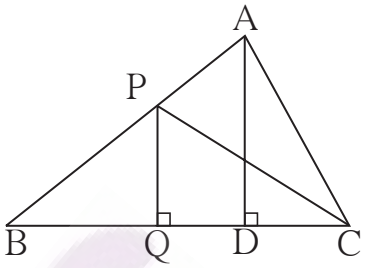
(4) Find the ratio of the volumes of a cylinder and a cone having equal radius and equal height.

(A) 1 : 2 (B) 2 : 1 (C) 1 : 3 (D) 3 : 1

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

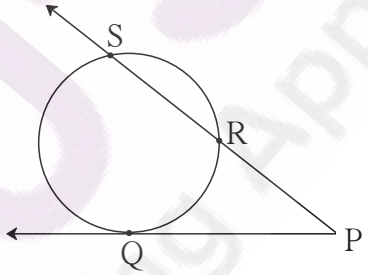
(1) In the adjoining figure,
PQ ⊥ BC, AD ⊥ BC,
PQ = 4, AD = 6
Write down the following ratios.

(i) $\frac{A(\Delta PQB)}{A(\Delta ADB)}$ (ii) $\frac{A(\Delta PBC)}{A(\Delta ABC)}$



(2) Diagonal of a square is 20 cm. Find the length and perimeter of the square.

(3) In the figure, point Q is the point of contact. If PQ = 12, PR = 8 then find PS.

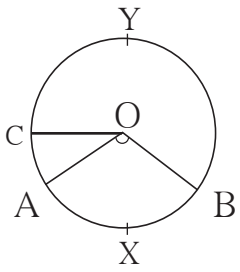


Q. 3 (A) Carry out **any two** activities of the following. **4**

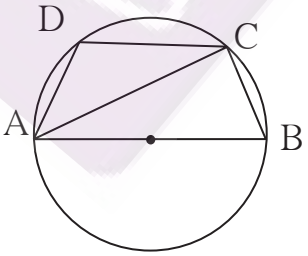
(1) In the following figure 'O' is the centre of the circle.
∠AOB = 110^0, *m*(arc AC) = 45^0.

Use the information and fill in the boxes with proper numbers.

(i) *m*(arcAXB) = ☐ (ii)*m*(arcCAB) = ☐
(iv)∠COB = ☐ (iv)*m*(arcAYB) = ☐

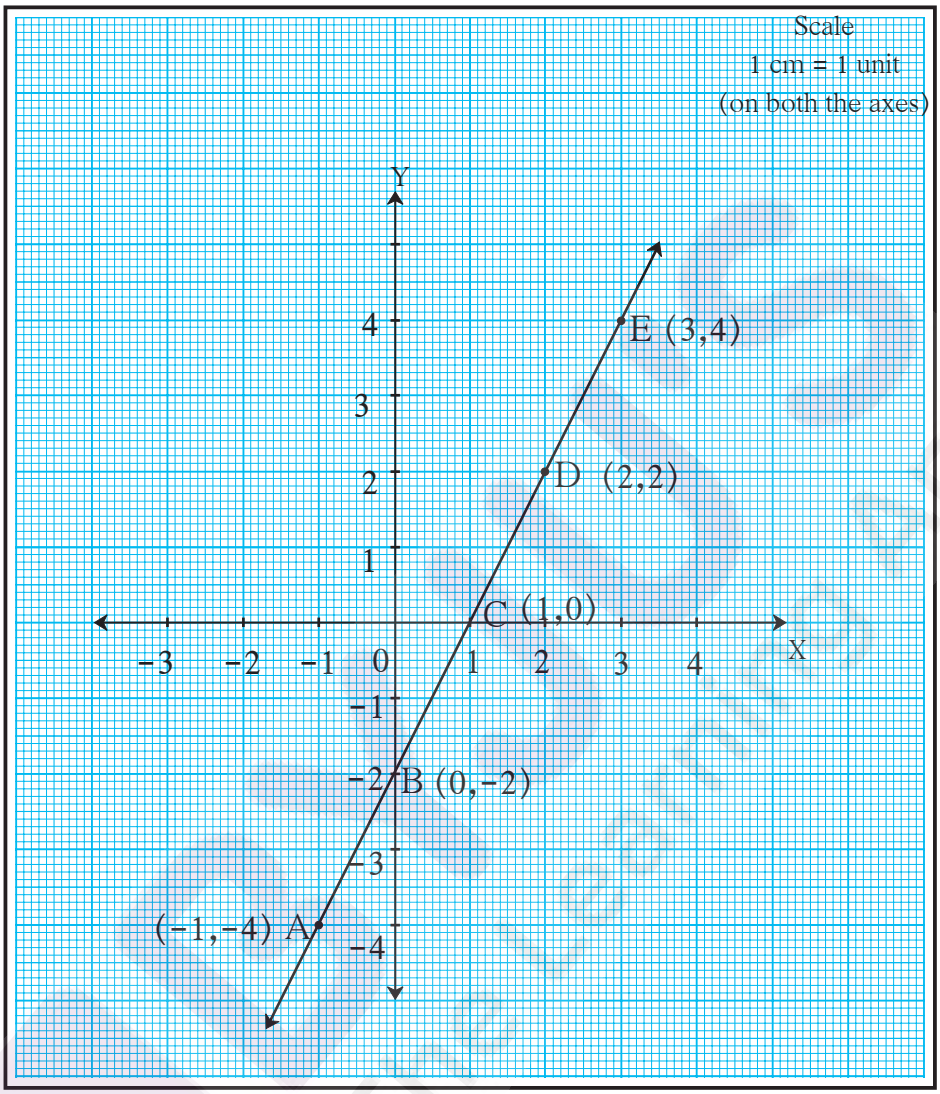


(2) In the figure, □ABCD is a cyclic quadrilateral. Seg AB is a diameter. If ∠ADC = 120°, complete the following activity to find measure of ∠ BAC.



□ABCD is a cyclic quadrilateral.
∴ ∠ADC + ∠ABC = 180°
∴ 120° + ∠ABC = 180°
∴ ∠ABC = ☐
But ∠ACB = ☐ .....angle in semicircle
In ΔABC,
∠BAC + ∠ACB + ∠ABC = 180°
∴ ∠BAC + ☐ = 180°
∴ ∠BAC = ☐

(3) Complete the table below the graph with the help of the following graph.



Sr. No.	First point	Second point	Co-ordinates of first point (x_1, y_1)	Co-ordinates of second point (x_2, y_2)	$\frac{y_2 - y_1}{x_2 - x_1}$
1	C	E	(1, 0)	(3, 4)	$\frac{\square}{\square} = \square$
2	A	B	(−1,−4)	(0,−2)	$\frac{\square}{\square} = \square$
3	B	D	(0,−2)	(2, 2)	$\frac{\square}{\square} = \square$

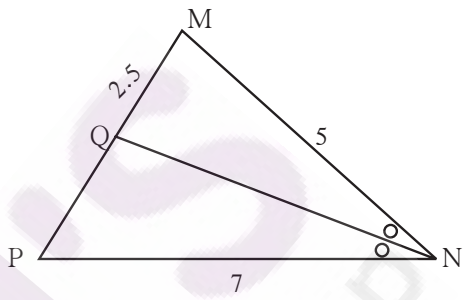
Write your observation from the table.

Q. 3 (B) Solve **any two** of the following. **4**

(1) If $\tan\theta = \frac{3}{4}$ then find the value of $\sec\theta$.

(2) Find the length of an arc if measure of the arc is $90°$ and its radius is 14 cm.

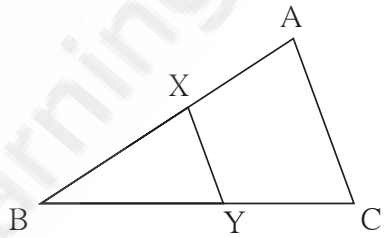
(3) Seg NQ is the bisector of $\angle N$ of ΔMNP. If MN= 5, PN =7, MQ = 2.5 then find QP.



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

(1) Δ ABC is an equilateral triangle. P is the point on side BC such that $PC = \frac{1}{3}$ BC. If AB = 6 cm, then find AP.

(2) In the adjoining figure, seg XY || seg AC, If 3AX = 2BX and XY = 9 then find the length of AC.

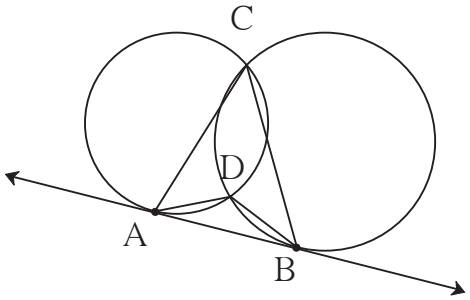


(3) Show that $\square$ABCD formed by the vertices A(−4,−7), B(−1,2), C(8,5) and D(5,−4) is a rhombus.

(4) Two buildings are in front of each other on a road of width 15 meters. From the top of the first building, having a height of 12 meter, the angle of elevation of the top of the second building is $30°$. What is the height of the second building ?

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

(1) Two circles intersect each other at points C and D. Their common tangent AB touches the circles at point A and B. Prove that : $\angle ADB + \angle ACB = 180°$



(2) Draw an isosceles triangle with base 5 cm and height 4 cm. Draw a triangle similar to the triangle drawn whose sides are $\frac{2}{3}$ times the sides of the triangle.

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

(1) Height of a cylindrical barrel is 50 cm and radius of its base is 20 cm. Anurag started to fill the barrel with water, when it was empty, by a cylindrical mug. The diameter and height of the mug was 10 cm and 15cm respectively. How many minium number of mugs will be required for the barrel to overflow?

(2) Draw Δ ABC such that, AB = 8 cm, BC = 6 cm and $\angle$ B = 90°. Draw seg BD perpendicular to hypotenuse AC. Draw a circle passing through points B, D, A. Show that line CB is a tangent of the circle.