Genesis Educates

"There is no element of genius,

Without some form of madness"

10th ICSE Mathematics Mock Test

Topic: Co-ordinate Geometry, Triangles, Circle, Quardatic Equation, Ratio & Proportion, Similarity, Linear Inequation, Probability, Matrics & A.P

Time Allowed: 2.5 hrs **M.M: 80**

Instructions:

- **Q1 is of 15 marks (each question carries 1 mark).Write only the correct option.**
- **Q2 carries 5 marks.**
- **Q3-Q8 carry 10 marks each [(i)&(ii) carry 3 marks each, (iii) carries 4 marks]**

1. Point A(a, 6) is reflected in the origin as A'(–2, b). Then a+b equals:
   (a)2 (b) – 6 (c) 4 (d) – 4

2. ABCD is a parallelogram. The co-ordinates of the vertices are A(–4, –2), B(3, – 2), C(x, 4) and D(–1, 2). The co-ordinates of the point C are
   (a) (6,2) (b) (2,6) (c) (- 6,2) (d) None of these

3. If in two triangles ABC and PQR, (AB/QR) = (BC/PR) = (CA/PQ), then
   (a) ΔPQR ~ ΔCAB (b) ΔPQR ~ ΔABC
   (c) ΔCBA ~ ΔPQR (d) ΔBCA ~ ΔPQR

4. If in triangles ABC and DEF, (AB/DE)=(BC/FD),then they will be similar when
   (a) ∠B = ∠E b) ∠A = ∠D c) ∠B = ∠D d) ∠A = ∠F

5. If 4x + ay – 7 = 0 and 6x + 3y – 10 = 0 are parallel lines, then a is
   (a) 1 (b)2 (c) 3 (d) 4

   OR

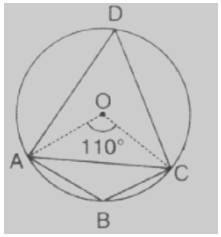
   Values of k for which the quadratic equation 2x2 – kx + k = 0 has equal roots is
   (a) 0 only (b) 4 (c) 8 only (d) 0, 8

6. D and E are respectively the points on the sides AB and AC of a triangle ABC such that AD = 2 cm, BD = 3 cm, BC = 7.5 cm and DE is parallel to BC. Then, length of DE (in cm) is
   (a) 2.5 (b) 3 (c) 5 (d) 6

7. A (5, x), B(–4, 3) and C(y, –2) are the vertices of the ΔABC, whose centroid is the origin. Value of 'x – y' is:
   (a) –1 (b) 0 (c) 1 (d) 2

8. In the adjoining figure; $\angle AOC = 110°$; calculate:
$\angle ABC - (\angle ADC + \angle OAC)$

(a) 15° (b) 35° (c) 25° (d) 45°

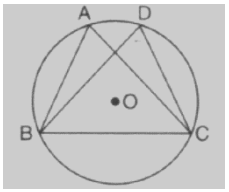


OR

If $2\begin{bmatrix}3 & 4\\5 & x\end{bmatrix} + \begin{bmatrix}1 & y\\0 & 1\end{bmatrix} = \begin{bmatrix}7 & 0\\10 & 5\end{bmatrix}$, then 'x + y' is:

(a) – 6 (b) 2 (c) – 8 (d) 6

9. The given shows a circle through the points A, B, C and D. If $\angle BAC = 67°$, then $\angle DBC + \angle DCB$ equals



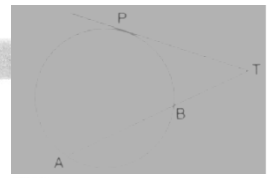
(a) 123° (b) 93° (c) 100° (d) 113°

OR

If $A = \begin{bmatrix}3 & 5\\4 & -2\end{bmatrix}$ and $B = \begin{bmatrix}2\\4\end{bmatrix}$, then

(a) Order of AB is 1 × 2 (b) Order of AB is 2 × 2
(c) Order of AB is 2 × 1 (d) AB is not defined.

10. In the given figure, find TP if AT = 16 cm and AB = 12 cm.

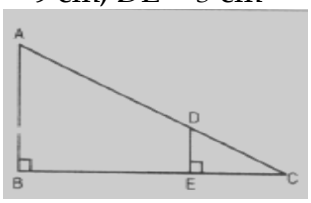


(a) 6 cm (b) 12 cm (c) 10 cm (d) 8 cm

OR

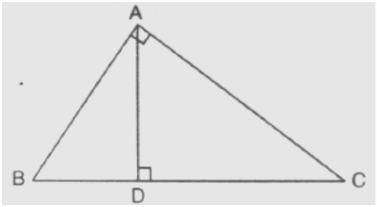
The sum of the first 22 terms of the AP: 8, 3, –2,… is:
(a) –979 (b) –1958 (c) 1331 (d) None of these

11. In the given figure, AB and DE are perpendiculars to BC. If AB = 9 cm, DE = 3 cm and AC = 24 cm, calculate AD.



(a) 16 cm (b) 8 cm (c) 6 cm (d) 10 cm

12. In the adjoining figure, ABC is a triangle right-angled at vertex A and AD is altitude. If BD = 3·6 cm and CD = 6·4 cm; the length of AD.



(a) 9.6 cm (b) 2.4 cm
(c) 4.8 cm (d) None of these

13. If Δ ABC ~ Δ PRQ, then which is true:

(a) $\frac{AB}{PR} = \frac{BC}{PQ}$ and $\angle A = \angle P$

(b) $\frac{AB}{PR} = \frac{BC}{RQ}$ and $\angle C = \angle P$

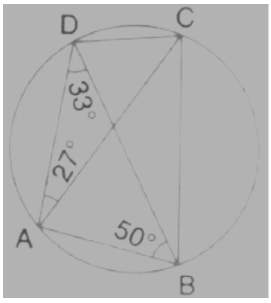
(c) $\frac{AC}{PQ} = \frac{BC}{RQ}$ & $\angle B = \angle R$

(d) None of these

14. In Δ ABC, LM || BC (L lies on AB & M lies on AC).
If AL = 2cm, LB = 4 cm, then $\frac{BC}{LM}$ is:

(a) $\frac{1}{3}$ (b) 2 (c) 3 (d) None of these

15. ABCD is a cycle quadrilateral in which $\angle$DAC = 27°; $\angle$DBA = 50° and $\angle$ADB = 33°. Calculate: $\angle$CAB



(a) 35° (b) 73°
(c) 53° (d) None of these

OR

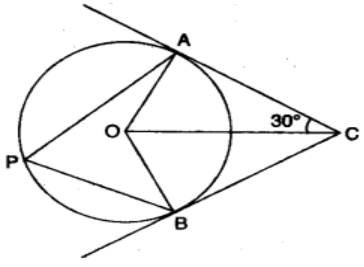
If x ∈ N and – 100 < x < 1, then solution set is:
(a) {0, 1} (b) {1} (c) empty (d) containing 99elements

Q2. Use a graph paper to answer the following questions. (Take 1 cm = 1 unit on both axes).
(i) Plot A (4, 4), B (4, -6) and C (8, 0), the vertices of a triangle ABC.
(ii) Reflect ABC on the y-axis and name it as A'B'C'.
(iii) Write the coordinates of the image A', B' and C'.
(iv) Give a geometrical name for the figure AA'C'B'BC.

Q3. (i) Find the coordinates of the points which divide the line segment joining A(–2, 2) and B (2, 8) into four equal parts.

(ii)M and N are two points on the X axis and Y axis respectively. P(3, 2) dividesthe line segment MN in the ratio 2 : 3.Find :
(a) the coordinates of M and N
(b) equation of the line MN.

(iii)In the given figure O is the centre of the circle. Tangents at A and B meet at C. If ∠AOC = 30°, find:
(a) ∠BCO
(b) ∠AOB



(c) ∠APB

OR

The n^{th} term of a sequence is 8 - 5n. Find 25th term and common difference.

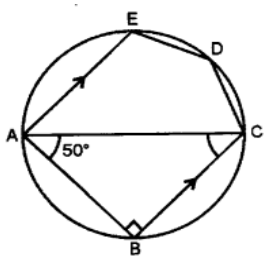
Q4. (i) The slope of a line joining P(6, k) and Q(1 – 3k, 3) is 12. Find
(a) k
(b) Midpoint of PQ, using the value of 'k' found in (a).

(ii) The co-ordinates of points A and B are (6, – 4) and (8, 12). Find the equation of
(a) the straightline AB.
(b) the perpendicular bisector of AB.

OR

A box contains 3 blue, 2 white, and 4 red marbles. If a marble is drawn at random from the box, what is the probability that it will be
(i) white? (ii) blue? (iii) red?

(iii) In the given figure, ABCDE is a pentagon inscribed in a circle such that AC is a diameter and side BC||AE. If ∠BAC = 50°, find giving reasons
(a) ∠ACB
(b) ∠EDC
(c) ∠BEC

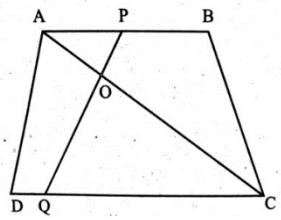


OR

How many terms of the series 18 + 15 + 12 +… when added together will give 45?

Q5. (i) If the points A(6, 1), B(8, 2), C(9, 4) and D(p, 3) are the vertices of a parallelogram, taken in order, find the value of p.

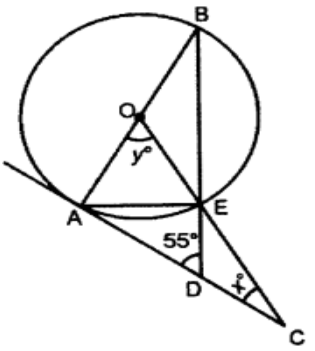
(ii) In figure below, if AB ‖ DC and AC and PQ intersect each other at the point O, then OA.CQ = OC.AP.



(iii) Rs 480 is divided equally among 'x' children. If the number of children were 20 more, then each would have got Rs 12 less. Find the value of x.

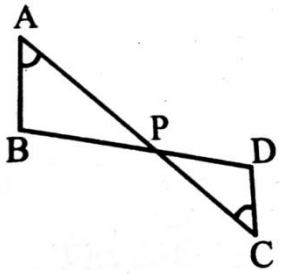
OR

In the given figure, AC is a tangent to the circle with centre O.If ∠ADB = 55°, find x and y. Give reasons for your answers.

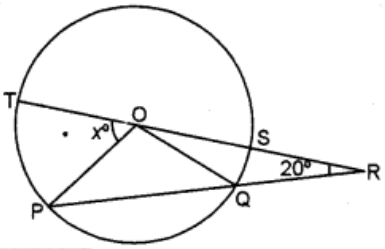


Q6. (i) If A(2, 8), B(6, 4) and C(–6, y) are collinear points, find y.

(ii) In figure below, ∠A = ∠C, AB = 6 cm, BP = 15 cm, AP = 12 cm and CP = 4cm then find PD + CD.



(iii) In the figure given below 'O' is the centre of the circle. If QR = OP and∠ORP = 20°, find the value of 'x ' giving reasons.



OR

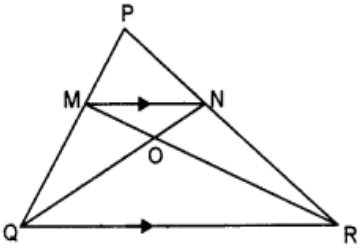
If$A = \begin{bmatrix} 3 & x \\ 0 & 1 \end{bmatrix}$ & $B = \begin{bmatrix} 9 & 16 \\ 0 & -y \end{bmatrix}$and $A^2 = B$, then find 'x + y'.

Q7. (i) Find the coordinates of the point which divides the line segment joining the points (4, – 3) and (8, 5) in the ratio 3:1 internally.

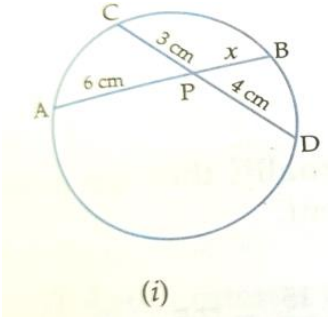
(ii) In Δ PQR, MN is parallel to QR and PM/MQ = 2/3

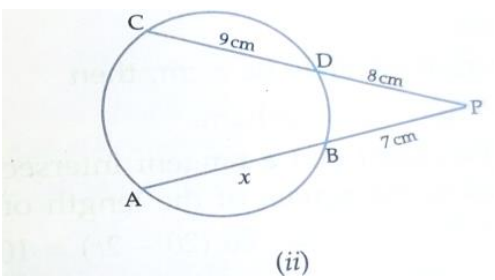
(a) Find MN/QR.

(b) Prove that ΔOMN and ΔORQ are similar.



(iii) Find the unknown length x in each of the following figures:





OR

Solve: $2y - 3 < y + 1 \leq 4y + 7$, if

a. $y \in \mathbf{Z}$

b. $y \in \mathbf{R}$

Q8. (i) Find the equation of the perpendicular dropped from the points (–1, 2) onto the line joining (1, 4) and (2, 3).

OR

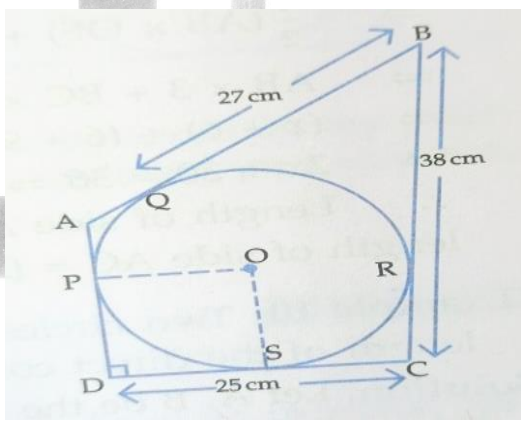
Solve: $2x^2 - 4x - 3 = 0$ and write your answer correct up to two decimal places.

(ii) ABCD is a rhombus. The co-ordinates of A and C are (2, 12) and (–6, – 4) respectively. Find the equation of the diagonal BD.

OR

Solve for x: $\frac{1}{x} + \frac{2}{2x-3} = \frac{1}{x-2}, \quad x \neq 0, \frac{3}{2}, 2$

(iii) In the adjoining figure, a circle is inscribed in the quadrilateral ABCD. Given that BC = 38 cm, QB = 27 cm and DC = 25 cm and that AD is perpendicular to DC, find the radius of the circle.



OR

Using properties of proportion solve for x, given

$$\frac{\sqrt{5x} + \sqrt{2x-6}}{\sqrt{5x} - \sqrt{2x-6}} = 4$$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