Class - Mathematics

Class - IX

Time: 3 hrs

Marks: 80

General Instructions:

(i) All questions are compulsory.

(ii) The question paper consists of 30 questions divided into four sections – A, B, C and D. Section A contains 10 questions of 1 mark each, Section B is of 5 questions of 2 marks each, Section C is of 10 questions of 3 marks each and section D is of 5 questions of 6 marks each.

(iii) There is no overall choice. However, an internal choice has been provided in sections B,C and D

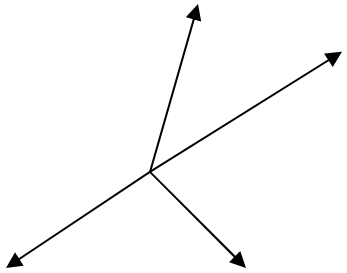
(iv) In question on construction, the drawing should be neat and exactly as per the given measurements.

(v) Use of calculator is not permitted.

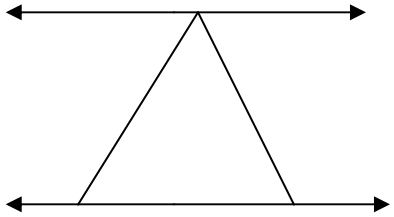
SECTION A

(Qns 1 – 10 carry 1 mark each)

1. Find four rational numbers between 3/5 and 4/5.
2. Find P(1) and P(2) if P(x)= 3x+1
3. In which quadrant or on which axis do each of the following points lie? . (-2,4), (-1, 0) , (1,2) and (-3, -5)
4. Find the value of k if x = 2, y = 1 is a solution of the equation 2x + 3y = k.
5. Write any two postulates of Euclid
6. If x + y = w + z , then show that AOB is a line AD and BC equal perpendiculars to a line segment AB ,Show that CD bisects AB



7. Find x and y if AB // CD , $\angle$ APQ = 50^0 and $\angle$ PRD = 127^0.



8. Evaluate 103 ×107 by using a suitable identity.
9. Simplify $2^{2/3} . 2^{1/3}$.
10. Write two solutions of 2x + y = 7.

SECTION – B

(Qns 11 – 16 carry 2 marks each)

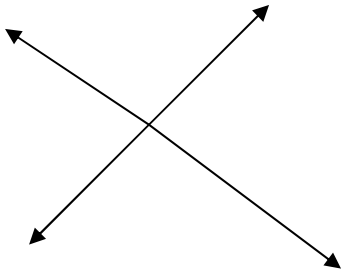
11. Find remainder when $x^3 + 3x^2 + 3x + 1$ is divided by (x-1) by using factor theorem.
12. Prove that angle opposite to equal sides of an isosceles triangle are equal.
13. Draw the graph of x + y = 3 .
14. Expand $(x – 2y)^3$
15. Expand $(2x + 1)^3$.
16. Rationalise $1/\sqrt{7}$.

SECTION – C

(Qns 17 – 28 carry 3 marks each)

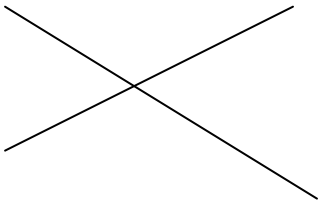
17. Find the value of k if x – 1 is a factor of $x^2 - 3x + k$

18. Simplify $1/(\sqrt{7} – \sqrt{2})$.
19. Factorise $9x^2 + 6xy + y^2$
20. Solve 2x + 1= x – 3 and represent the solutions on the Cartesian plane.
21. In figure , line PQ and RS intersect each other at O. If $\angle$ POR : $\angle$ ROQ = 5:7.Find all the angles.



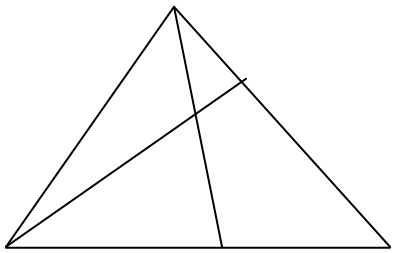
22. Prove that the sum of the angles of a triangle is 180.

23. In figure OA = OB and OC =OD Show that $\Delta AOD \cong \Delta BOC$.



24. In ΔABC ,the bisector AD of A is perpendicular to BC. Show that AB =AC.

25. In figure QT$\perp$ PR, $\angle$ TQR =40 and $\angle$ SPR =30 ,find x and y.

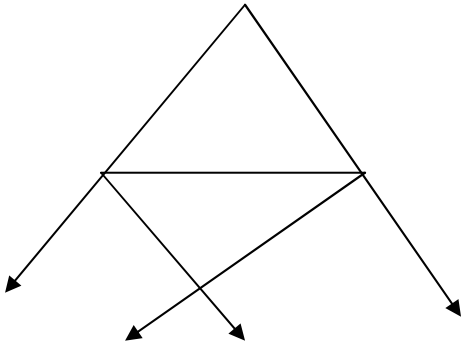


26. Express the following equations in the form of ax + by + c =0 (i) x – y/5 =10
    (ii) y-2 =0
27. Express 0.3333….. in the form of p/q.
28. Evaluate $(999)^3$.

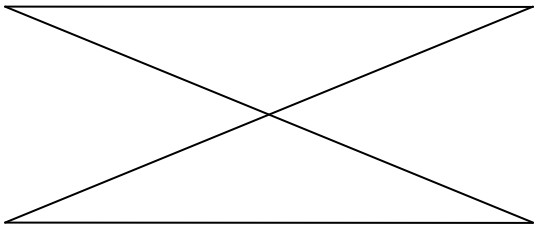
SECTION – C

(Qns 29 – 34 carry 6marks each)

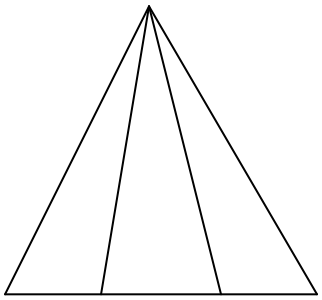
29. Factorise $49a^2 + 70ab + 25b^2$ (i) $25/4\ x^2 – y^2 / 9$
30. If the point (3,4) lies on the graph 3y= ax +7,find the value of a.
31. In figure the sides AB and AC of a triangle are produced to points E and D respectively .If bisectors BF and CG of $\angle$CBE and $\angle$ BCD respectively meet at the point O ,then prove that $\angle BOC = 90 - 1/2\ \angle BAC$.



32. Line segment AB is parallel to another line segment CD,O is the mid-point of AD. Show that (i) $\Delta AOB \cong \Delta DOC$ (ii) O is also the mid-point of BC.



33. In an isosceles triangle ABC with AB =AC , D and E are points on BC such that BE=CD. Show that
AD=AE.



34. Factorise (i) $8x^3 - 64y^3$ (ii) $125a^3 + 27b^3$.