Ashwani Gupta

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Class IX

Subject- Mathematics

Semester -1

Time: 3-3$\frac{1}{2}$ hrs. **MM:** 80

GENERAL INSTRUCTIONS:

1. *All questions are compulsory.*
2. *The question paper consists of thirty four questions divided into four sections A, B, C & D. Section A comprises of ten questions of 01 marks each, Section B comprises of eight questions of 02 marks each, Section C comprises of ten questions of 03 marks each and section D comprises of six questions of 04 marks each.*
3. *All questions in section A are multiple choice questions where you are to select one correct option out of given four.*
4. *There is no overall choice. However internal choice has been provided in one question of 02 marks each, three questions of 03 marks each and two questions of 04 mark each. You have to attempt only one of the alternatives in all such questions.*
5. *Use of calculators is not permitted.*

Section – 'A' (carry one mark each)

1. A rational number equivalent to $\frac{5}{7}$ is:

   (a) $\frac{15}{17}$ (b) $\frac{25}{27}$

   (c) $\frac{10}{14}$ (d) $\frac{10}{27}$

2. Given polynomial $p(t) = t^4 - t^3 + t^2 + 6$, then $p(-1)$ is:

   (a) 6 (b) 9

   (c) 3 (d) -1

3. In quad ABCD BM$\perp$ AC and DN $\perp$ AC, such that BM=DN. If BR =8cm then BD is

   a) 4 cm b)2cm

   c) 12cm d) 16cm

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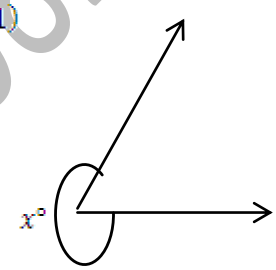
4. Given two points A and B, there is one and only one that contains both the point. This statement is known as
   a) Axiom　　b) Theorem
   c) Postulates　　d) All of these
5. Given a line segment AB. P is the point on the perpendicular bisector of line segment AB, such that AP=10cm, also AB=12cm then distance of point P from line segment AB is
   a) 6cm　　b) 5cm
   c) 7cm　　d)8cm
6. If the two complementary angles are in the ratio $13:5$, then the angles are:
   (a) $65°, 35°$　　(b) $65°, 25°$
   (c) $13x°, 5x°$　　(d) $25°, 65°$
7. The square root which number is rational:
   (a) 7　　(b) 1.96
   c) 0.04　　(d) 13
8. If polynomial $p(x) = 3x^4 - 4x^3 - 3x - 1$ is divided by $(x-1)$, then remainder is:
   (a) 3　　(b) -4
   (c) -1　　(d) $p(1)$



9. In the figure $\angle x$ is
   a) Reflexive angle
   b) Acute angles
   c) Obtuse angle
   d) Exterior angle
10. What is the common between the three angles of a triangle & a linear pair:
   (a) angles are equal　　(b) in both cases sum of angles is $180°$
   (c) in triangle there are three angles & in linear pair there are two angles.
   (d) All of these

Section – 'B' (carry two marks each)

11. Express $\overline{23}.43$ in $\frac{p}{q}$ form where $q \neq 0$

12. Find the value of x, if AB||CD

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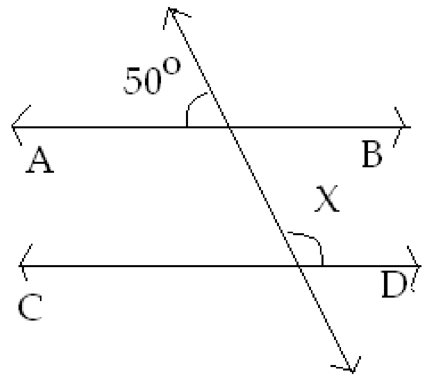
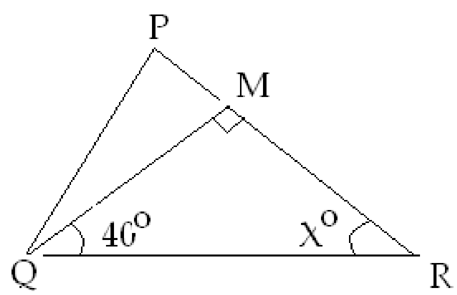
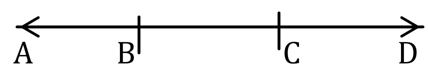


Or

Find the value of x.



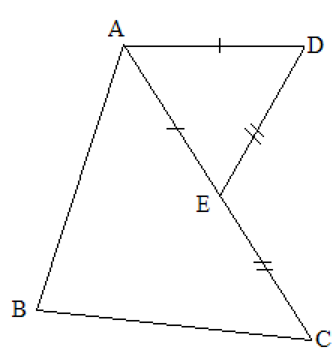
13. In fig, if AC=BD, then prove that AB=CD.



14. Find the value of $(16)^{-2/4}$

15. Factorize: $x^2 - 2x + \frac{7}{16}$

16. In the given fig. DE = EC. Show that AB + BC > AD



17. See the following figure and write the following:

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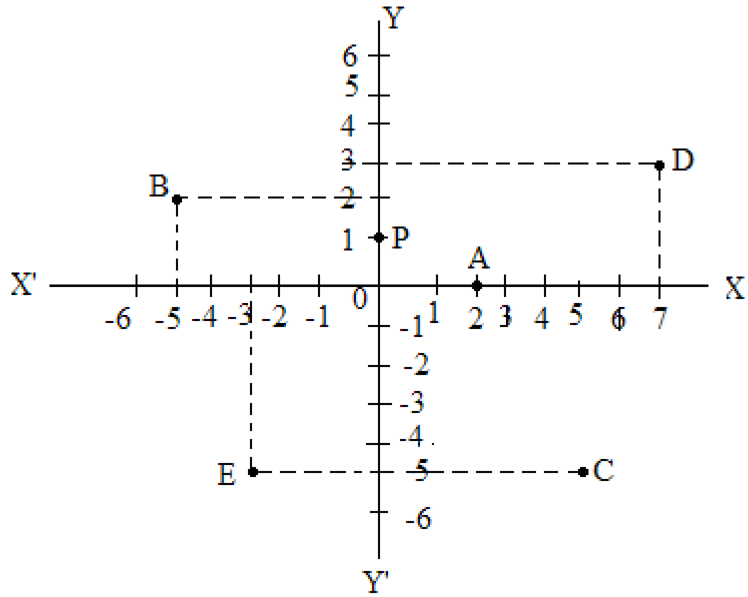
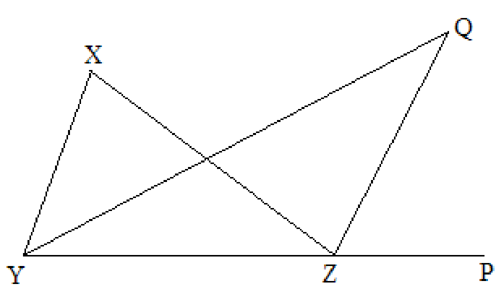


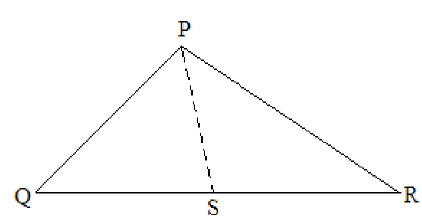
(i) The co-ordinates of B, C, A , P
(ii) The Abscissa of D
(iii) The point identified by (-3, -5)

18. In fig. the side YZ of ΔXYZ is produced to a point P. if the bisectors of∠ XYZ and ∠XZP meet at point Q. then prove that ∠YQZ = ½ ∠YXZ.



Section – 'C' (carry three marks each)

19. In fig. PR>PQ and PS bisects ∠QPR prove that ∠PSR>∠PSQ.



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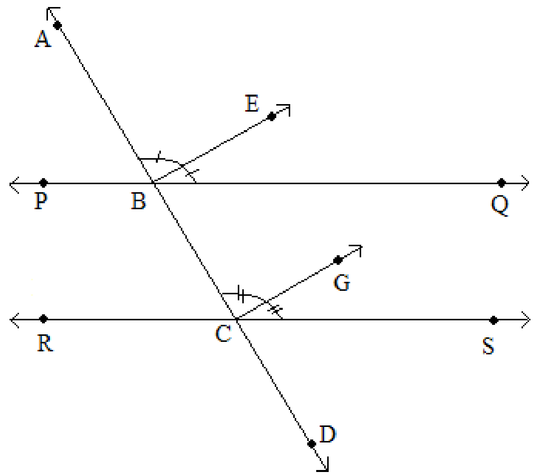
20. If a transversal intersects two lines such that the bisectors of a pair of corresponding angles are parallel, and then prove that two liens PQ and RS are parallel.



21. The sides of a triangular plot are in the ratio of 3:5:7 and its perimeter is 300m. Find its area.

22. Rationalize the denominator:

$$\frac{\sqrt{a+b} + \sqrt{a-b}}{\sqrt{a+b} - \sqrt{a-b}}$$

Or

$$\frac{5}{3+\sqrt{5} - 2\sqrt{2}}$$

23. Find the value of a & b if

$$\frac{\sqrt{3}-1}{\sqrt{3}+1} = a + b\sqrt{3}$$

Or

$$\frac{4+3\sqrt{5}}{4-3\sqrt{5}} = a + b\sqrt{5}$$

24. Represent $\sqrt{8.3}$ on number line.

25. **Factorize:** $x^{12} - y^{12}$

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26. Prove: $a^3+b^3+c^3-3abc = \frac{1}{2}(a+b+c)[(a-b)^2+(b-c)^2+(c-a)^2]$

Or

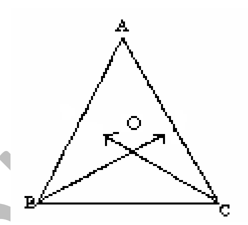
Prove: $(a+b)^3+(b+c)^3+(c+a)^3 = 3-(a+b)(b+c)(c+a) = (a^3+b^3+c^3-3abc)$

27. Locate the points (5,8), (0,5), (2,5), (5,2), (-3,0), (8,0) in the Cartesian plane.

28. Prove that the sum of the three angles of a triangle is 180^0.

Section – 'D' (carry four marks each)

29. In the fig BO and CO are bisectors o interior angles ∠B and ∠C intersecting at O. Show that $\angle BOC = 90_o + 12\angle BAC$



Or

ABC is a triangle in which BE and CF are altitude to sides AC and AB are equal Prove that $\Delta ABC \cong \Delta ACF$

30. Factories: $x^3 - 23x^2 + 142x + 120$

31. Factorize : $4x^2 + 9y^2 + 16z^2 + 12xy - 24yz - 16xz$

32. Find the value of p for which the polynomial $2x^4+3x^3+2px^2+3x+6$ is divided by $x+2$.

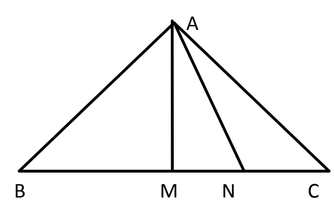
Or

If $x + \frac{1}{x} = 7$, find the value of $x^3 + \frac{1}{x^3}$.

33. In fig:

AM I BC & AM is the bisector of LA. If LB=55^0 & LC=33^0

Find LMAN.



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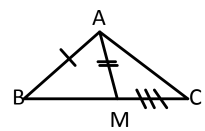
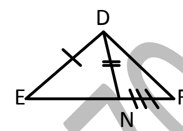
34. In the following figure:

Two sides AB & BC & the median AM of ΔABC are respectively equal to sides DE & EF





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