Sample Paper – 2014
Class – IX
Subject – Mathematics

General instructions:

1. All questions are compulsory.
2. The question paper consists of 34 questions divide into four sections A, B, C and D.

3. (i) Section A contains 8 questions of 1 mark each.

    (ii) Section B contains 6 questions of 2 marks each
    (iii) Section C contains 10 questions of 3 marks each
    (iv) Section D contains 10 questions of 4 marks each

Section A

1. Which of the following is a rational number?
(a) $\sqrt{3}$ (b) $\sqrt{4}$ (c) $\sqrt{0.9}$ (d) None of these

2. When $x^{25} + 2$ is divided by $(x + 1)$, the remainder is
(a) 1   (b) 2   (c) 25   (d) None of these

3. The coefficient of x^2 in the expansion of $(x + 10)^2$ is
(a) 2   (b) 4   (c) 10   (d) None of these

4. Which of the following need a proof
(a) Theorem   (b) Axiom   (c) Postulate   (d) None of these

5. Find the value of x, If AB is parallel to CD and 'T' is a transversal.
(a) 120°   (b) 60°   (c) 30°   (d) None of these
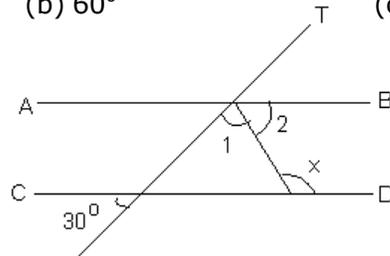
6. If X > 0 and y < 0, the point (x, y) lies in which quadrant
(a) I   (b) II   (c) III   (d) IV

7. In the given figure, if l is parallel to m then value of x is
    (a) 40°
    (b) 20°
    (c) 30°
    (d) None of these

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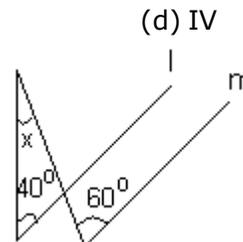
8. If a + b = -1, then the value of $a^3 + b^3 - 3ab$ is

(a) 26   (b) 1   (c) -1   (d) None of these

Section B

9. Give an example of two irrational numbers whose product is
    (a) A rational number
    (b) An irrational number
10. Expand $(1/2\ x + 2y - c)^2$
11. Represent $\sqrt{5.2}$ on the number line.
12. Plot the points A (4, 0) and B (0, 4). Join A, B to the origin O. fined the area of the triangle AOB.
13. Simplify $(2x + a + b)^2 - (2x - a + b)^2$
14. Find two irrational numbers between $\sqrt{2}$ and $\sqrt{5}$.

Or

Represent $\sqrt{5}$ on a number line.

Section c

15. Write any three Euclid's postulate.
16. factorize $x^2 + 1/x^2 + 2 - 2x - 2/x$
17. Express 0.0010101…. in the form of p/q, where p and q are integers and q ≠ 0.
18. Find the values of a and b, if $a + b\ \sqrt{35} = (\sqrt{7} + \sqrt{5}) / (\sqrt{7} - \sqrt{5})$

Or

Factorize $x^2 + 3\ \sqrt{3}\ x - 30$
19. If x, y, z are real numbers, show that $\sqrt{(x^{-1}\ y)}\ \sqrt{(y^{-1}\ z)}\ \sqrt{(z^{-1}\ x)} = 1$
20. Plot the following points and write the name of the figure thus obtained:
   A (2, 0), B (4, 0), C (4, 2)   and   D (2, 2)
21. If $a = 6 + 2\sqrt{3}$, find the value of a – 1/a.

Or

Factorize $2x^2 - 7x - 15$
22. Simplify $128^{-2/7} - (625^{-3})^{-1/4} + 14\ (2401)^{-1/4}$
23. If x – y = 5 and xy = 84, find the value of $x^3 - y^3$.

Or

If x + y + z = 10 and $x^2 + y^2 + z^2 = 40$, find the value of xy + yz + zx.
24. In the given figure, DE is parallel to QR and AP and BP are bisectors of angle EAB angle RBA respectively. Find angle APB.
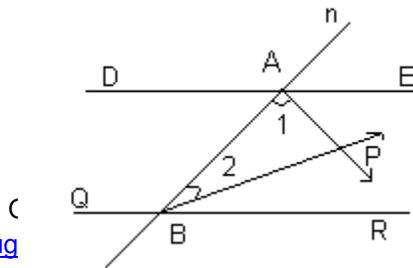
Section D

25. In the given figure bisector of angle B and D of a quadrilateral ABCD meet CD and AB produced at P and Q respectively. Prove that angle P + angle Q = ½ (ABC + ADC).
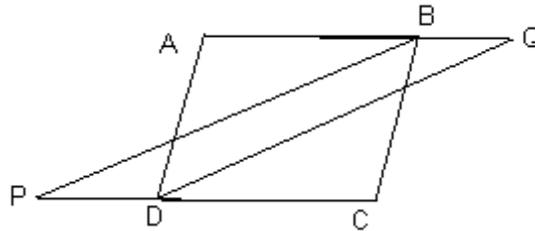
26. S is a point on side QR of a ΔPQR. Show that: PQ + QR + RP > 2 PS.
27. If the bisector of an angle of a triangle bisects the opposite side at 90°; prove that the triangle is an isosceles.
28. If each side of a triangle is doubled, then find the ratio of area of new triangle thus formed and the given triangle.
29. If x = 7 + √40, find the value of √x + 1/√x.

Or

Factorize $(x^2 - 2x)^2 - 23 (x^2 - 2x) + 120$.

30. If $x = \dfrac{[(\sqrt{(a + 2b)} + \sqrt{(a - 2b)}]}{[(\sqrt{(a + 2b)} - \sqrt{(a - 2b)}]}$

Then show that $bx^2 - a x + b = 0$
31. Prove that angles opposite to two equal sides of a triangle are equal.
32. In the given figure, the side BC of a ΔABC is produced, such that D is on ray BC. The bisector of angle A meets BC in L. Prove that angle ABC + angle ACD = 2 angle ALC.
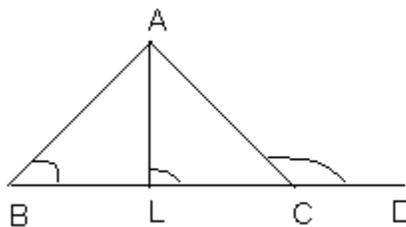
33. Factorize $x^6 - 64$

34.A field is in the shape of a trapezium, its parallel sides are 25m and 10 m and non-parallel sides are 14 m and 13 m. find the area of the trapezium.

Or

In triangle ABC, the sides AB and AC of ΔABC are produced to points E and D respectively. If bisectors of BO and CO of angle CBE and angle BCD respectively meet at a point O. then prove that angle BOC = 90° − ½ angle A.

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