

OM

# CHINMAYA VIDYALAYA

BOKARO STEEL CITY, SECTOR-5

STD-IX

MATHEMATICS

F.M. 90

## General Instruction:

- i. Question numbers 1 to 4 are of 1 mark each.
- ii. Question numbers 5 to 10 carry 2 marks each.
- iii. Question numbers 11 to 20 carry 3 marks each.
- iv. Question numbers 21 to 31 carry 4 marks each.

1. Give an example of two irrational numbers whose product is rational number.
2. Write the perpendicular distance of the point p(-3,4) from y-axis.
3. Find the degree of the polynomial  $(x^2+9)(5-x^2)$
4. In  $\triangle ABC$  if  $AB = AC$  and  $\angle B = 20^\circ$ , then find  $\angle A$ .
5. Expand  $(4a - b + 2c)^2$
6. Find the area of a triangle whose sides are 13 cm. 14cm and 15 cm.
7. Find the value of n if  $\left(\frac{2}{7}\right)^{-5} \left(\frac{7}{2}\right)^7 = \left(\frac{7}{2}\right)^{4n}$ .
8. Write the co-ordinate of the point where x-axis and y-axis intersect. Also find the co-ordinate of a point whose ordinate is -5 and which lies on y-axis.
9. Find the area of a parallelogram ABCD whose adjacent sides measure 34 cm and 20 cm and the diagonal AC measures 42 cm.
10. In  $\triangle ABC$  and  $\triangle PQR$ ,  $\angle A = \angle P$ ,  $\angle B = \angle Q$  and  $AB = QR$ , will the two triangles be congruent? Give reasons for your answer.
11. Simplify  $(2x + p - q)^2 - (2x - p + q)^2$
12. Represent  $\sqrt{8.3}$  on the number line.
13. Express 0.0046 in the form of p/q where p and q are integers and  $q \neq 0$ .
14. Find remainder when  $p(x) = 4x^3 - 12x^2 + 14x - 3$  is divided by  $g(x) = x - 1/x$ .
15. S is any point in the interior of  $\triangle PQR$ . Show that  $SQ + SR < PQ + PR$ .
16. A rhombus shaped field has grass for 18 buffaloes to graze on. If each side of the rhombus is 30 m and its longer diagonal is 48 m, how much area of the field will each buffalo graze on, if all the buffaloes graze an equal area.
17. if  $a = \frac{2-\sqrt{5}}{2+\sqrt{5}}$  and  $b = \frac{2+\sqrt{5}}{2-\sqrt{5}}$ , find  $a^2 - b^2$ .
18. Factorize :  $2x^2 + 3\sqrt{5}x + 5$ .
19.  $\triangle ABC$  and  $\triangle DBC$  are two isosceles triangles on the same base BC. Show that  $\angle ABD = \angle ACD$ .
20. Find the area of a triangular park whose sides are of the lengths 120m, 80 m and 50 m.
21. If the polynomials  $ax^3 + 3x^2 - 13$  and  $2x^3 - 5x + a$  leave the same remainder when divided by  $x + 2$  find the value of a.
22. Using a suitable identities, factorize  $p^3(q-r)^3 + q^3(q-p)^3 + r^3(p-q)^3$

23. Factorise:  $(a+2b)^2 + 101(a + 2b) + 100$

24. Show that  $\frac{x^{a(b-c)}}{x^{b(a-c)}} \div \left(\frac{x^b}{x^a}\right)^c = 1$

25. Prove that the sum of any two sides of a triangle is greater than twice the median drawn to the third side.

26. AD, BE and CE, the altitude of triangle ABC are equal. From that triangle ABC is an equilateral triangle.

27. If  $\frac{5+3\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3}$ , Find the value of a and b.

28. Prove that the sum of the angles of a triangle is  $180^\circ$ . also, find the angles of a triangle if they are in the ratio 3:7:8.

29. If D is the mid point of the hypotenuse AC of a right angle ABC, then prove that  $BD = \frac{1}{2} AC$ .

30. The bisectors of  $\angle B$  and  $\angle D$  of a quadrilateral ABCD meet CD and AB produced at P and Q respectively. Prove that  $\angle P + \angle Q = \frac{1}{2} (\angle ABC + \angle ADC)$ .

31. If  $x = \frac{1}{2+\sqrt{3}}$ , find the value of  $2x^3 - 7x^2 - 2x + 1$ .

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