GRADE: VIII   MARKS: 100
SUBJECT: MATHS   TIME: 3HRS

Section A

This section comprises of Multiple choice question (MCQs)   (1x30=30)

1. Rational numbers are the numbers written in the $\frac{p}{q}$ form where q __ 0.
   a. =   b. ≠   c. <   d. >

2. Name the property used in $\frac{-2}{5} \times \frac{7}{9} = \frac{7}{9} \times \frac{-2}{5}$
   a. Distributivity   b. Commutativity   c. Associativity   d. Additive inverse

3. Additive inverse of $\frac{-41}{47}$ is _____
   a. $\frac{-41}{47}$ b. $\frac{-47}{41}$ c. $\frac{47}{41}$ d. $\frac{41}{47}$

4. If $3(x - 3) = 5(2x + 1)$, then $x =$ ____
   a. -2   b. 5   c. 2   d. 1

5. The difference between two whole numbers is 66. The ratio of the two numbers is 2:5. What are the two numbers?
   a. 40,100   b. 44,110   c. 30, 90   d. 50,100

6. The method of taking one term of the equation from one side to other after changing its sign is known as
   _____.
   a. Balancing   b. Transposing   c. Reciprocal   d. None of these

7. Find the value of z if $\frac{z}{15} = \frac{4}{9}$
   a. $\frac{15}{9}$ b. $\frac{21}{3}$ c. $\frac{20}{3}$ d. $\frac{4}{15}$

8. If a regular polygon has 'n' sides, then measure of each interior angle is _____
   a. $\frac{360^0}{n}$ b. (n -2) x 180^0 c. $\frac{180^0}{n}$ d. 90^0

9.

The above given figure is an example of _____.
   a. Convex quadrilateral   b. concave quadrilateral   c. Parallelogram   d. Rhombus

10. If ∠A and ∠B are two adjacent angles of a parallelogram. If ∠A = 125°, then ∠B = ?
    a. 70°   b. 180°   c.55°   d. 90°

11. If a coin is flipped in the air, what is the probability of getting a tail?
    a. $\frac{1}{2}$ b. $\frac{2}{1}$ c. 1   d. 2

12. In a survey of 720 people, if 180 are in favour of sector A, then the central angle of the sector will be
    a. 60^0 b. 90^0 c. 160^0 d. 100^0

13. Dispersed data is also known as _____.
    a. Frequency   b. Grouped data   c. Ungrouped data   d. Range

14. A _____ has no gaps between the bars
    a. Bar graph   b. Histogram   c. Pie chart   d. Line graph

15. Central angle = $\frac{\text{item quantity}}{\text{total}}$ x ___

    a. 360^0 b. 90^0 c. 160^0 d. 180^0

16. If 5278 is squared, then what will be at unit place?

    a. 8   b. 7   c. 6   d. 4

17. What will be the number of zeros in square of 400?

    a. 5   b. 2   c. 6   d. 4

18. How many natural numbers lie between 9^2 and 10^2?

    a. 17   b. 18   c. 19   d. 20

19. The square of 42 is:

    a. 1764   b. 1664   c. 1564   d. 1504

20. Which of the following are the squares of even number?

    a. 225   b. 169   c. 144   d.49

21. The one's digit of the cube of 53 is

    a. 9   b. 3   c. 7   d.1

22. The prime factorisation of 64 is:

    a. 2 x 2 x 2   b. 4 x 4 x 4   c. 8 x 8 x 8   d. None of the above

23. By what number should 81 be divided to get a perfect cube?

    a. 3   b. 6   c. 7   d.9

24. The volume of a cubical box is 3375 cm^3. Which of the following is its side?

    a. 12cm   b. 24cm   c.15cm   d.18cm

25. The value of $4^3 - 1$ is equal to

    a. 64   b. 63   c. 62   d. 61

26. Find the area of rectangular table if length is 3x and breadth is 5xy

    a. 15xy   b. $8xy^2$ c. $15x^2y$ d. $8x^2y^2$

27. The expression -3xy + 8xy is a _____.

    a. Binomial   b. Trinomial   c. Monomial   d. Variable

28. The value of $(a + b)^2$ is

    a. $a^2 + 2ab + b^2$ b. $a^2 - 2ab + b$ c. $(a + b)(a - b)$ d. None of these

29. A term is a product of its _____.

    a. Binomial   b. Trinomial   c. Monomial   d. factors

30. Which of the following are like terms?

    a. $5xyz^2, -3xy^2z$ b. $-5xyz^2, 7xyz^2$ c. $5xyz^2, 5zyx^2$,   d. $5xyz^2, xyz$

Section B

This section comprises with very short answer type questions.   (2x10=20)

31. Write additive inverse of (i) $\frac{7}{9}$ (ii) $\frac{-21}{28}$

32. Solve: $\frac{3x}{2} + \frac{2x}{3} = 8$

33. How many sides does a regular polygon have if each of its interior angle is 165^0?

34. The marks scored by 20 students in a test are given below:

    84, 57, 53, 89, 41, 57, 47, 64, 58, 44, 53, 72, 51, 78, 71, 62, 56, 68, 54, 42

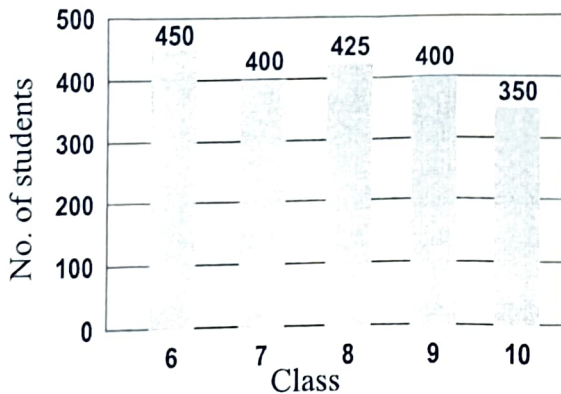   Using tally marks make a frequency table with intervals

35. Find the missing number

    a. $4^2 + 5^2 + \underline{}^2 = 21^2$

    b. $5^2 + \underline{}^2 + 30^2 = 31^2$

c. $6^2 + 7^2 + \_\_^2 = \_\_^2$

36. Find the cube root of 512 using prime factorisation method.
37. Give an example of binomial and trinomial expressions.
38. Find the square roots of 36 by the method of repeated subtraction.
39. Read the following graph and answer the given questions.

a. Which class has highest number of students?
b. How many more students are there in class 6 than class 8?

40. Find the product of the following pairs of monomials.
   a. $5a, 7a^2$
   b. $-4p, 7$

Section C

This section comprises of short answer type questions. (3x6=18)

41. Solve and check your results $3x + \dfrac{2}{3} = 2x + 1$
42. Find the angle measure x, y and z in the adjoining figure
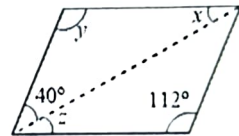
43. Given below is the frequency distribution of the heights of 50 students in a class:
   Represent the given data in the form of histogram.

Class Interval	140-145	145-150	150-155	155-160	160-165
Frequency	8	12	18	10	5

44. Find the square of 36 and 24 without actual multiplication.

45. Find the smallest number by which 192 must be divided to obtain a perfect cube.
46. Add   (i) $2p^2q^2 - 3pq + 4$, $5 + 7pq - 3p^2q^2$

   (ii) $l^2 + m^2$, $m^2 + n^2$, $n^2 + l^2$, $2lm + 2mn + 2nl$

Section D

This section comprises of long answer type questions. (5 x4=20)

47. Use the identity $(x + a)(x + b) = x^2 + (a + b)x + ab$ to find the following products.
   (i) $(x + 3)(x + 7)$ (ii) $(4x + 5)(4x + 1)$

48. The number of students in a hostel, speaking different languages is given below. Display the data in a pie chart.

Language	Hindi	English	Marathi	Tamil	Bengali	Total
Numberof students	40	12	9	7	4	72

49. Find the smallest number by which each of the following numbers must be multiplied to obtain a perfect cube.
    (i) 675   (ii) 256

50. Baichung's father is 26 years younger than Baichung's grandfather and 29 years older than Baichung. The sum of the ages of all the three is 135 years. What is the age of each one of them?
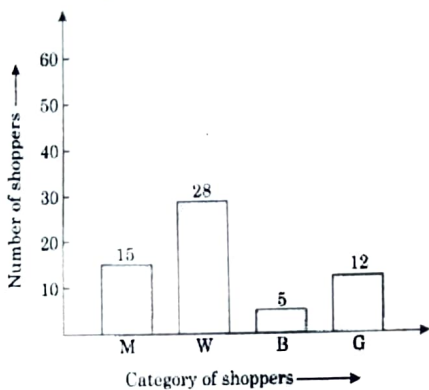
Section E

This section comprises with case study type questions.   (4x3=12)

51. The data of number of shoppers who come to a departmental store marked as: man(M), woman(W), boy (B) or girl (G) is represented through the graph given below:

Bar Graph

a. What is the total number of people in the departmental store?   1
b. How much more is the number of girls than boys?   1
c. Find out whether the sum of women and girls is more than men and boys.   1
d. Write the scale for the given graph.

52. Lakshmi is a cashier in a bank. She has currency notes of denominations Rs 100, Rs 50 and Rs 10, respectively. The ratio of the number of these notes is 2:3:5. The total cash with Lakshmi is Rs 4, 00,000.
    a. What are the numbers of ₹100, ₹50 and ₹10 notes?   1
    i. 200x, 150x, 50x   ii. 100x, 50x, 10x
    iii. 500x, 150x, 20x   iv. 160x
    b. Find the value of x when the total cash is ₹4,00,000.   2
    c. How many notes of denomination of ₹50 does she have?   1
    i. 2000
    ii. 3000
    iii. 5000
    iv. 6000

53. Shweta wanted to design a square box having an area 2704m². She went to the market and purchased a big cardboard. She had to cut the cardboard for making the square box. Based upon this information answer the following questions.
    a. What will be the side of square box? Calculate using division method.   2
    b. Calculate the volume of the square box.   1
    c. What will be the perimeter of the square box?   1