

Maharashtra Board

Class IX Mathematics - Algebra

Sample Paper – 1

Time: 2 hours

Total Marks: 40

Note: - (1) All questions are compulsory.
(2) Use of calculator is not allowed

1. Attempt any five sub-questions from the following: 5

- i. In the equation $kx - \frac{3}{5}y = 8$, if $y = -\frac{1}{2}$ and $x = 1$. Find the value of k .
- ii. Calculate mode of the following data:
20,60,70,70,60,70,60,10,70,80
- iii. If $n(P) = 5$, $n(Q) = 12$ and $n(P \cup Q) = 14$ then find $n(P \cap Q)$.
- iv. Express $2pq + 4p + 5q + 10$ in the factor form.
- v. Write the set $A = \{1, 8, 27, 64, \dots\}$ in set-builder form.
- vi. Express $\sqrt[4]{1250}$ in its simplest form.

2. Attempt any four sub-questions from the following: 8

- i. The ratio of the present ages of a mother and her daughter is 7:3. When the mother was 26 years old, the daughter was 6 years old. Find the present age of the mother (in years).
- ii. If two numbers are in the ratio 6:13 and their LCM is 312, then find the numbers.
- iii. Find the union of the following pair of sets:
 $A = \{x : x = 3n, n \leq 5, n \in \mathbb{N}\}$
 $B = \{x : x = 2n + 1, n \leq 4, n \in \mathbb{N}\}$
- iv. Write the additive inverse of each of the following:
i) $\frac{2}{8}$ ii) $-\frac{5}{8}$ iii) $-\frac{6}{-5}$ iv) $\frac{2}{9}$
- v. Factorise the expression: $12xy - 15x$.
- vi. Classify the following data as primary or secondary:
(a) Classifying the date of birth of different students from the class attendance register.
(b) Collecting name and roll number information from each individual.

3. Attempt any three of the following sub-question:**9**

- i. Give two equivalent ratios of 18:12.
- ii. Represent the irrational number $\sqrt{2}$ on the number line.
- iii. How many subsets do the following sets have?
(1) $\{x, y, z\}$ (2) Set of letters in the word 'DELHI' (3) $\{0, 3, 6, 9\}$
- iv. There are 36 members on a student council in a school and the ratio of the number of boys to the number of girls is 3:1. How many more girls should be added to the council so that the ratio of number of boys to the number of girls will be 9:5?
- v. Solve : $99x + 101y = 499$
 $101x + 99y = 501$

4. Attempt any two sub-questions from the following:**8**

- i. If $x = \frac{4\sqrt{6}}{\sqrt{2} + \sqrt{3}}$, find the value of $\frac{x+2\sqrt{2}}{x-2\sqrt{2}} + \frac{x+2\sqrt{3}}{x-2\sqrt{3}}$
- ii. The distance, in km, from schools to homes of thirty children are listed below:
16, 2, 3, 5, 12, 5, 8, 4, 8, 10, 3, 4, 12, 2, 8, 15, 1, 17, 6, 3, 2, 8, 5, 9, 6, 8, 7, 14, 12, 11.
(a) Make a grouped frequency distribution table for this data, taking class width 5 and one of the class intervals as 5 - 10.
(b) How many children live at a distance of more than 15 km from school?
- iii. Solve the following pairs of linear equations by substitution method.
 $2x + 3y - 2 = 0$ (1)
 $5x - \frac{3}{2}y - 2 = 0$ (2)

5. Attempt any two of the following subquestions:**10**

- i. Following table shows frequency distribution for the speed of cars passing through a particular point on a highway:

Class Interval	30 - 40	40- 50	50- 60	60-70	70-80	80-90	90-100
Frequency	3	6	25	65	50	28	14

Draw a histogram and a frequency polygon to represent the above data.

- ii. The monthly pocket money of Ravi and Sanjeev are in the ratio 5:7. Their expenditures are in the ratio 3:5. If each saves Rs. 80 every month, then find their monthly pocket money.
- iii. The sum of a two digit number and the number obtained by reversing the order of its digits is 121, and the two digits differ by 3. Find the number.