Time: 3 hours   Total Marks: 80

General Instructions:

1. **All** questions are **compulsory**.
2. **Section A** comprises of **12** questions carrying 1 mark each.
3. **Section B** comprises of **12** questions carrying 2 marks each.
4. **Section C** comprises of **8** questions carrying 3 marks each.
5. **Section D** comprises of **5** questions carrying 4 marks each.

Section A
(Questions 1 to 8 carry 1 mark each)

1. The rational number whose reciprocal is not a rational number is _____.
   A. 1
   B. -1
   C. $-\dfrac{1}{5}$
   D. Zero

2. 20% of x stands for _____.
   A. $\dfrac{x}{3}$
   B. $\dfrac{x}{5}$
   C. $\dfrac{x}{6}$
   D. 0.02x

3. A pentagon has _____ vertices.
   A. 5
   B. 6
   C. 7
   D. 8

4. Find the square root of $\sqrt{\dfrac{196}{484}}$.

    A. $\dfrac{7}{11}$

    B. $\dfrac{8}{11}$

    C. $\dfrac{9}{11}$

    D. $\dfrac{10}{11}$

5. The probability of an event always lies between _____.

    A. 0 and 2

    B. 0 and 1

    C. 0 and $\dfrac{1}{2}$

    D. −1 and 1

6. Which natural number is equal to its cube?

    A. 1

    B. 2

    C. 3

    D. 4

7. The rational number whose reciprocal is not a rational number is _____.

    A. 1

    B. -1

    C. $-\dfrac{1}{5}$

    D. Zero

8. If $\dfrac{6k+17}{k}=\dfrac{29}{2}$, then the value of 'k' is

    A. 2

    B. 3

    C. 4

    D. 5

9. Number of edges in the following shape is

    A. 8
    B. 10
    C. 12
    D. 9

10. If SP = Rs. 380 and sales tax is 4%, then the amount of sales tax is given by:
    A. Rs 15.40
    B. Rs 15.60
    C. Rs 15.30
    D. Rs 15.20

11. Square root of 484 is given by which of the options listed below?
    A. 21
    B. 42
    C. 22
    D. 32

12. If 14 kg of bananas cost Rs 441, then the cost of 22 kg bananas will be which of the following options listed below:
    A. Rs. 752
    B. Rs. 693
    C. Rs. 842
    D. Rs. 947

Section B
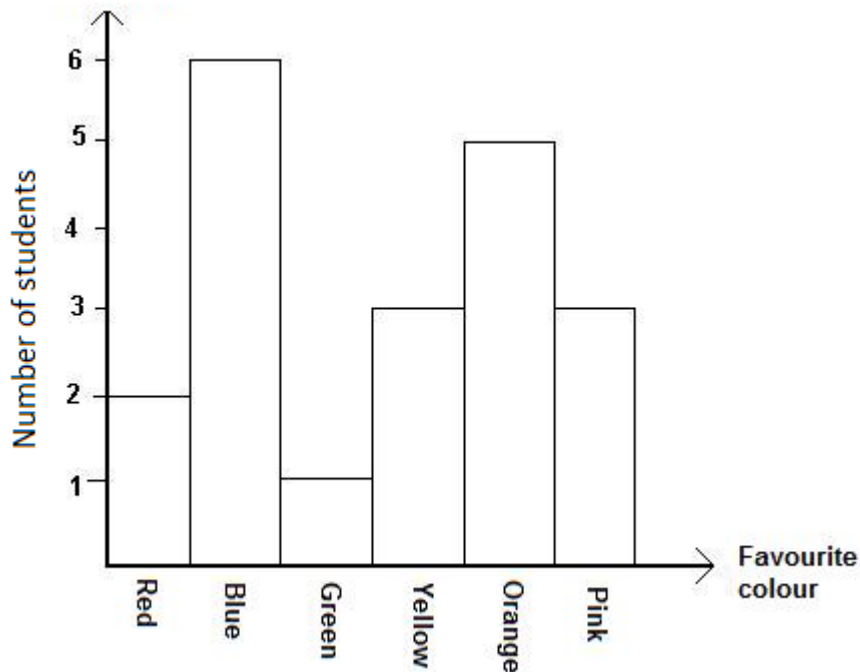### (Questions 9 to 14 carry 2 marks each)

13. Represent $\frac{2}{5}$ on the number line.

14. Construct a rhombus ABCD, whose diagonals are of length 6 cm and 8 cm. Also, write the steps of construction.
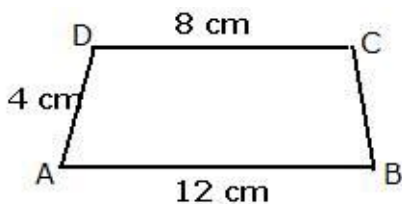
15. A polyhedron is having 8 vertices and 12 edges. Find the number of faces in this polyhedron.

16. Find the square of the number (-25), using the identity $(a + b)^2 = a^2 + b^2 + 2ab$.

17. The given bar graph shows the favourite colours of 20 students in a class. How many more students favour orange colour than green colour?

18. The following quadrilateral is an isosceles trapezoidal. Find its perimeter.

19. The price of a book was Rs. 50. If the price is increased by 6%, then what will be the new price of the book?
20. The side of a square is (5a - 2b). Find its area.
21. Find the square of the number 82 using the property $(a + b)^2 = a^2 + b^2 + 2ab$
22. In a two-digit number, the unit's digit is 7 more than the ten's digit. Sum of the digits is half of the whole number. Find the digits and number.
23. If 26% of a number is 65, then find the number.
24. Solve the following expression using properties of rational numbers:

$$\frac{2}{5} \times \frac{-3}{7} - \frac{1}{14} - \frac{3}{7} \times \frac{3}{5}$$

Section C
(Questions 15 to 24 carry 3 marks each)

25. In the following product, find A, B and C.

$$\begin{array}{r} B\ A \\ \times\ \ \ 5 \\ \hline C\ B\ A \end{array}$$

26. Find the cubes of the following numbers:

i) $1\dfrac{2}{3}$

ii) 0.06

iii) $-\dfrac{2}{3}$

27. Find a number such that one-fourth of it is less than one-third of it by 4

28. In a class, the girls are 60% of the total number of students and the boys are 18 in number. How many students are there in the class?

29. A survey was conducted in a school to determine which sport is liked by the students. The result of the survey is given in the table below.

Sport	% of students
Football	15
Basketball	20
Baseball	10
Tennis	40
Soccer	15

30. Construct a square whose side measures 4.7 cm. Write the steps of construction.

31. A's income is 60% more than that of B. By what percent is B's income less than A's?

32. Solve: $\dfrac{(5x+1)}{12} - 2 = \dfrac{(3x-1)}{9}$

Section D
(Questions 25 to 34 carry 4 marks each)

33. Construct a quadrilateral ABCD in which AB = 3.8 cm, BC = 3.4 cm, CD = 4.5 cm, AD = 4 cm and ∠B = 80°. Write the steps of construction.

34. The following table shows various modes of transport used by 1500 students of a school.

Mode of transport	Bicycle	Bus	Walk	Train	Car
Number of students	800	300	160	100	140

Draw the bar graph to represent the above data.

35. The regular selling price of an item at Shop A is Rs. 32.25. The shop offers a discount of 20%. The regular selling price of the same item at shop B is Rs. 43.35 and the discount

is 40%. Which shop offers the lowest sale price? Also find the difference in the sale prices.

36. A pair of jeans is marked down 30% and then is reduced at the cash register by another 10%. Is this a total reduction of 40%? Give reasons.

37. Simplify:
   i. $(-8)^2$
   ii. $(-7)^2$
   iii. $(15)^3$
   iv. $-(12^2)$