

SATISH CHANDRA MEMORIAL SCHOOL
MID TERM EXAMINATION (2026-27)
CLASS- VIII
MATHEMATICS

Time Allowed: 3 hours

Maximum Marks: 80

General Instructions

Read the following instructions carefully and follow them:

1. This question paper contains **38 questions**. All Questions are compulsory.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Question numbers 1-18 are multiple choice questions (MCQs) and question no.19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In Section B, Question numbers 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Question numbers 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Question numbers 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Question numbers 36-38 are case study-based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
8. There is no overall choice. However, an internal choice in 2 questions of Section B, 2 questions of Section C and 2 questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required. Take $\pi = 22/7$ wherever required if not stated.
10. Use of calculators is not allowed.

SECTION A

1. A number that leaves a remainder of 3 when divided by 5 can be expressed as:
(A) $3K$ (B) $5K + 3$ (C) $3K + 5$ (D) $5K - 3$
2. When both numbers in a product 'ab' are increased by 1, the increase in the product is
(A) 1 (B) $a + b$ (C) $a + b + 1$ (D) $ab + 1$
3. The algebraic expression $(3x + 2y + 6y)$ is a
(A) monomial (B) binomial (C) trinomial (D) not a polynomial
4. Which of the statement is always true for an isosceles trapezium?
(A) Diagonals are equal.
(B) Opposite angles are equal.
(C) All sides are equal.
(D) Diagonals bisect each other.
5. How many natural numbers lie between 18^2 and 19^2 ?
(A) 30 (B) 37 (C) 35 (D) 36
6. A number has a digital root of 9. Which of the following is true?
(A) It is divisible by 3 but not necessarily by 9.
(B) It is divisible by both 3 and 9.

- (C) It is odd.
- (D) It leaves remainder of 1 when divided by 9.
7. If $4 : 7 :: x : 21$, then the value of x is
- (A) 12 (B) 15 (C) 18 (D) 24
8. Diagonals of which of the following quadrilateral do not bisect it into two congruent triangles?
- (A) Rhombus (B) Trapezium (C) Square (D) Rectangle
9. Which of the following is not true?
- (A) $(a - b)^2 = (b - a)^2$ (B) $(a - b)^2 = (a - b)(a - b)$
 (C) $(a - b)^2 = a^2 - b^2$ (D) $(a - b)^2 = a^2 - 2ab + b^2$
10. When four consecutive numbers are combined using '+' and '-' signs in any way, the result is always
- (A) an odd number (B) an even number
 (C) a multiple of 4 (D) a prime number
11. The product of a monomial and a binomial is a
- (A) monomial (B) binomial (C) trinomial (D) trinomial or monomial
12. The standard form for 0.000064 is
- (A) 64×10^4 (B) 64×10^{-4} (C) 6.4×10^5 (D) 6.4×10^{-5}
13. The angles of a triangle are in the ratio 3 : 4 : 5. The measure of the largest angle is
- (A) 60° (B) 75° (C) 120° (D) 150°
14. If 5 notebooks cost Rs. 75, then the cost of 8 notebooks at the same rate is
- (A) Rs. 100 (B) Rs. 110 (C) Rs. 120 (D) Rs. 125
15. Which of the following expression is equivalent to $5(2x - 3) - 2(x + 4)$?
- (A) $8x - 23$ (B) $8x - 7$ (C) $12x - 23$ (D) $12x - 7$
16. Which of the following number has the same digital root as 458?
- (A) 125 (B) 239 (C) 347 (D) 562
17. The Roman numerals for 444 is
- (A) CDXLIV (B) CCCCXLIV (C) CDIL (D) CDLIV
18. In a square ABCD, $AB = (2X + 3)$ cm and $BC = (3X - 5)$ cm. Then, the value of x is
- (A) 4 (B) 5 (C) 6 (D) 8
19. **ASSERTION (A):** The sum of a multiple of 6 and a multiple of 3 is always a multiple of 9.
- REASON (R):** Every multiple of 6 and every multiple of 3 is divisible by 3.
- (A) Both A and R are true and R is the correct explanation of A.
 (B) Both A and R are true but R is not the correct explanation of A.
 (C) A is true but R is false.
 (D) A is false but R is true.

10. **ASSERTION (A):** $(4a + 9b) \times (4a - 9b) = 16a^2 - 81b^2$

REASON (R): The product of two binomials is always a binomial.

- (A) Both A and R are true and R is the correct explanation of A.
- (B) Both A and R are true but R is not the correct explanation of A.
- (C) A is true but R is false.
- (D) A is false but R is true.

SECTION B

21. (A) If $x + \frac{1}{x} = 5$, then find the value of $x^2 + \frac{1}{x^2}$

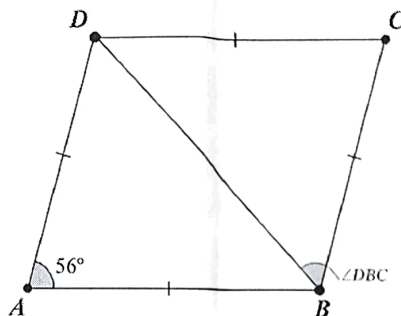
OR

21. (B) Find the smallest natural number by which 392 must be multiplied to make it a perfect cube.

22. Find the value of 'm' so that $25^m \div 5^3 = 5^5$

23. Find the smallest square number which is exactly divisible by 12, 15 and 20.

24. In the given figure, ABCD is a rhombus with $\angle DAB = 56^\circ$. Determine $\angle DBC$.



25. (A) Prove that, the sum of any two multiples of 4 is always a multiple of 4. Give two examples.

OR

25. (B) The first, second and fourth terms of a proportion are 6, 18 and 25 respectively. Find its third term.

SECTION C

26. Simplify: (i) $a(b - c) + b(c - a) + c(a - b)$

(ii) $(a + b + c)(a + b - c)$

(1.5+1.5)

27. (A) Construct a kite ABCD, where diagonal $BD = 6$ cm and diagonal $AC = 8$ cm.

OR

27. (B) A number when divided by 5 leaves a remainder 3. What is the remainder when the square of the same number is divided by 5?

28. Blue and yellow paints are mixed in the ratio 3 : 5 to produce green paint. To produce 40 litres of green paint, how much of these two colours are needed? To make the paint a lighter shade of green, I added 20 litres of yellow to the mixture. What is the new ratio of blue and yellow in the paint?

(2+1)

29. (A) Simplify: $\frac{25 \times p^{-4}}{5^{-3} \times 10 \times p^{-8}}$, (where $p \neq 0$)

OR

29. (B) Expand and simplify using an identity:

(i) $(2x + 3y)^2$ (ii) $(-5x - 3y)^2$

(1.5+1.5)

30. A tap fills 12 litre tank in 20 minutes. How much volume is filled in 1 hour at same rate? If the capacity of the tank is 50 litres, how much more water is required to fill it completely?

(2+1)

31. Find the least number which must be subtracted from 18625 to make it a perfect square. Also find the square root of the resulting number.

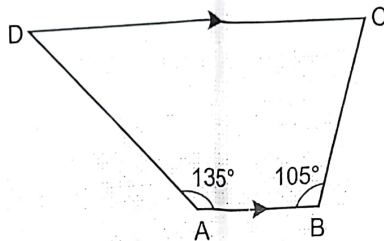
SECTION D

32. (A) In a 3-digit number, the tens digit is thrice the units digit and the hundreds digit is four times the units' digit. Also, the sum of its digits is 16. Find the number.

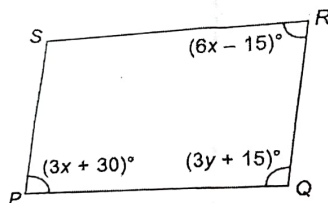
(3+2)

(B) Find the digital root of $18a+27b+16$.

33. (A) ABCD is a trapezium where $\angle A = 135^\circ$ and $\angle B = 105^\circ$. Find the other angles.



(B) In the given figure, PQRS is a parallelogram. Find the value of x and y.



(2+3)

34. (A) (i) A mixture of 40 kg contains sand and cement in the ratio of 3:1. How much cement should be added to the mixture to make the ratio of sand to cement 5:2?

(3+2)

(ii) If $X:Y=3:5$ and $Y:Z=10:13$ then find $X:Z$.

OR

34.(B) Simplify $\left(\frac{4^{m+\frac{1}{4}} \times \sqrt{2 \times 2^m}}{2 \times \sqrt{2^{-m}}} \right)^{\frac{1}{m}}$

35.(A) Simplify: $(x^2 - 3x + 2)(5x - 2) - (3x^2 + 4x - 5)(2x - 1)$

OR

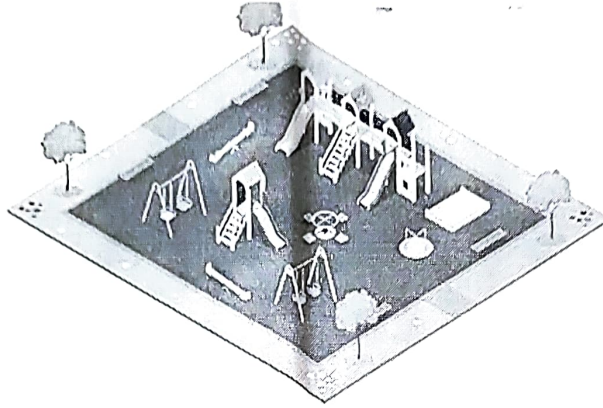
35. (B)(i) Three numbers are in ratio 2:3:5. The sum of their squares is 608. Find the numbers.

- (ii) The area of a square field is $101\frac{1}{400}$ square meters. Find the length of one side of the field. (3+2)

SECTION E

36. A playground is in shape of a square whose area is 256 m^2 with each side $(5x - 4)\text{ m}$. One day Raj along with his two friends Ajay and Aman went to play there with bicycle. Someone stole Raj's bicycle, but Ajay and Aman helped him by contributing ₹ $(4a + 60)$ and ₹ $(6a + 10)$ respectively to buy a new bicycle. The cost of bicycle was ₹4200.

On basis of this information given in passage answer following questions:



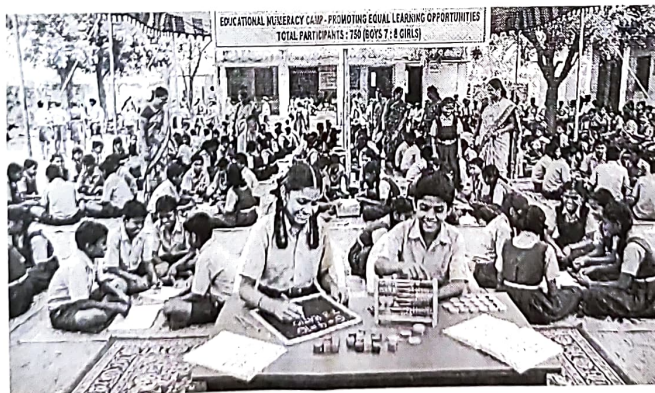
- (i) What is the perimeter of the playground in terms of x ?
- (ii) What is the algebraic expression of the area of the ground and the total cost of the bicycle?
- (iii)(A) What is the value of a ? What was the amount given by Ajay and Aman to Raj?

OR

- (iii) (B) Find the value of x .

(1+1+2)

37. A school organized an educational camp to strengthen basic numeracy skills and promote equal learning opportunities. Out of 750 students, who participated in this initiative, the ratio of boys to girls was 7:8 reflecting active involvement from all.



- (i) Find the number of boys participated.
- (ii) Find number of girls participated.
- (iii) (A) If 30 boys left the camp and 80 girls joined the camp, then find the ratio of number of boys to girls.

OR

- (iii)(B) If 30 boys left the camp and 80 girls joined the camp, then find the ratio of number of boys to total number of students.

(1+1+2)

38. In a rural village in Tamil Nadu, a large water tank is being constructed to store rainwater for the dry season. The base of the tank is a square with an area of 3600 m^2 . The villagers want to expand the tank while keeping its base perfectly square.



- (i) What is the present length of each side of the tank?
- (ii) If the side length of tank is increased by 10 m, what will be new area of the tank?
- (iii) (A) If the new area becomes 6400 sq. m , then find increase in length.

OR

- (B) If the perimeter of initial tank needs to be fenced then find the total cost at the rate of Rs 25 per m. (1+1+2)