Class 8 Mathematics

SA2 (Sample Paper-1)

Max. Marks 80

Section A contains 10 questions which carries 1 mark each (1 x 10 = 10)
Section B contains 9 questions which carries 2 marks each (2 x 10 = 20)
Section C contains 9 questions which carries 4 marks each (4 x 5 = 20)
Section D contains 6 questions which carries 6 marks each (6 x 5 = 30)

Topics:
- Algebraic Expressions and Identities
- Visualizing Solid Shapes
- Mensuration
- Exponents and Powers
- Direct and Inverse Proportion
- Factorization
- Introduction to Graphs

Section A

1. The product of a binomial and a monomial is a
    a) Monomial
    b) Binomial
    c) Trinomial
    d) None of these
2. If the ratio of cost price and the selling price is equal to 4:3, then determine the loss percentage.
3. Find the surface area of a cube having edge l units.
4. Coefficient of term xy^2 in expression $2xy^2 + x^3 - x^5 + xy^2$ is?
5. If 14 kg of pulses cost Rs 441, what is the cost of 22 kg of pulses?
    a) Rs. 627
    b) Rs.649
    c) Rs. 671
    d) Rs.693
6. Find the factors of the equation a² + 8a + 16.
7. A four digit number $4ab5$ is divisible by 55. Then determine the value of $b - a$.
8. Find the length of a diagonal of a square whose side is 2 cm.
9. Which of the following is correct?

    a) $(a - b)^2 = a^2 + 2ab - b^2$
    b) $(a - b)^2 = a^2 - 2ab + b^2$
    c) $(a + b)^2 = a^2 + 2ab - b^2$
    d) $(a - b)^2 = a^2 - b^2$

10. If selling price is doubled, the profit triples. Find the profit percent.
   a) 100%
    b) 66.66%
    c) 75%
    d) 90%

Section B

11. The cost price of 20 articles is the same as the selling price of x articles. If the profit is 25%, then what is the value of x?

12. The length of a rectangle is twice its breadth. If the area of the rectangle 520 cm². Find the length and breadth of the rectangle.

13. Two adjacent side of a rectangle are $7x^2 - 5y^2$ and $x^2 - 3xy$ .Find its area.

14. A cab driver charges a fare of Rs.300 for a journey of 175 km. How much would it travel for Rs.320

15. If $5\ A \times A = 399$, find the value of A.

16. In a small town, the population increased from 25,000 people in 1990 to 32,000 people in 2000. What is the percent increase in population?

17. Find the factors of $16l^2 + 24lm + 9m^2$.

18. A sum of money is to be distributed among A, B, C, D in the ratio of 5:2:4: 3. If C gets Rs. 1000 more than D, what is B's share?

19. How many cubes of side length 6 cm can be obtained from a cube whose edge is 12 cm?

20. Verify that $(5x + 8)^2 - 160x = (5x - 8)^2$

Section C

21. Payal visits a departmental store and purchases the following articles:
    a) 2 rain coats for Rs. 500, sales tax at the rate of 12%
    b) One pair of sandals for Rs. 480, sales tax at the rate of 8%
    c) Food articles for Rs. 300, sales tax at the rate of 6%
    d) Clothes for Rs. 1200, sales tax at the rate of 2%

    Calculate the total amount of the bill.

22. The dimensions of a room are 16 × 14 × 10 meters. There are 4 windows of 1.3 m × 1.4 cm and 2 doors of 2m × 1m. What will be the cost of white washing the walls and painting the doors and windows, if the rate of white washing is Rs.5 per m² and rate of painting is Rs.8 per m².

23. Add the following expressions
    a) $9ax, +3by - cz, -5by + ax + 3cz$
    b) $7a^2bc, -3abc^2, 3a^2bc, 2abc^2$

24. Find the value of x in the following expressions:
    a) $1x3x6$ is divisible by 11.
    b) $756x$ is a multiple of 11.

25. A trader allows successive discounts of 15% and 10% on the marked price of an article.
    (a) If the marked price is Rs. 100, what would be the selling price?
    (b) If the selling price is Rs. 7650 then find the marked price.
    If the marked price is 25% above the cost price, find the cost price and the percentage profit or loss.

Section D

26. A man invested Rs. 50000 for 3 years at the compound interest rate of 10% per annum. After 2 years the rate of interest was raised to 10%.
    (a) Find the total interest earned by him.
    (b) Find the amount he received after 3 years.
    (c) Find the amount he received after 10 years if the compound interest rate is of 15%.

27. An athletic track 14 m wide consists of two straight sections 120 m long joining semi-circular ends whose inner radius is 35 m. calculate the area of the shaded region.
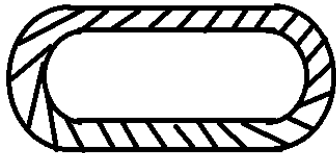
28. Expand the following, using suitable identities.
    a) $(x^2 + y^2)(x^2 - y^2)$
    b) $(a^2 + b^2)^2$
    c) $(x - y)^2 = (x + y)^2$
    d) $(2x - 5y)(2x - 5y)$

29. Factorize the following expressions:
    a) $a^4 - b^4$
    b) $p^4 - 81$
    c) $x^4 - (x - z)^4$
    d) $a^4 - 2a^2b^2 + b^4$

30. The following graph shows the temperature of a patient in a hospital, recorded every hour.
    a) What was the patient's temperature at 1 p.m.?
    b) When was the patient's temperature 38.5°C?
    c) The patient's temperature was the same two times during the period given. What were these two times?
    d) What was the temperature at 1.30 pm? How did you arrive at your answer?
    e) During which periods did the patient's temperature show an upward trend?