

STANDARDISED ASSESSMENT FOR ELEMENTARY SCHOOLS (SAFES): 2025 - 2026
SUBJECT: MATHEMATICS
CLASS VIII

Duration: 3 hours
Full Mark – 100
Pass Mark – 40

A. Choose the correct answer from the following. (20 × 1 = 20)

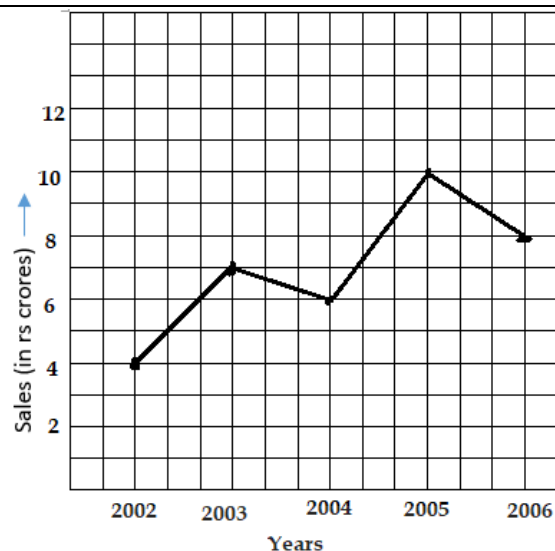
1. The value of $(1/4)^{-2}$ is ____
(a) 16 (c) $1/16$
(b) 4 (d) $1/4$
2. If $4^{-1} \times (1/2)^{-2} \div 8^{-1} = 2^k$, then k equals ____
(a) 2 (c) 3
(b) 4 (d) 5
3. The diameter of the sun is 1.4×10^9 m and the diameter of earth is 1.2756×10^7 m. The ratio of the sun's diameter to earth's diameter is approximately ____
(a) 1:100 (c) 1:140
(b) 1:170 (d) 1:200
4. The multiplicative inverse of 4^{-3} is ____
(a) 4 (c) 4^3
(b) $\frac{1}{4^3}$ (d) $\frac{1}{4}$
5. The equivalent value of $\frac{1}{2100000000}$ is ____
(a) 2.1×10^8 (c) 210^8
(b) 2.1×10^{-8} (d) 210^{-8}
6. $(a^m)^n$ is equal to ____
(a) a^{m+n} (c) a^{m-n}
(b) a^{mn} (d) a^{n-m}
7. $(-1)^{50}$ is equal to ____
(a) -1 (c) 1
(b) 50 (d) -50
8. If x and y are in direct proportion, and $x = 6$ when $y = 18$, what is the value of y when $x = 10$?
(a) 20 (c) 25
(b) 30 (d) 35

9. 15 workers can complete a project in 40 days. If the number of workers is increased to 25, in how many days will the same project be completed?
- (a) 20 days (c) 24 days
(b) 30 days (d) 32 days
10. A map has a scale of 1:500000. Two cities are 3 cm apart on the map. If a car travels at a constant speed and covers this distance in 5 hours, what is the speed of the car in km/h?
- (a) 3 km/h (c) 5 km/h
(b) 6 km/h (d) 9 km/h
11. Which of the following is inverse proportion?
- (a) Distance covered by taxi and taxi fare.
(b) Area of cultivated land and crop harvested.
(c) Amount of money deposited in a bank and its interest.
(d) The population of a country and the area of land per person.
12. If 3 quintals of coal cost ₹ 6000, what is the cost of 120 kg?
- (a) ₹ 1200 (c) ₹ 2400
(b) ₹ 3600 (d) ₹ 4800
13. The outcome of $34x^3y^3z^3 \div 51xy^2z^3$ is _____
- (a) $\frac{2}{3}x^2y$ (c) $\frac{2}{3}xyz$
(b) $\frac{2}{3}xy^2$ (d) $\frac{2}{3}xyz^2$
14. What is the highest common factor of the terms $12x$ and $18y$?
- (a) 2 (c) 3
(b) 6 (d) 12
15. Which of the following is the correct factorization of the expression $x^2 + 8x + 16$?
- (a) $(x + 4)(x + 4)$ (c) $(x + 2)(x + 8)$
(b) $(x + 8)(x + 2)$ (d) $(x - 4)(x - 4)$
16. Which identity is used to factorize $49p^2 - 36$?
- (a) $(a + b)^2 = a^2 + 2ab + b^2$
(b) $(a - b)^2 = a^2 - 2ab + b^2$
(c) $(a + b)(a - b) = a^2 - b^2$
(d) $x^2 + (a + b)x + ab = (x + a)(x + b)$

17. When factorizing $4xy + 6y + 2x + 3$ by regrouping, what is the correct grouping?
- (a) $(4xy + 2x) + (6y + 3)$ (c) $(4xy + 6y) + (2x + 3)$
(b) $(4xy + 3) + (6y + 2x)$ (d) $(4xy + 6y) + (2x + 3y)$
18. The amount of electricity bill depends on the quantity of electric used. So, we say the amount of electric bill is
- (a) an independent variable (c) the dependent variable
(b) controllable (d) none of these
19. In a distance-time graph, what does a horizontal line segment represent?
- (a) Increasing speed (c) No movement
(b) Decreasing speed (d) Constant maximum speed
20. Which of the following is true about a linear graph representing the relationship between deposit and simple interest?
- (a) It cannot pass through the origin.
(b) It always passes through the origin.
(c) It may or may not pass through the origin depending on the context.
(d) It will always have a negative slope.

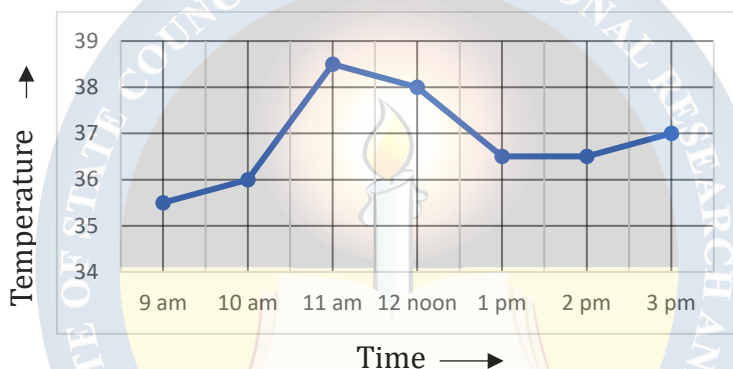
B. Answer the following questions ($11 \times 2 = 22$)

21. Given that $a = 6^{-3}$ and $b = 6^5$, find the multiplicative inverse of the product ab .
22. If a box of sweets is divided among 24 children, they will get 5 sweets each. How many would each get if the number of children is reduced by 4?
23. The diameter of a human hair is 0.07 mm and the diameter of a certain bacterium is 0.000007 mm . Express both in standard form and compare their thicknesses.
24. The cost of 8 metres of cloth is ₹ 560. How many metres of the same cloth can be purchased with ₹ 840? Find the cost of 12 metres of cloth of the same type.
25. If the height of a pole is 10 metres and it casts a shadow of 8 metres, how high is another pole that casts a shadow of 12 metres under similar conditions?
26. Ruati has road map with a scale of 1 cm representing 18 km . She drives on a road for 72 km . What would be her distance covered in the map?
27. Find the common factors of $12a^2b$ and $15ab^2$.
28. Factorise $4y^2 - 12y + 9$.
29. Factorise $6xy - 4y + 6 - 9x$ by regrouping.
30. The following time graph shows the yearly sales figures of a manufacturing company



From the above graph, find the average sales between 2003 and 2005.

31. The following graph shows the temperature of a patient in a hospital record every hour.



- What was the patient's temperature at 1:00 pm?
- During which periods did the patient's temperature showed an upward trend?

C. Answer the following questions ($11 \times 3 = 33$)

- Simplify the following and express the result in exponential form with positive exponent: $(3^{-2} \times 5^4) \div (3^{-4} \times 5^2)$
- The mass of an electron is $9.1 \times 10^{-31} \text{ kg}$ and the mass of a proton is $1.67 \times 10^{-27} \text{ kg}$. Find how many times the proton is heavier than the electron. Give your answer in standard form.
- Expand 2546.37 using exponents.
- A mixture of paint is prepared by mixing 1 part of red pigment with 6 parts of base.
 - Complete the table:

Parts of Red Pigment	1	2	5	10
Parts of Base	6	?	?	?
 - Are the parts of red pigment and base in direct proportion? Give reason.

36. 8 pipes can fill a water tank in 27 minutes.

- How long will such 6 pipes type take to fill the tank?
- How many pipes are needed to fill the tank in 12 minutes?

37. A photograph of bacteria is enlarged 40,000 times and has a length of 8 cm. What is the actual length of the bacteria? If the photograph is enlarged 16,000 times only, what would be its enlarged length?

38. Factorize the expression: $a^2 - 2ab + b^2 - c^2$

39. Factorise the expression: $15pq + 15 + 9q + 25p$

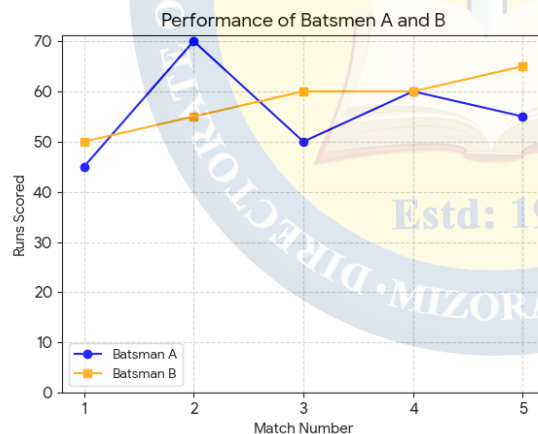
40. Divide: $3xy(4x^2 - 36)(y + 2)$ by $6x(x + 3)(y + 2)$

41. The following table shows the sales figures of a company for 5 years:

Year	2002	2003	2004	2005	2006
Sales (in ₹ crore)	4	6	8	10	12

- Draw a line graph for this data.
- In which year was the maximum increase in sales compared to the previous year?
- What is the average annual increase in sales?

42. The given graph represents the runs scored by two batsmen A and B in 5 consecutive matches.



- What information is given on the two axes?
- In which match did both batsmen score the same runs?
- Who is a more consistent batsman and why?

D. Answer the following questions. ($5 \times 5 = 25$)

43. Hminga prepares tea for 2 persons using 300 ml of water, 2 spoons of sugar, 1 spoon of tea leaves and 50 ml of milk.

- How much of each ingredient will be needed to make tea for 5 persons?
- Create a table showing the quantities needed for 1, 2, 3, 4, 5 and 6 persons.

44. A factory has 12 machines that produce 480 items per day.
- How many items will be produced per day if the number of machines is reduced to 9?
 - How many machines are required to produce 1440 items per day?
 - A similar factory with 15 machines works for 8 hours per day. How many hours should a factory with 12 machines work to produce the same daily output?
45. Factorize $10x^2 - 18x^3 + 14x^4$ using the common factor method. Verify your answer by expanding. State the irreducible factors.
46. Divide $44(x^4 - 5x^3 - 24x^2)$ by $11x(x - 8)$ using factorisation. Verify the result by multiplication.
47. Mawia rides a scooter at a constant speed of 40 km/hour. A table showing time and distance covered is given below:

Time (hours)	0	1	2	3	4	5
Distance (km)	0	40	80	120	160	200

- Draw a time-distance graph on graph paper using suitable scales.
- Using the graph, find:
 - The time taken to cover 100 km.
 - The distance covered in 3.5 hours.
- Is this a linear graph? Justify your answer.
- Does the graph pass through the origin? Why?
- What is the relationship between time and distance?