SCHOOL LEVEL EXAM (2024 – 2025)

MATHS MARATHON Competition For Excellence	CLASS **8**
Total Questions : 50 **Total Marks : 100**	**Time : 1 hour**

INSTRUCTIONS TO THE STUDENT'S

1. Please do not open this question paper unless you are instructed to do so.
2. Additional 5 minutes will be given to the candidates for filling up the student's details before the start of the competition.
3. The paper consists of 5 different chapters of the textbook.
4. All questions are compulsory and consist of equal marks.
5. Each question is carrying 2 marks, there is no negative marking.
6. There is only one correct answer, hence mark one answer only.
7. Darken the circle with dark pencil or blue/black ball pen only.
8. Return the answer sheet along with the question paper to the supervisor at the end of the exam.
9. Extra Blank pages can be used for rough calculations.

Name - _____

SCHOOL - _____

ROLL NO - _____ CLASS - _____

1. What is the comparison between 2/5 and 4/9?

A) $2/5 < 4/9$ B) $2/5 > 4/9$ C) $2/5 = 4/9$

2. Which of the following rational numbers is greater: -5/9 or -7/12?

A) -5/9 B) -7/12 C) Both are equal

3. Which decimal represents the rational number -1/4?

A) -0.75 B) -0.5 C) -0.25

4. If the numerators are the same, which rational number is greater: 2/5 or 2/7?

A) 2/5 B) 2/7 C) Both are equal

5. Which is smaller: -11/3 or -7/3?

A) -11/3 B) -7/3 C) Both are equal

6. Which of the following decimals represents the rational number -7/12?

A) -0.583... B) -0.666... C) -0.75

7. Which of the following numbers is irrational?

A) $\sqrt{2}$ B) 0.5 C) $\sqrt{36}$

8. If the denominators are the same, which rational number is greater: 3/4 or 5/4?

A) 3/4 B) 5/4 C) Both are equal

9. What is the comparison between 3/8 and 5/12?

A) $3/8 < 5/12$ B) $3/8 > 5/12$ C) $3/8 = 5/12$

10. Which is greater: -2/7 or -4/9?

A) -2/7 B) -4/9 C) Both are equal

11. Rewrite $\sqrt[3]{169}$ using index notation.

A) $13^{(1/3)}$ B) $169^{(1/3)}$ C) $\sqrt[3]{169}$

12. What is the square root of 64 expressed using index notation?

A) 8^2 B) $64^{(1/2)}$ C) $\sqrt{1/8}$

13. What is the cube root of 361 expressed in index notation?

A) $361^{(1/3)}$ B) 19^3 C) $\sqrt{1/19}$

14. Rewrite $25^{4/2}$ using square root notation.

A) $\sqrt[4]{25^2}$ B) $\sqrt[2]{25^4}$ C) $\sqrt[4]{25}$

15. Convert $324^{17/8}$ to square root notation.

A) $\sqrt[17]{324^8}$ B) $\sqrt[17]{324}$ C) $\sqrt[8]{324^{17}}$

16. Write the 5th root of 243 in index form.

A) $\sqrt[5]{243}$ B) $\sqrt[243]{5}$ C) $243^{1/5}$

17. Simplify $(7^{-1})^2$ as a power.

A) 7^2 B) 7^{-2} C) 7^{-1}

18. Express $729^{1/3}$ in standard form.

A) 9^3 B) 3 C) 3^2

19. Express $512^{1/3}$ in standard form.

A) 8 B) 25 C) 13

20. Convert $100^{9/2}$ to square root notation.

A) $\sqrt[3]{100^9}$ B) $\sqrt[2]{100^9}$ C) $\sqrt[9]{100}$

21. What is the expansion of $(x-4)(x+5)$?

A) x^2+x-20 B) x^2-x-20 C) x^2+x+20

22. Expand $(\frac{3}{5}x+\frac{1}{2}y-\frac{1}{3}z)^2$.

A) $\frac{9}{25}x^2+\frac{1}{4}y^2+\frac{1}{9}z^2+\frac{3}{5}xy-\frac{2}{5}xz-\frac{1}{3}yz$ B) $\frac{9}{25}x^2+\frac{1}{4}y^2+\frac{1}{9}z^2+\frac{3}{10}xy-\frac{1}{12}xz-\frac{1}{6}yz$

C) $\frac{9}{25}x^2+\frac{1}{4}y^2+\frac{1}{9}z^2+\frac{3}{10}xy-\frac{1}{15}xz-\frac{1}{8}yz$

23. What is the expansion of $(\frac{3}{4}a-\frac{1}{5}b+\frac{1}{6}c)^2$?

A) $\frac{9}{16}a^2-\frac{3}{10}ab+\frac{1}{25}b^2+4ac-\frac{1}{15}bc-\frac{1}{36}c^2$ B) $\frac{9}{16}a^2-\frac{3}{10}ab+\frac{1}{25}b^2+\frac{1}{9}ac-\frac{1}{13}bc+\frac{1}{36}c^2$

C) $\frac{9}{16}a^2-\frac{3}{10}ab+\frac{1}{25}b^2+\frac{1}{4}ac-\frac{1}{15}bc+\frac{1}{36}c^2$

24. Expand (x + 1) (x + 2).

A) $x^2 + 3x + 2$ B) $x^2 + 2x + 1$ C) $x^2 + 3x + 1$

25. Expand $(y + 4)^2$.

A) $y^2 + 16$ B) $y^2 + 8y + 16$ C) $y^2 + 8y + 4$

26. What is the expansion of $(2a - 5)^3$?

A) $8a^3 - 30a^2 + 25a - 125$ B) $8a^3 - 30a^2 - 25a - 125$ C) $8a^3 - 60a^2 + 150a - 125$

27. What is the expansion of $(2a - 3b + 4)^2$?

A) $4a^2 + 9b^2 + 16 - 24ab - 12b - 16a$ B) $4a^2 + 9b^2 + 12 - 16ab - 24b + 16a$

C) $4a^2 + 9b^2 + 16 - 12ab - 24b + 16a$

28. Expand $(2x + \frac{1}{3})^3$.

A) $8x^3 + \frac{1}{16} + 4x^2 + x\frac{2}{3}$ B) $8x^3 + \frac{1}{27} + 4x^2 + x\frac{2}{3}$ C) $8x^3 + \frac{1}{27} + 2x^2 + x\frac{5}{3}$

29. Expand $(\frac{1}{2}x + \frac{1}{3}\ y)^2$.

A) $\frac{1}{4}x^2 + \frac{1}{3}xy + \frac{1}{9}y^2$ B) $\frac{1}{4}x^2 + \frac{1}{6}xy + \frac{1}{9}$ C) $\frac{1}{4}x^2 + \frac{1}{6}xy + \frac{1}{9}y^2$

30. Expand $(\frac{3}{5}y + \frac{1}{2})^3$.

A) $\frac{27}{125}y^3 + \frac{9}{25}y^2 + \frac{9}{20}y + \frac{1}{8}$ B) $\frac{27}{125}y^3 + \frac{9}{50}y^2 + \frac{9}{20}y + \frac{1}{4}$ C) $\frac{27}{125}y^3 + \frac{27}{50}y^2 + \frac{9}{20}y + \frac{1}{8}$

31. What is the factorization of $x^2 + 6x + 9$?

A) $(x + 3)^2$ B) $(x + 3\ )\ (x - 3\ )$ C) $(x + 9\ )\ (x + 1\ )$

32. Which of the following is a factor of $x^2 - 9x + 18$?

A) $(x - 3)$ B) Both A and B C) $(x - 6)$

33. What are the factors of $x^4 - y^4$?

A) $(x - y)\ (\ x^2 + xy + y^2)$ B) $(x + y)\ (\ x^2 + xy + y^2)$

C) $(x - y)\ (x + y)(\ x^2 + y^2)$

34. What is the factorization of $27a^3 + 64b^3$?

A) $(3a - 4b)^3$ B) $(3a + 4b)^3$ C) $(3a + 4b)(9a^2 - 24ab + 16b^2)$

35. What is the simplified form of the rational expression $\frac{6x^3-12x^2}{2x^2-4x}$?

A) $3x$ B) $3x^2$ C) $3x(x - 2)$

36. What is the factorization of $a^3 - b^3$ if a - b = 0?

A) $(a - b)^3$ B) 0 C) $a^3 - b^3$

37. Simplify $\frac{8x^3-27y^3}{4x^2-9y^2}$?

A) $\frac{4x^2+6xy+9y^2}{2x+3y}$ B) $\frac{4x^2+6xy+9y^2}{2x-3y}$ C) $\frac{4x^2+6xy-9y^2}{2x+3y}$

38. What is the factorization of $p^3 - 125q^3$?

A) $(4p - 5q)^3$ B) $(4p + 5q)^3$ C) $(p - 5q)\ (p^2 + 5pq - 25q^2))$

39. Which of the following is equivalent to the rational expression $\frac{x^2-4}{x^2-2x+1}$?

A) $\frac{(x+2)\ (x-2)}{(x-1)^2}$ B) $\frac{(x-2)\ (x-2)}{(x-1)^2}$ C) $\frac{(x+2)\ (x+2)}{(x-1)^2}$

40. Simplify $\frac{3x^2-x-2}{x^2-7x+12} \div \frac{3x^2-7x-6}{x^2-4}$?

A) $\frac{(x-1)\,(x-2)(x+2)}{(x+3)^2\,(x-4)}$ B) $\frac{(x-1)\,(x-2)(x+2)}{(x-3)^2\,(x-4)}$ C) $\frac{(x-1)\,(x-2)(x+2)}{(x-3)^2\,(x+4)}$

41. If y varies directly as x, and y = 25 when x = 5, what is the value of y when x = 10?

A) 40 B) 50 C) 30

42. If it takes 8 workers 10 days to build a wall, how many days would it take for 20 workers to build the same wall, assuming they work at the same rate?

A) 6 days B) 4 days C) 5 days

43. The distance traveled by a car is directly proportional to the time it travels at a constant speed. If a car travels 120 miles in 3 hours, how far will it travel in 5 hours?

A) 300 miles B) 180 miles C) 200 miles

44. The distance traveled by a cyclist is inversely proportional to the wind resistance encountered. If a cyclist travels 60 km with a wind resistance of 10 km/h, how far will the cyclist travel with a wind resistance of 15 km/h?

A) 40 km B) 30 km C) 20 km

45. The force exerted by a spring is inversely proportional to the amount it is stretched. If a force of 20 N is exerted when the spring is stretched by 5 cm, what will be the force when the spring is stretched by 10 cm?

A) 10 N B) 8 N C) 5 N

46. A shirt originally priced at $40 is on sale at a 20% discount. What is the sale price of the shirt?

A) $32 B) $28 C) $36

47. A salesperson receives a commission of 5% on the total sales made in a month. If the total sales amount to $5000, what is the commission earned by the salesperson?

A) $200 B) $250 C) $300

48. A furniture salesperson earns a commission of 10% on each furniture sale. If the total sales amount to $8000, what is the commission earned by the salesperson?

A) $1000 B) $600 C) $800

49. A company offers a rebate of $100 on the purchase of a refrigerator priced at $800. What is the effective price after rebate?

A) $750 B) $700 C) $900

50. If a camera originally priced at $300 is sold with a rebate of $50, what is the effective price after rebate?

A) $270 B) $280 C) $250

ANSWER SECTION

No.	Ans	No.	Ans	No.	Ans	No.	Ans	No.	Ans
1	A	11	B	21	A	31	A	41	B
2	A	12	B	22	A	32	B	42	B
3	C	13	A	23	C	33	C	43	C
4	A	14	B	24	A	34	C	44	A
5	A	15	C	25	B	35	A	45	A
6	A	16	C	26	C	36	B	46	A
7	A	17	B	27	C	37	A	47	B
8	B	18	C	28	B	38	C	48	C
9	A	19	A	29	A	39	A	49	B
10	A	20	B	30	C	40	B	50	C