

Full Practice Exam — Set 2

Mathematics · Class 8 · Full Syllabus Practice Exam

TIME 60 minutes	QUESTIONS 50	TOTAL MARKS 60	MAX. SCORE ___ / 60
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Name: _____ Class/Sec: _____ Date: _____

INSTRUCTIONS

- There are **50 questions** in this paper. All questions are compulsory.
- Each question has four options (A), (B), (C) and (D). Exactly **one** option is correct.
- Questions 1–45 carry **1 mark** each. Questions 46–50 (Achievers Section) carry **3 marks** each.
- There is no negative marking. Use of a calculator is **not** allowed.
- Rough work may be done in the space at the side of each page.

Section 1 — Logical Reasoning

Q1–Q10 · 1 mark each

- What comes next in the series? 3, 6, 12, 24, 48, ____
 (A) 72 (B) 80
 (C) 96 (D) 144
- Find the **odd one out**: 16, 25, 36, 50
 (A) 16 (B) 25
 (C) 36 (D) 50
- What comes next in the series? BD, EG, HJ, ____
 (A) KM (B) KL
 (C) LM (D) JL
- In a certain code, TABLE is written as 20-1-2-12-5. How is CHAIR written in the same code?
 (A) 3-8-1-9-18 (B) 3-8-1-9-19
 (C) 4-8-1-9-18 (D) 3-9-1-9-18
- Pointing to a boy in a photograph, a woman says, 'He is the son of my mother's only daughter.' How is the boy related to the woman?
 (A) Son (B) Nephew
 (C) Brother (D) Grandson
- In a row of 60 students, Meera is 23rd from the left end. What is her position from the right end?
 (A) 37th (B) 36th
 (C) 39th (D) 38th
- A boy walks 9 m north and then 12 m east. How far is he from his starting point?
 (A) 15 m (B) 21 m
 (C) 18 m (D) 12 m

8. Which number should replace the question mark? 5, 11, 23, 47, ____

(A) 93

(B) 94

(C) 95

(D) 96

9. $7 : 56 :: 9 : \underline{\hspace{1cm}}$

(A) 81

(B) 88

(C) 90

(D) 99

10. Study the given number grid. Each row increases by the same amount going across, and each column increases by the same amount going down. Find the missing number.

4	7	10
9	12	15
14	17	?

Fig. — Number grid

(A) 18

(B) 19

(C) 20

(D) 21

Section 2 — Mathematical Reasoning

Q11–Q28 · 1 mark each

11. The additive inverse of $\frac{7}{9}$ is ____.

(A) $\frac{-9}{7}$

(B) $\frac{9}{7}$

(C) 0

(D) $\frac{-7}{9}$

12. Which of these numbers is a perfect cube?

(A) 150

(B) 168

(C) 189

(D) 216

13. $\sqrt{784} = \underline{\hspace{1cm}}$

(A) 26

(B) 27

(C) 28

(D) 29

14. The value of 5^{-3} is ____.

(A) $\frac{1}{125}$

(B) -15

(C) -125

(D) $\frac{1}{15}$

15. $5^6 \div 5^2 = \underline{\hspace{1cm}}$

(A) 5^8

(B) 5^4

(C) 5^3

(D) 5^{12}

16. 15% of 360 is ____.

(A) 36

(B) 45

(C) 54

(D) 60

17. An article bought for ₹400 is sold for ₹460. The profit per cent is ____.

(A) 10%

(B) 12%

(C) 20%

(D) 15%

18. How many terms are there in $6a^2b - 4ab + 7b - 3$?
- (A) 2 (B) 3
(C) 4 (D) 5
19. $(a - b)^2 =$ _____
- (A) $a^2 - 2ab + b^2$ (B) $a^2 + b^2$
(C) $a^2 + 2ab + b^2$ (D) $a^2 - b^2$
20. The solution of $4x - 7 = 21$ is $x =$ _____.
- (A) 5 (B) 6
(C) 7 (D) 8
21. The sum of the interior angles of a hexagon is _____.
- (A) 540° (B) 720°
(C) 600° (D) 900°
22. The diagonals of a square _____.
- (A) Bisect each other but not at right angles (B) Are unequal in length
(C) Do not bisect each other (D) Are equal in length and bisect each other at right angles
23. The area of a parallelogram with base b and height h is _____.
- (A) $b \times h$ (B) $\frac{1}{2} b \times h$
(C) $2(b+h)$ (D) $b+h$
24. The number line shows four points P, Q, R and S. Which point represents the rational number $7/4$?

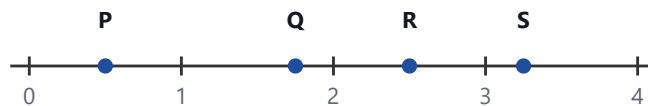


Fig. — Points on a number line

- (A) P (B) Q
(C) R (D) S
25. The volume of a cube of side 6 cm is _____.
- (A) 116 cm^3 (B) 216 cm^3
(C) 196 cm^3 (D) 36 cm^3
26. The table shows the number of goals scored by a football team in 10 matches. What is the mode of this data?

Goals scored	0	1	2	3
Number of matches	2	4	3	1

Table — Goals scored in 10 matches

- (A) 0 (B) 1
(C) 2 (D) 3

27. If x and y vary inversely, then _____ remains constant.

(A) $x-y$

(B) $\frac{x}{y}$

(C) $x+y$

(D) $x \times y$

28. A fair die is rolled once. What is the probability of getting a number greater than 4?

(A) $\frac{1}{3}$

(B) $\frac{1}{2}$

(C) $\frac{2}{3}$

(D) $\frac{1}{6}$

Section 3 — Everyday Mathematics

Q29–Q45 · 1 mark each

29. The ratio of pens to pencils in a box is 4 : 7. If there are 28 pencils, how many pens are there?

(A) 14

(B) 16

(C) 18

(D) 20

30. A shopkeeper marks a shirt at ₹800 and allows a discount of 15%. Find the selling price.

(A) ₹720

(B) ₹680

(C) ₹650

(D) ₹760

31. Find the compound interest on ₹8,000 for 2 years at 10% per annum, compounded annually.

(A) ₹1,600

(B) ₹800

(C) ₹1,760

(D) ₹1,680

32. A kite is flying 24 m above the ground. The horizontal distance from the person holding the string to the point directly below the kite is 7 m. Find the length of the string.

(A) 25 m

(B) 26 m

(C) 24 m

(D) 30 m

33. The area of a square park is $2,025 \text{ m}^2$. Find the cost of fencing it at ₹40 per metre.

(A) ₹1,800

(B) ₹7,200

(C) ₹3,600

(D) ₹9,000

34. Using a suitable identity, the value of 97×103 is _____.

(A) 9,979

(B) 9,989

(C) 10,009

(D) 9,991

35. A rectangular garden has length $(y+9)$ m and breadth $(y-4)$ m. Its area in m^2 is _____.

(A) $y^2+5y-36$

(B) y^2-36

(C) $y^2+13y-36$

(D) $y^2+5y+36$

36. The sum of three consecutive natural numbers is 84. The largest of the three numbers is _____.

(A) 27

(B) 28

(C) 29

(D) 30

37. A mother is 4 times as old as her daughter. After 16 years she will be twice as old as her daughter. Find the daughter's present age.

(A) 6 years

(B) 8 years

(C) 10 years

(D) 12 years

38. In parallelogram PQRS, $\angle P = 72^\circ$. Find $\angle Q$.

(A) 72°

(B) 144°

(C) 118°

(D) 108°

39. The diagonals of a rhombus are 24 cm and 18 cm. Find the length of each side.

(A) 15 cm

(B) 21 cm

(C) 20 cm

(D) 30 cm

40. A wooden box measures 12 cm by 9 cm by 5 cm. Find its volume.

(A) 480 cm^3

(B) 540 cm^3

(C) 450 cm^3

(D) 600 cm^3

41. A cylindrical pipe has radius 3.5 cm and length 20 cm. Find its volume. (Take $\pi = \frac{22}{7}$.)

(A) $1,540 \text{ cm}^3$

(B) 700 cm^3

(C) 880 cm^3

(D) 770 cm^3

42. 18 workers can complete a road in 40 days. How many days would 24 workers of the same efficiency take?

(A) 30 days

(B) 32 days

(C) 36 days

(D) 25 days

43. A recipe uses 5 eggs to bake 20 cupcakes. How many eggs are needed to bake 32 cupcakes?

(A) 6

(B) 7

(C) 8

(D) 9

44. The bar graph shows the rainfall recorded in a town over five months. On how many months was the rainfall more than 42 mm?

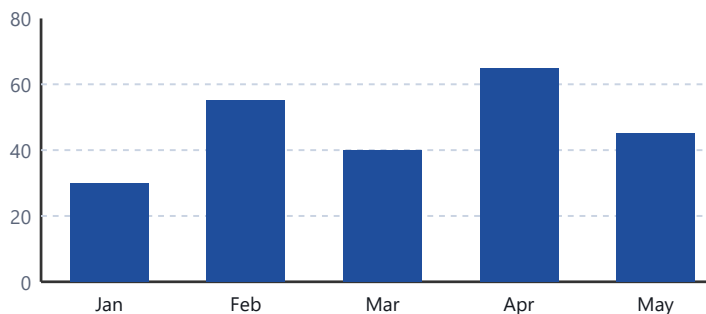


Fig. — Rainfall recorded in a town (in mm)

(A) 2

(B) 3

(C) 4

(D) 5

45. A bag contains 6 white, 4 black and 5 yellow marbles. One marble is drawn at random. What is the probability that it is yellow?

(A) $\frac{1}{4}$

(B) $\frac{1}{3}$

(C) $\frac{1}{5}$

(D) $\frac{4}{15}$

46. Find x if $\left(\frac{2}{3}\right)^{-3} \times \left(\frac{2}{3}\right)^4 = \left(\frac{2}{3}\right)^{3x-2}$.

(A) -1

(B) 2

(C) 1

(D) $\frac{1}{3}$

47. Consider the following statements about rational numbers.

(I) Every whole number is a rational number.

(II) $\frac{0}{7}$ equals 0.

(III) $\frac{-5}{-8}$ is a negative rational number.

(IV) $\frac{2}{3}$ and $\frac{-2}{-3}$ represent the same rational number.

How many of these statements are TRUE?

(A) 1

(B) 2

(C) 3

(D) 4

48. The length of a rectangle is increased by 25% and its breadth is decreased by 20%. Find the net percentage change in its area.

(A) A 10% increase

(B) A 5% increase

(C) A 5% decrease

(D) No change

49. Three bells toll at intervals of 15, 20 and 30 minutes respectively. If they toll together at 8:00 a.m., at what time will they next toll together?

(A) 9:00 a.m.

(B) 8:45 a.m.

(C) 8:30 a.m.

(D) 9:15 a.m.

50. Assertion (A): The diagonals of a rhombus are always equal in length.

Reason (R): The diagonals of a rhombus bisect each other at right angles.

(A) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).

(B) Assertion (A) is false, but Reason (R) is true.

(C) Assertion (A) is true, but Reason (R) is false.

(D) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

Answer Key

1	C	2	D	3	A	4	A	5	A
6	D	7	A	8	C	9	C	10	C
11	D	12	D	13	C	14	A	15	B
16	C	17	D	18	C	19	A	20	C
21	B	22	D	23	A	24	B	25	B
26	B	27	D	28	A	29	B	30	B
31	D	32	A	33	B	34	D	35	A
36	C	37	B	38	D	39	A	40	B
41	D	42	A	43	C	44	B	45	B
46	C	47	C	48	D	49	A	50	B

Solutions

1. Answer: (C) 96

Each term is double the previous term: $3 \times 2 = 6$, $6 \times 2 = 12$, $12 \times 2 = 24$, $24 \times 2 = 48$, $48 \times 2 = \mathbf{96}$.

2. Answer: (D) 50

$16 = 4^2$, $25 = 5^2$ and $36 = 6^2$ are perfect squares. **50** is not a perfect square, so it is the odd one out.

3. Answer: (A) KM

Both letters move ahead by 3 each time: B,E,H,**K** and D,G,J,**M**. So the next pair is **KM**.

4. Answer: (A) 3-8-1-9-18

Each letter is replaced by its position in the alphabet: C=3, H=8, A=1, I=9, R=18, giving **3-8-1-9-18**.

5. Answer: (A) Son

Since the woman has no sister, 'my mother's only daughter' refers to the woman herself. So the boy is her own **son**.

6. Answer: (D) 38th

Position from the right = $60 - 23 + 1 = \mathbf{38th}$.

7. Answer: (A) 15 m

Distance = $\sqrt{9^2 + 12^2} = \sqrt{81 + 144} = \sqrt{225} = \mathbf{15 \text{ m}}$.

8. Answer: (C) 95

Each term is doubled and 1 is added: $5 \times 2 + 1 = 11$, $11 \times 2 + 1 = 23$, $23 \times 2 + 1 = 47$, $47 \times 2 + 1 = \mathbf{95}$.

9. Answer: (C) 90

The second number equals the first multiplied by one more than itself: $7 \times 8 = 56$. So $9 \times 10 = \mathbf{90}$.

10. Answer: (C) 20

Reading across, each number increases by 3 (14, 17, 20). Reading down the last column also increases by 5 each time (10, 15, 20). Both checks agree, so the missing number is **20**.

11. Answer: (D) $-\frac{7}{9}$

$\frac{7}{9} + \frac{-7}{9} = 0$, so the additive inverse is $\frac{-7}{9}$.

12. Answer: (D) 216

$216 = 6^3$, so **216** is a perfect cube.

13. Answer: (C) 28

$28 \times 28 = 784$, so $\sqrt{784} = \mathbf{28}$.

14. Answer: (A) $\frac{1}{125}$

$5^{-3} = 1 \div 5^3 = \frac{1}{125}$.

15. Answer: (B) 5^4

$5^{6-2} = \mathbf{5^4}$.

16. Answer: (C) 54

15% of 360 = $360 \times 15 \div 100 = \mathbf{54}$.

17. Answer: (D) 15%

Profit=60. Profit% = $(60 \div 400) \times 100 = \mathbf{15\%}$.

18. Answer: (C) 4

The terms are $6a^2b$, $-4ab$, $7b$ and -3 — **4** terms.

19. Answer: (A) $a^2 - 2ab + b^2$

$$(a-b)^2 = a^2 - 2ab + b^2.$$

20. Answer: (C) 7

$$4x = 28, x = 7.$$

21. Answer: (B) 720°

A hexagon splits into $(6-2)=4$ triangles, so the sum is $4 \times 180^\circ = 720^\circ$.

22. Answer: (D) Are equal in length and bisect each other at right angles

In a square, the diagonals are **equal in length and bisect each other at right angles**.

23. Answer: (A) $b \times h$

Area of a parallelogram = **$b \times h$** .

24. Answer: (B) Q

$7/4 = 1.75$, which lies three-quarters of the way between 1 and 2 on the number line. That is the position marked **Q**.

25. Answer: (B) 216 cm^3

$$6^3 = 216 \text{ cm}^3.$$

26. Answer: (B) 1

The team scored 1 goal in 4 out of the 10 matches, more than any other number of goals. So the mode is **1**.

27. Answer: (D) $x \times y$

In inverse proportion, **$x \times y$** stays constant.

28. Answer: (A) $\frac{1}{3}$

Numbers greater than 4 on a die are 5 and 6, so there are 2 favourable outcomes out of 6. $P = 2/6 = \frac{1}{3}$.

29. Answer: (B) 16

$$1 \text{ part} = 28 \div 7 = 4. \text{ Pens} = 4 \times 4 = \mathbf{16}.$$

30. Answer: (B) ₹680

$$\text{Discount} = 800 \times 15 \div 100 = 120. \text{ SP} = 800 - 120 = \mathbf{\text{₹}680}.$$

31. Answer: (D) ₹1,680

$$\text{Amount} = 8000 \times 1.1 \times 1.1 = 9680. \text{ CI} = 9680 - 8000 = \mathbf{\text{₹}1,680}.$$

32. Answer: (A) 25 m

$$\sqrt{(24^2 + 7^2)} = \sqrt{(576 + 49)} = \sqrt{625} = \mathbf{25 \text{ m}}.$$

33. Answer: (B) ₹7,200

$$\text{Side} = 45 \text{ m. Perimeter} = 180 \text{ m. Cost} = 180 \times 40 = \mathbf{\text{₹}7,200}.$$

34. Answer: (D) 9,991

$$97 \times 103 = (100 - 3)(100 + 3) = 10000 - 9 = \mathbf{9,991}.$$

35. Answer: (A) $y^2 + 5y - 36$

$$(y+9)(y-4) = \mathbf{y^2 + 5y - 36}.$$

36. Answer: (C) 29

$$x + (x+1) + (x+2) = 84, \text{ so } 3x = 81, x = 27. \text{ The largest number is } x+2 = \mathbf{29}.$$

37. Answer: (B) 8 years

$$4x + 16 = 2(x + 16), \text{ so } 2x = 16, x = \mathbf{8 \text{ years}}.$$

38. Answer: (D) 108°

$\angle P$ and $\angle Q$ are adjacent angles of a parallelogram, so they are supplementary: $180 - 72 = \mathbf{108^\circ}$.

39. Answer: (A) 15 cm

Half-diagonals are 12 cm and 9 cm. Side = $\sqrt{(12^2 + 9^2)} = \sqrt{225} = \mathbf{15 \text{ cm}}$.

40. Answer: (B) 540 cm³

$12 \times 9 \times 5 = \mathbf{540 \text{ cm}^3}$.

41. Answer: (D) 770 cm³

Volume = $\pi r^2 h = \frac{22}{7} \times 3.5^2 \times 20 = \frac{22}{7} \times 12.25 \times 20 = \mathbf{770 \text{ cm}^3}$.

42. Answer: (A) 30 days

$18 \times 40 = 24 \times t$, $t = \mathbf{30 \text{ days}}$.

43. Answer: (C) 8

$\frac{5}{20} = \frac{e}{32}$, $e = \mathbf{8}$.

44. Answer: (B) 3

Jan = 30 mm, Feb = 55 mm, Mar = 40 mm, Apr = 65 mm, May = 45 mm. Months with rainfall above 42 mm: Feb, Apr and May = **3**.

45. Answer: (B) $\frac{1}{3}$

Total marbles = $6 + 4 + 5 = 15$. Yellow marbles = 5. $P = 5/15 = \mathbf{\frac{1}{3}}$.

46. Answer: (C) 1

Adding exponents on the left: $-3 + 4 = 1$.

So $3x - 2 = 1$, giving $3x = 3$, $x = \mathbf{1}$.

47. Answer: (C) 3

Statement I is true since any whole number n can be written as $n/1$. Statement II is true because $0 \div 7 = 0$. Statement III is false, since a negative number divided by a negative number gives a positive result, not a negative one. Statement IV is true because $\frac{-2}{-3}$ simplifies to $\frac{2}{3}$. So **3** of the four statements are true.

48. Answer: (D) No change

New area factor = $1.25 \times 0.80 = 1.00$, so the area stays exactly the same as before. Net change = **no change**.

49. Answer: (A) 9:00 a.m.

LCM of 15, 20 and 30 = 60 minutes. So the three bells will next toll together 60 minutes after 8:00 a.m., which is **9:00 a.m.**

50. Answer: (B) Assertion (A) is false, but Reason (R) is true.

The diagonals of a rhombus are generally unequal in length (they are equal only in the special case of a square), so the assertion is false. However, the diagonals of every rhombus do bisect each other at right angles, so the reason is a true statement on its own.