

Full Practice Exam — Set 3

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? 100, 91, 83, 76, 70, ____
 (A) 65 (B) 64
 (C) 66 (D) 68
- Find the **odd one out**: 4, 16, 22, 36
 (A) 4 (B) 22
 (C) 16 (D) 36
- What comes next in the series? AZ, CX, EV, ____
 (A) GS (B) FT
 (C) GT (D) HT
- In a certain code, GARDEN is written as 7-1-18-4-5-14. How is FLOWER written in the same code?
 (A) 6-11-15-23-5-18 (B) 6-12-16-23-5-18
 (C) 6-12-15-23-5-18 (D) 6-12-15-24-5-18
- Introducing a boy, Neha said, 'He is the son of my grandfather's only child.' How is the boy related to Neha?
 (A) Nephew (B) Cousin
 (C) Brother (D) Uncle
- In a line of 52 students, Karan is 19th from the left end. What is his position from the right end?
 (A) 33rd (B) 36th
 (C) 35th (D) 34th
- A cyclist rides 6 km north, then 8 km east, then 6 km south. How far is he from his starting point?
 (A) 10 km (B) 14 km
 (C) 8 km (D) 20 km

8. Which number should replace the question mark? 3, 8, 15, 24, 35, ____
- (A) 46 (B) 47
(C) 50 (D) 48
9. If 1 March 2028 is a Wednesday, what day of the week is 25 March 2028?
- (A) Monday (B) Friday
(C) Sunday (D) Saturday
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.

5	9	13
12	16	20
19	23	?

Fig. — Number grid

- (A) 26 (B) 27
(C) 28 (D) 29

Section 2 — Mathematical Reasoning

Q11–Q28 · 1 mark each

11. The additive inverse of $\frac{-9}{11}$ is ____.
- (A) $\frac{9}{11}$ (B) 0
(C) $\frac{-11}{9}$ (D) $\frac{11}{9}$
12. Which of the following is **NOT** a perfect square?
- (A) 169 (B) 150
(C) 196 (D) 144
13. $\sqrt{2025} =$ ____
- (A) 42 (B) 44
(C) 45 (D) 48
14. The value of 2^{-4} is ____.
- (A) -8 (B) -16
(C) $\frac{1}{16}$ (D) $\frac{1}{8}$
15. $7^5 \times 7^{-2} =$ ____
- (A) 7^{10} (B) 7^7
(C) 7^{-3} (D) 7^3
16. 40% of 650 is ____.
- (A) 240 (B) 260
(C) 250 (D) 280
17. An article bought for ₹350 is sold for ₹280. The loss per cent is ____.
- (A) 20% (B) 18%
(C) 15% (D) 25%

18. How many terms are there in $5p^2q - 2pq^2 + 3p - 9$?

(A) 2

(B) 3

(C) 5

(D) 4

19. $(a + b)(a - b) =$ _____

(A) $a^2 + b^2$

(B) $a^2 - b^2$

(C) $a^2 + 2ab - b^2$

(D) $a^2 - 2ab + b^2$

20. The solution of $5x - 9 = 26$ is $x =$ _____.

(A) 5

(B) 7

(C) 6

(D) 8

21. The sum of the interior angles of a pentagon is _____.

(A) 450°

(B) 480°

(C) 540°

(D) 600°

22. The diagonals of a rectangle _____.

(A) Bisect each other at right angles

(B) Do not intersect

(C) Are always perpendicular

(D) Are equal in length and bisect each other

23. A number is divisible by 11 if _____.

(A) The difference between the sum of digits at odd places and the sum of digits at even places is a multiple of 11

(B) Its last digit is 0 or 5

(C) The sum of all its digits is divisible by 11

(D) The number formed by its last two digits is divisible by 11

24. In the right triangle shown below, the two legs measure 9 cm and 12 cm. Find the length of the hypotenuse x .

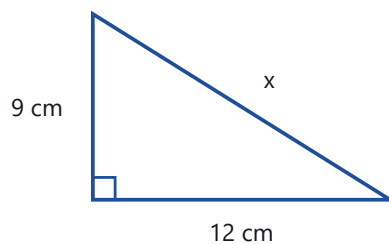


Fig. — Right triangle with legs 9 cm and 12 cm

(A) 14

(B) 15

(C) 16

(D) 18

25. The volume of a cube of side 7 cm is _____.

(A) 294 cm^3

(B) 343 cm^3

(C) 315 cm^3

(D) 336 cm^3

26. If x and y are in direct proportion and $y=20$ when $x=8$, find y when $x=12$.

(A) 24

(B) 28

(C) 32

(D) 30

27. Find the mean of 12, 15, 18, 21 and 24.

(A) 18

(B) 16

(C) 17

(D) 20

28. A bag contains 4 red, 6 blue and 2 white balls. One ball is drawn at random. What is the probability that it is blue?

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

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

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

(D) $\frac{3}{5}$

Section 3 — Everyday Mathematics

Q29–Q45 · 1 mark each

29. The ratio of boys to girls in a class is 5 : 6. If there are 30 boys, how many girls are there?

(A) 36

(B) 32

(C) 34

(D) 40

30. A jacket marked at ₹2,000 is sold at a discount of 12%. Find its selling price.

(A) ₹1,800

(B) ₹1,680

(C) ₹1,750

(D) ₹1,760

31. Find the simple interest on ₹6,000 at 9% per annum for 3 years.

(A) ₹1,620

(B) ₹1,600

(C) ₹1,500

(D) ₹1,800

32. Find the compound interest on ₹10,000 for 2 years at 5% per annum, compounded annually.

(A) ₹1,000

(B) ₹1,025

(C) ₹1,100

(D) ₹1,050

33. A rectangular field has a diagonal path of length 34 m. If one side of the field is 16 m, find the length of the other side.

(A) 32 m

(B) 28 m

(C) 30 m

(D) 26 m

34. The area of a square garden is $2,916 \text{ m}^2$. Find the cost of fencing it at ₹30 per metre.

(A) ₹6,000

(B) ₹5,400

(C) ₹6,240

(D) ₹6,480

35. Using a suitable identity, the value of 95×105 is _____.

(A) 9,975

(B) 10,025

(C) 9,925

(D) 9,950

36. A rectangular plot has length $(m+7)$ m and breadth $(m-3)$ m. Its area in m^2 is _____.

(A) m^2-21

(B) $m^2+4m-21$

(C) $m^2-4m-21$

(D) $m^2+10m-21$

37. The sum of two consecutive even numbers is 94. The larger number is _____.

(A) 48

(B) 46

(C) 50

(D) 44

38. A is 5 times as old as B. After 10 years, A will be 3 times as old as B. Find B's present age.

(A) 8 years

(B) 12 years

(C) 10 years

(D) 15 years

39. In parallelogram WXYZ, $\angle W = 110^\circ$. Find $\angle X$.

(A) 110°

(B) 55°

(C) 90°

(D) 70°

40. In rhombus PQRS shown below, diagonal QS = 48 cm and diagonal PR = 20 cm. Find the length of side PQ.

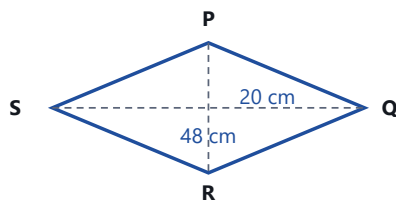


Fig. — Rhombus PQRS with diagonals PR and QS

(A) 26 cm

(B) 28 cm

(C) 25 cm

(D) 24 cm

41. A wooden crate measures 15 cm by 10 cm by 4 cm. Find its volume.

(A) 580 cm^3

(B) 600 cm^3

(C) 620 cm^3

(D) 560 cm^3

42. A cylindrical tin has radius 3.5 cm and height 12 cm. Find its volume. (Take $\pi = \frac{22}{7}$.)

(A) 440 cm^3

(B) 420 cm^3

(C) 462 cm^3

(D) 480 cm^3

43. 24 workers can complete a job in 15 days. How many days would 18 workers of the same efficiency take?

(A) 18 days

(B) 25 days

(C) 22 days

(D) 20 days

44. A recipe uses 4 cups of rice to serve 10 people. How many cups of rice are needed to serve 25 people?

(A) 10 cups

(B) 9 cups

(C) 12 cups

(D) 8 cups

45. The bar graph shows the number of visitors to a museum over five days. On how many days were fewer than 50 visitors recorded?

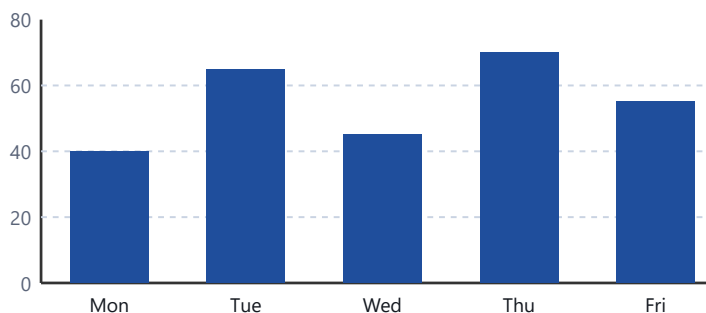


Fig. — Visitors to a museum over five days

(A) 2

(B) 1

(C) 3

(D) 4

46. Find x if $\left(\frac{4}{7}\right)^{-3} \times \left(\frac{4}{7}\right)^{2x} = \left(\frac{4}{7}\right)^5$.

(A) -4

(B) 4

(C) 3

(D) 8

47. Factorise $9x^2 - 25y^2$ completely.

(A) $(3x-5y)^2$

(B) $(9x-25y)(x+y)$

(C) $(3x-5y)(3x+5y)$

(D) $(3x+5y)^2$

48. The price of an article is increased by 30% and then decreased by 30%. Find the net percentage change.

(A) No change

(B) A 9% increase

(C) A 4% decrease

(D) A 9% decrease

49. Three alarms ring together at 7:00 a.m. They then ring every 24, 32 and 40 minutes respectively. At what time will all three next ring together?

(A) 3:00 p.m.

(B) 4:00 p.m.

(C) 1:00 p.m.

(D) 2:00 p.m.

50. Assertion (A): The square of any odd number is always odd.

Reason (R): The product of two odd numbers is always odd.

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

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

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

Solutions

1. Answer: (A) 65

The gap between consecutive terms shrinks by 1 each time: 9, 8, 7, 6, so the next gap is 5. $70-5=65$.

2. Answer: (B) 22

$4=2^2$, $16=4^2$ and $36=6^2$ are perfect squares. **22** is not, so it is the odd one out.

3. Answer: (C) GT

The first letter advances by 2 each time: A, C, E, **G**. The second letter goes back by 2 each time: Z, X, V, **T**. So the next pair is **GT**.

4. Answer: (C) 6-12-15-23-5-18

Each letter is replaced by its position in the alphabet: F=6, L=12, O=15, W=23, E=5, R=18, giving **6-12-15-23-5-18**.

5. Answer: (C) Brother

Neha's grandfather's only child must be one of Neha's own parents, since Neha herself is that parent's child. So the boy, being the son of that parent, is Neha's **brother**.

6. Answer: (D) 34th

Position from the right = $52 - 19 + 1 = 34$ **th**.

7. Answer: (C) 8 km

The 6 km north and 6 km south cancel each other out, leaving only the 8 km travelled east. Distance from the start = **8 km**.

8. Answer: (D) 48

The gap between consecutive terms increases by 2 each time: 5, 7, 9, 11, so the next gap is 13. $35+13=48$.

9. Answer: (D) Saturday

25 March is 24 days after 1 March. $24 = 3 \times 7 + 3$, so 3 extra days after Wednesday land on **Saturday**.

10. Answer: (B) 27

Reading across, each row increases by 4 (19, 23, **27**). Reading down the last column, each entry increases by 7 (13, 20, **27**). Both checks agree, so the missing number is **27**.

11. Answer: (A) $\frac{9}{11}$

$\frac{-9}{11} + \frac{9}{11} = 0$, so the additive inverse is $\frac{9}{11}$.

12. Answer: (B) 150

$144=12^2$, $169=13^2$ and $196=14^2$ are perfect squares. **150** is not a perfect square.

13. Answer: (C) 45

$45 \times 45 = 2025$, so $\sqrt{2025} = 45$.

14. Answer: (C) $\frac{1}{16}$

$2^{-4} = 1 \div 2^4 = \frac{1}{16}$.

15. Answer: (D) 7^3

$7^{5-2} = 7^3$.

16. Answer: (B) 260

40% of 650 = $650 \times 40 \div 100 = 260$.

17. Answer: (A) 20%

Loss = 70. Loss% = $(70 \div 350) \times 100 = 20\%$.

18. Answer: (D) 4

The terms are $5p^2q$, $-2pq^2$, $3p$ and -9 — **4** terms.

19. Answer: (B) $a^2 - b^2$

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

20. Answer: (B) 7

$$5x=35, x=7.$$

21. Answer: (C) 540°

A pentagon splits into $(5-2)=3$ triangles, so the sum is $3 \times 180^\circ = \mathbf{540^\circ}$.

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

In a rectangle, the diagonals are **equal in length and bisect each other** (but not necessarily at right angles).

23. Answer: (A) The difference between the sum of digits at odd places and the sum of digits at even places is a multiple of 11

The test for 11 is that **the difference between the sum of digits at odd places and the sum of digits at even places must be a multiple of 11** (including 0).

24. Answer: (B) 15

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

25. Answer: (B) 343 cm^3

$$7^3 = \mathbf{343 \text{ cm}^3}.$$

26. Answer: (D) 30

$$\frac{y}{x} \text{ stays constant: } \frac{20}{8} = \frac{y}{12} \cdot y = \mathbf{30}.$$

27. Answer: (A) 18

$$\text{Mean} = (12+15+18+21+24) \div 5 = 90 \div 5 = \mathbf{18}.$$

28. Answer: (C) $\frac{1}{2}$

$$\text{Total balls} = 4+6+2=12. \text{ Blue balls} = 6. P=6/12 = \mathbf{\frac{1}{2}}.$$

29. Answer: (A) 36

$$1 \text{ part} = 30 \div 5 = 6. \text{ Girls} = 6 \times 6 = \mathbf{36}.$$

30. Answer: (D) ₹1,760

$$\text{Discount} = 2000 \times 12 \div 100 = 240. \text{ SP} = 2000 - 240 = \mathbf{₹1,760}.$$

31. Answer: (A) ₹1,620

$$\text{SI} = (6000 \times 9 \times 3) \div 100 = \mathbf{₹1,620}.$$

32. Answer: (B) ₹1,025

$$\text{Amount} = 10000 \times 1.05 \times 1.05 = 11,025. \text{ CI} = 11,025 - 10,000 = \mathbf{₹1,025}.$$

33. Answer: (C) 30 m

$$\text{Other side} = \sqrt{(34^2 - 16^2)} = \sqrt{(1156 - 256)} = \sqrt{900} = \mathbf{30 \text{ m}}.$$

34. Answer: (D) ₹6,480

$$\text{Side} = 54 \text{ m. Perimeter} = 216 \text{ m. Cost} = 216 \times 30 = \mathbf{₹6,480}.$$

35. Answer: (A) 9,975

$$95 \times 105 = (100-5)(100+5) = 10000 - 25 = \mathbf{9,975}.$$

36. Answer: (B) $m^2 + 4m - 21$

$$(m+7)(m-3) = \mathbf{m^2 + 4m - 21}.$$

37. Answer: (A) 48

$x + (x + 2) = 94$, so $2x = 92$, $x = 46$. The larger number is $x + 2 = \mathbf{48}$.

38. Answer: (C) 10 years

$5x + 10 = 3(x + 10)$, so $2x = 20$, $x = \mathbf{10}$ years.

39. Answer: (D) 70°

$\angle W$ and $\angle X$ are adjacent angles of a parallelogram, so they are supplementary: $180 - 110 = \mathbf{70^\circ}$.

40. Answer: (A) 26 cm

The diagonals of a rhombus bisect each other at right angles, so half of $QS = 24$ cm and half of $PR = 10$ cm. $PQ = \sqrt{(24^2 + 10^2)} = \sqrt{(576 + 100)} = \sqrt{676} = \mathbf{26}$ cm.

41. Answer: (B) 600 cm^3

$15 \times 10 \times 4 = \mathbf{600 \text{ cm}^3}$.

42. Answer: (C) 462 cm^3

Volume = $\pi r^2 h = \frac{22}{7} \times 3.5^2 \times 12 = \frac{22}{7} \times 12.25 \times 12 = \mathbf{462 \text{ cm}^3}$.

43. Answer: (D) 20 days

$24 \times 15 = 18 \times t$, $t = \mathbf{20}$ days.

44. Answer: (A) 10 cups

$\frac{4}{10} = \frac{c}{25}$, $c = \mathbf{10}$ cups.

45. Answer: (A) 2

Mon = 40, Tue = 65, Wed = 45, Thu = 70, Fri = 55. Days with fewer than 50 visitors: Mon and Wed = **2**.

46. Answer: (B) 4

Adding exponents on the left: $-3 + 2x$.

So $-3 + 2x = 5$, giving $2x = 8$, $x = \mathbf{4}$.

47. Answer: (C) $(3x - 5y)(3x + 5y)$

$9x^2 - 25y^2 = (3x)^2 - (5y)^2 = \mathbf{(3x - 5y)(3x + 5y)}$, fully factorised.

48. Answer: (D) A 9% decrease

$100 \rightarrow 130 \rightarrow 91$. Net change = **9% decrease**.

49. Answer: (A) 3:00 p.m.

LCM of 24, 32 and 40 = 480 minutes = 8 hours. Next together at 7:00 a.m. + 8 hours = **3:00 p.m.**

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

An odd number can be written as $2k + 1$, and $(2k + 1)^2 = 4k^2 + 4k + 1$, which is odd, so the assertion holds. Squaring an odd number is the same as multiplying two odd numbers together, so the fact that the product of two odd numbers is always odd directly explains why the square is odd.