



Minervaa International Scholarship Examinations

Sample Question Paper

Class- 9

Subject- Mathematics



MINERVAA

LOGICAL REASONING

1. If every letter in a word is moved 2 steps forward and reversed at the end, what is the final word for "CODE"?
 - a) EQFG
 - b) GRFE
 - c) GFQE
 - d) GRFD
2. If in a certain code, A=Z, B=Y, C=X,... what will be the reverse code for "BRAIN"?
 - a) YIZRM
 - b) YIZNM
 - c) MRZIY
 - d) YIZRN
3. John is facing South. He turns 135° in the clockwise direction and then 45° in the anti-clockwise direction. Which direction is he facing now?
 - a) West
 - b) South-West
 - c) South-East
 - d) East
4. Rahul is the brother of Neha. Neha is the daughter of Meena. How is Meena related to Rahul?
 - a) Aunt
 - b) Mother
 - c) Sister
 - d) Grandmother
5. Which set of letters fits the series: D4, F9, H16, J25, ?
 - a) K36
 - b) L36
 - c) M36
 - d) N36

MATHEMETICS

6. How many of the following numbers are irrational?
 $\sqrt{2}$, 3.1415926535 , $5/3$, $\sqrt{121}$, π , $0.121212\dots$, $\sqrt{7}$
 - a) 2
 - b) 3
 - c) 4
 - d) 5
7. Which of these numbers lies between 3.141 and 3.142?
 - a) π
 - b) $\sqrt{10}$
 - c) $22/7$
 - d) $\sqrt{9}$

8. If $x = \sqrt{2} + 3$, what is the value of $x^2 - 6x - 7$?

- a) Rational b) Irrational
- c) 0 d) $2\sqrt{2}$

9. Which of the following must be irrational?

- a) $\sqrt{n}$, where n is a perfect square
- b) $\sqrt{n}$, where n is not a perfect square
- c) $\sqrt{n} / \sqrt{n}$
- d) $(\sqrt{n})^2$

10. A number is written

$a + b\sqrt{2}$ where $a, b \in \theta$ and $b \neq 0$, what can we say about the number?

- a) Always Rational b) Always Irrational
- c) Sometimes Rational d) Cannot be Determined

11. A sum doubles itself in 5 years at compound interest, compounded annually. In how many years will it become 8 times itself?

- a) 10 years b) 15 years c) 20 years d) 12.5 years

12. Which of the following statements is incorrect?

- a. Compound interest increases faster than simple interest.
- b. In compound interest, interest is calculated on previous interest.
- c. Compound interest is linear in nature.
- d. Compound interest grows exponentially.

13. A sum becomes ₹1320 in 2 years and ₹1452 in 3 years at compound interest. Find the rate of interest.

- a) 10% b) 12.5% c) 8% d) 9%

14. Which of the following options are correct about compound interest and simple interest?

- 1. CI is always more than SI if time > 1 year
- 2. CI equals SI for 1 year
- 3. CI = SI if interest is not compounded
- 4. CI can be less than SI

- a) 1, 2, 3 b) 1, 2 c) 1, 2, 4 d) All 4

15. Which of the following is True (with reasoning)?

Compound Interest and Simple Interest are equal:

- a) When rate = 0% b) Only for 1st year
- c) When amount = principal d) Both A and B

16. How many of the following expressions are correctly factorised?

1. $x^2 - 9 = (x - 3)(x + 3)$
2. $x^2 + 2x + 1 = (x + 1)^2$
3. $a^2 + 2ab + b^2 = (a + b)^2$
4. $4x^2 - 4 = (2x + 2)^2$

a) 1 b) 2 c) 3 d) 4

17. Match the expressions with their expanded forms:

Expression Expanded Form

(i) $(x + 1)^2$ (a) $x^2 - 2x + 1$

(ii) $(x - 1)^2$ (b) $x^2 + 2x + 1$

(iii) $(x + 2)^2$ (c) $x^2 + 4x + 4$

Options:

- a) (i - b), (ii - a), (iii - c)
- b) (i - a), (ii - c), (iii - b)
- c) (i - c), (ii - a), (iii - b)
- d) (i - b), (ii - c), (iii - a)

18. If $x + 1/x = 5$, then what is the value of $x^2 + 1/x^2$?

a) 23 b) 25 c) 21 d) 27

19. True or False with Reasoning:

Statement: $(x - y)^2 = x^2 - y^2$

- a) True, because squaring a difference means subtracting squares
- b) False, because $(x - y)^2 = x^2 - 2xy + y^2$
- c) True, under specific values
- d) False, identity applies only for cubes

20. Which of these expansions are correct?

1. $(a - b)^2 = a^2 - 2ab + b^2$
2. $(a + b)^2 = a^2 + 2ab + b^2$
3. $(a + b)(a - b) = a^2 - b^2$
4. $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$

a) 1, 2 only b) 1, 2, 3 only
c) All 4 d) 2, 3, 4 only

21. How many of the following event are certain?
1. Sun rises in the east.
 2. A tossed coin shows head or tail.
 3. Rolling a die gives a number from 1 to 6.
 4. Drawing a black ball from a bag that contains only white balls.

a) 1 b) 2 c) 3 d) 4

22. Which of the following has a probability equal to 0?

- Drawing an ace from a standard deck
- Rolling a 7 on a standard die
- Getting a head in a coin toss
- Drawing a red ball from a bag with red balls

23. Match the event with its probability: Event

Probability

(i) Tossing a coin → Tail (a) $\frac{1}{6}$

(ii) Rolling a die → Even no. (b) $\frac{1}{2}$

(iii) Picking a red ball ($\frac{1}{6}$) (c) $\frac{3}{6}$

Options:

- (i-b), (ii-c), (iii-a)
- (i-a), (ii-b), (iii-c)
- (i-c), (ii-b), (iii-a)
- (i-b), (ii-a), (iii-c)

24. If a die is thrown twice, what is the probability that the same number appears both times?

a) $\frac{1}{6}$ b) $\frac{1}{36}$ c) $\frac{6}{36}$ d) $\frac{5}{36}$

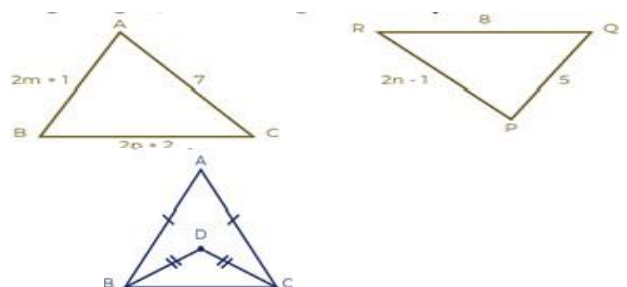
25. If a triangle ABC is drawn such that the sides AB and AC are equal and $\angle C$ is 15° , then what is the value of $\angle A$?

a. 150° b. 170° c. 140° d. 160°

26. In the given figure, $\triangle ABC$ is congruent to $\triangle PQR$.

What is the value of $(m+4n+2p)$?

a. 23 b. 32 c. 24 d. 28



27. In the given figure, the ratio of $\angle ABD : \angle ACD$ is

a. 1:1 b. 2:2 c. 2:1 d. 1:2

28. Find the value of the missing angle.

- a. 120° b. 125° c. 115° d. 130°

29. In the parallelogram ABCD, find the measurement of $\angle BAC$ and $\angle DAC$, when $\angle BCA$ is 40° and $\angle DCA$ is 32° .

- a) $32^\circ, 40^\circ$ b. $50^\circ, 58^\circ$
c. $45^\circ, 45^\circ$ d. $40^\circ, 32^\circ$

30. In a rhombus, one of the diagonals is equal to a side of the rhombus. Find the angles of the rhombus.

- a) $120^\circ, 80^\circ$ b. $60^\circ, 60^\circ$
c. $60^\circ, 120^\circ$ d. $80^\circ, 100^\circ$

31. In a parallelogram, the ratio of any side to an altitude of adjacent side is:

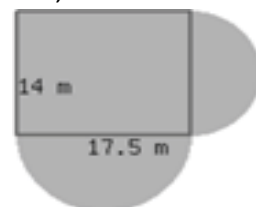
- b) equal to the ratio of other sides and their corresponding altitudes
c) equal to the ratio of other sides and their corresponding adjacent side's altitudes
d) half the bigger side and its altitude
e) not same for all its sides and corresponding altitudes

32. Two chords PQ and PR of a circle subtends angles equal to 70° and 60° , respectively at the center. Find $\angle QPR$.

- a. 120° b. 110° c. 115° d. 125°

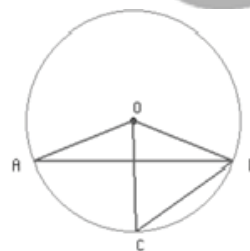
33. Find the perimeter of a park which is made of one rectangle and 2 semi-circles, as shown in the figure. (All measurements are in meters, assume $\pi = \frac{22}{7}$)

- a. 79 m b. 89.1 m c. 64.8 m d. 81 m



34. If $\angle OAB = 22^\circ$ and $\angle OCB = 57^\circ$, find $\angle BOC$.

- a. 56° b. 76° c. 66° d. 71°



35. A circular swimming pool has a diameter of 14 meters. If the pool's depth is 3 meters, what is the total volume of water the pool can hold? (Use $\pi = \frac{22}{7}$)

- a) 462 m^3 b) 924 m^3 c) 1326 m^3 d) 1540 m^3

36. The radius of a sphere is 3 cm. What is its volume?

- a) 36 cm^3 b) 108 cm^3 c) 27 cm^3 d) 72 cm^3

37. A rectangular prism has dimensions 3 cm by 4 cm by 5 cm. What is its surface area?

- a) 94 cm^2 b) 82 cm^2 c) 56 cm^2 d) 72 cm^2

38. Find the volume of a cone with a radius of 4 cm and height 9 cm.

- a) 113.04 cm^3 b) 113.6 cm^3 c) 96 cm^3 d) 150 cm^3

39. True or False with reasoning:

Statement: If the radius of a cylinder is doubled, the surface area of the cylinder becomes four times larger, while the volume becomes eight times larger.

- a) True, because surface area and volume scale differently with radius.
b) False, because the surface area scales linearly, not quadratically.
c) True, because both surface area and volume scale linearly with radius.
d) False, because the volume scales only with radius squared.

40. Which of the following is incorrect about the surface area of cone?

- a) The lateral surface area is $\pi r l$
b) The total surface area is $\pi r (r + l)$
c) The total surface includes the base area.
d) The lateral surface area includes base area.

41. The height of 40 plants in a garden are given below:

Height in (cm)	49	57	65	73
Number of plants	11	6	5	18

The mean height per plant is:

- f) 69.94 cm b. 63 cm
c. 58.81 cm d. 65.4 cm

42. The table below shows the number of books read by five children in one month.

Name	Number of books
Julia	13
Jacob	24
Kevin	12
Gabriel	14
Hailey	22

What is the average number of books a child reads in a month?

- a. 17 b. 22 c. 12 d. 16

43. What is the mean of all the internal angles of a quadrilateral.

- a. 100° b. 110° c. 90° d. 70°

44. Consider the following frequency distribution:

Class interval	Frequency
5–10	5
10–20	6
20–35	9
35–55	18
55–80	7
80–110	12

What is the adjusted frequency for the class 10–20?

- a. 7 b. 3 c. 10 d. 1

45. The three vertices of a square $ABCD$ are $A(3, 3)$, $B(-3, 3)$ and $D(3, -3)$. Find the coordinates of C and the area of square $ABCD$.

- a. $C(-3, -3)$, 25 sq. units
b. $C(-3, 3)$, 36 sq. units
c. $C(-3, 3)$, 25 sq. units
d. $C(-3, -3)$, 36 sq. units

46. The linear equation $y=5x+7$ cuts the y -axis at _____

- a. $(7, 0)$ b. $(0, 5)$ c. $(5, 0)$ d. $(0, 7)$

47. Where will the point $(-7, -3)$ lie?

- a. 3rd Quadrant b. x -axis
c. y -axis d. Origin

48. The linear equation $y=3x+10$ cuts the x -axis at _____.

- a. $(0, 10)$ b. $(-10/3, 0)$
c. $(0, -3/10)$ d. $(3, 0)$

49. A pole 10 m high casts a shadow $10\sqrt{3}$ m long. What is the angle of elevation of the sun?

- a) 30° b) 45°
c) 60° d) 90°

50. If $a + \frac{1}{a} = 3$, then the value of $a^3 + \frac{1}{a^3}$ is:

a) 18

b) 27

c) 30

d) 30

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

