National Analytical Brains Competition 2025

NAB Competition 2025 - Grade 08

Mathematical Ability

All questions are mandatory. Please note there is no negative marking:

1. The product of two consecutive even numbers is 4224. Find the smaller number.
   (a) 56 (b) 64 (c) 66 (d) 62

2. A tank is filled by two pipes A and B in 12 and 15 hours respectively. A third pipe C empties the tank in 20 hours. If all three are opened together, in how many hours will the tank be full?
   (a) 10 (b) 12 (c) 15 (d) 20

3. A man bought a certain number of apples at ₹480. He sold 2/5th of them at 20% profit, another 2/5th at cost price and the rest at 20% loss. Find his overall gain or loss percent.
   (a) 2% Gain (b) 2% Loss (c) 4% Loss (d) 4% Gain

4. A pair of positive integers share the same largest common divider equal to 18. When the two integers are multiplied, the result is 7776. Which of the following is the smallest positive integer that is divisible by both of them?
   (a) 432 (b) 4320 (c) 468 (d) 486

5. A teacher wrote five consecutive odd numbers on the board. The average of these numbers is 53. What is the smallest number among them?
   (a) 49 (b) 51 (c) 53 (d) 55

6. A dishonest shopkeeper uses a weight of 850 g instead of 1 kg while selling rice at cost price. Find his profit percent (Best possible option).
   (a) 15% (b) 17.5% (c) 15.5% (d) 17%

7. A person invests a certain amount of money for 2 years at the rate of 8% per annum. After 2 years, the interest received under the simple interest scheme is ₹640. If the same amount were invested at the same rate and time under the compound interest scheme, how much extra money would the investor gain compared to simple interest?.
   (a) Approx ₹26(b) Approx ₹666 (c) Approx ₹36 (d) Approx ₹670

8. A farmer wants to fence his rectangular plot. The length of the plot is double its breadth. He spends ₹9600 on fencing the boundary at the rate of ₹40 per meter. What is the area of the plot?
   (a) 4400 m^2 (b) 3200 m^2 (c) 3400 m^2 (d) 4200 m^2

9. P is twice as fast as Q and R together. Working together, all three can finish a work in 21 days. In How many days can Q and R together do the work?
   (a) 48 (b) 63 (c) 54 (d) 72

10. A car travels at 60 km/h for 2 hours and at 80 km/h for 1.5 hours. Find the average speed of the car for the whole journey.
   (a) 68 km/h (Approx) (b) 80 km/h (Approx) (c) 72 km/h (Approx) (d) 75 km/h (Approx)

11. What of the following number is divisible by 11??
   (a) 1111111 (b) 77777 (c) 246642 (d) 7654321

12. A secret code is hidden inside a 4-digit number. When this number is divided by 12, 15, or 18, the remainder is always the same — 5. What is the largest possible 4 – digit code?
   (a) 9905 (b) 9995 (c) 9990 (d) 9985

13. A mysterious two-digit number has digits that add up to 13. When 9 is added to the number, the digits swap their positions. What is this number?
   (a) 49 (b) 58 (c) 67 (d) 76

14. Kiran's income before he got an increment was 40% of his family's total income. His increment is 1/4th of his income. If there is no change in the income of the other members of the family, what percentage of his family's total income is his salary??
   (a) 25% (b) 11% (c) 41% (d) 45%

15. A sculptor is making a cone-shaped vase and a cylinder-shaped jar. Both have the same base radius and same height. What is the ratio of the volume of the vase to the volume of the jar?
   (a) 1:2 (b) 1:3 (c) 2:3 (d) 3:4

16. A number and its immediate successor are such that the difference of their squares is 85. What is the smaller number?
   (a) 42 (b) 43 (c) 44 (d) 45

17. Six children share some sweets such that the average number of sweets per child is 6. When a seventh child joins, the average increases to 7 sweets per child. How many sweets does the new child have?
   (a) 12 (b) 13 (c) 14 (d) 15

18. The ratio of the present ages of a man and his wife is 5:4. Which of the following cannot be the ratio of their ages 20 years ago??
   (a) 3:2 (b) 5:4 (c) 2:3 (d) 9:7

19. The sum of three numbers is 98. The ratio of the first to second is 2:3 and that of second to third is 5:8. Find the second number?
    (a) 20 (b) 30 (c) 35 (d) 40

20. A mathematician wants to find the smallest perfect square number that can be exactly divided by 18, 24, and 32. Which number should he choose?
    (a) 144 (b) 288 (c) 576 (d) 1152

Logical Reasoning:

All questions are mandatory. Please note there is no negative marking:

21. Which of the following word will come in the middle if all of them are arranged alphabetically as in a dictionary?

(a) Butterfly (b) Butler (c) Butcher
(d) Button (e) Butter

22. Study the following arrangement carefully and answer the question given below. Four of the following five are alike in a certain way on the basis of above arrange and hence form a group. Which one does not belong to that group?

W 1 R % 4 J E # 7 M T 2 I 9 B H 3 A $ 9 F Q 5 D G 6 U S P

(a) R W 4 (b) 5 F G (c) 9 Q A (d) 3 B $ (e) 7 E T

23. Dipanshu has a brother Aniket. Dipanshu is the son of Prem. Nitesh is Prem's father. In terms of relationship, what is Aniket of Nitesh?

(a) Brother (b) Son (c) Grandson (d) Grandfather

24. Which figures have equal frequency in the below series?

789765342897245929764 7.

(a) 2, 5, 8 (b) 2, 4,5 (c) 8,7, 5
(d) 8, 6, 5 (e) None of these

25. A class of boys stands in a single line, One boy is nineteenth in order from both the ends. How many boys are there in the class?

(a) 27 (b) 37 (c) 38 (d) 39

26. In a particular code language 'come soon' is written as '24', and 'go soon' is written as '52'. Find the code for 'soon'?

(a) 5 (b) 4 (c) 2 (d) 3 (e) None of these

27. In a dice, if 1 is adjacent to 2, 4 and 6, then which of the following statements is necessarily true?

(a) 2 is opposite to 6 (b) 1 is adjacent to 3
(c) 3 is adjacent to 5 (d) 3 is opposite to 5

28. If 'you' stands for '÷', 'are' stands for'+' and 'great' stands for '×', then what will be the value of '50 you 2 are 3 great 4'?.

(a) 32 (b) 37 (c) 47 (d) 73

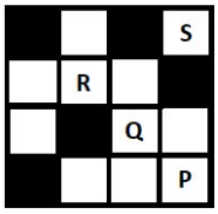
29. The number of boys in a class is three times the number of girls. Which one of the following numbers cannot represent the total number of children in the class?

(a) 48 (b) 44 (c) 42 (d) 40

30. A cube, painted yellow on all faces is cut into 27 small cubes of equal size. How many small cubes are painted on one face only?

(a) 1 (b) 6 (c) 8 (d) 12

31. Which of the following squares must be shaded so that the given figure has a line of symmetry?



(a) P (b) Q (c) R (d) S

32. Which set of letters is different?

(a) ABD (b) GHI (c) IJK (d) KLM

33. Find the next number:

3, 9, 21, 45, ?.

(a) 85 (b) 93 (c) 97 (d) 99

34. In a certain code language, '782' means 'Flowers are beautiful', 692 means 'Roses are red', '628' means 'Roses are beautiful'? Which number denotes 'Flower'?

(a) 3 (b) 2 (c) 7 (d) 8

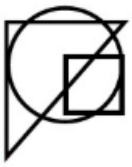
35. Which option will come next? MANGO : NAMGO : : APPLE : ?

(a) PAELP (b) PAEPL (c) PPALE (d) PAPEL

36. from the options select the one which satisfies the same conditions of the placement of the dots(s) as in the Fig.(X).

Fig. (X)

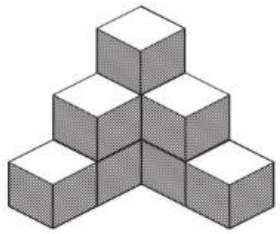
(a) 

(b) 

(c) 

(d) 

37. Count the number of blocks in the below figure?



(a) 5 (b) 6 (c) 9 (d) 7

38. If 'Book' is called 'Pen', 'Pen' is called 'Cell' and 'Cell' is called 'Copy', then we write with a .....?

(a) Book (b) Pen (c) Copy
(d) Cell (e) None of these

39. If it was Saturday on 17th December, 2002 what was the day on 22nd December, 2004?

(a) Monday (b) Tuesday (c) Wednesday (d) Sunday

40. In the following letters series, some of the letters are missing which are given in that order as one of the alternatives below it. Choose the correct alternative.

_ op _ mo _ n _ _ pnmop _

(a) mnpmon (b) mpnmop (c) mnompn (d) mnpomn

Daily Life Problem

Ravi purchased a 40 m × 30 m plot to build his dream home. To make the boundary attractive, he left a uniform 2 m wide path inside for gardening. The main hall was planned as 18 m × 12 m with a height of 6 m. On one shorter side, a semi-circular verandah was added. For flooring, square tiles of side 50 cm were ordered, but Ravi wanted 10% extra tiles for breakage. To store water, a cylindrical tank of height 3 m and diameter 2 m was built. A pipe filled it at 150 liters per minute, but only 75% of the tank capacity was to be used daily. The painter agreed to paint the 4 walls of the hall, excluding one door (2m x 1m) and two windows (1.5 mx 1 m each). His rate was ₹25 per m². Ravi planned to cover the entire verandah with a carpet costing ₹120 per m².

41. What fraction of the total plot area is occupied by the garden path?
    (a) 11/10 (b) 11/12 (c) 11/50 (d) 11/40

42. If Ravi wants to construct the house only on the remaining area after leaving the path, what percentage of the total plot will be used for construction?
    (a) 78% (b) 80% (c) 88% (d) 90%

43. How many tiles are required for the hall floor, including 10% extra for breakage?
    (a) 792 (b) 850 (c) 951 (d) 960

44. If instead of square tiles, Ravi used rectangular tiles of 1 m × 0.5 m, by how many tiles would the requirement reduce (compared to square ones without extra tiles)?
    (a) 432 (b) 444 (c) 452 (d) 468

45. The capacity of the water tank is approximately:
    (a) 9290 liters (b) 9380 liters (c) 9420 liters (d) 9585 liters

46. If only 75% of the water tank is used daily, how long will it take to empty the daily usage using buckets of 15 liters each?
    (a) 465 buckets (b) 471 buckets (c) 475 buckets (d) 480 buckets

47. After deducting door and windows, the paintable wall area is:
    (a) 420 m^2 (b) 424 m^2 (c) 370 m^2 (d) 355 m^2

48. If the painter tales 6 hour to paint 100m^2, how many full days (8 hours each) will he require to finish painting the hall walls?
    (a) 2 (b) 3 (c) 4 (d) 5

49. The area of the semi-circular verandah is approximately:
    (a) 56 m^2 (b) 57 m^2 (c) 58 m^2 (d) 59 m^2

50. What will be the cost of carpeting the verandah at ₹120 per m^2 (approx.)?

(a) ₹6782 (b) ₹6840 (c) ₹6960 (d) ₹7200

ANSWER KEY

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