National Analytical Brains Competition 2025

NAB Competition 2025 - Grade 06

Mathematical Ability

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

1. A square garden has an area of 100 m². A bamboo stick is to be placed across the garden from one corner to the opposite corner. What is the largest possible length of the bamboo that can fit perfectly?
   (a) 14 m (b) 14.14 m (c) 20 m (d) 25 m

2. A shopkeeper has several boxes of chocolates. Whenever he tries to arrange them equally in groups of 6, 7, 8, 9, or 12, he always finds that 2 chocolates remain unpacked. What is the smallest number of chocolates the shopkeeper could have?
   (a) 600 (b) 506 (c) 72 (d) 108

3. Three friends decided to buy candies. The first friend bought 1 candy more than the second, and the third bought 1 more than the first. Altogether, they bought 27 candies. How many candies did the third friend buy?
   (a) 12 (b) 15 (c) 10 (d) 11

4. A trader wrote down a 7-digit bill number as 97215★6, but the digit ★ smudged. He later noticed that the bill number was divisible by 11. What is the smallest possible value of ★?
   (a) 3 (b) 2 (c) 1 (d) 5

5. A factory produced 3609 products today. Each shipment box can hold exactly 21 products. To avoid leftover products, the factory wants to pack a total number of products that is closest to 3609 and divisible by 21. How many products will be packed?
   (a) 3603 (b) 3610 (c) 3612 (d) 3620

6. A and B earn monthly incomes in the ratio 2:3. Their monthly expenses are in the ratio 5:9. If both of them save Rs. 600 each per month, what are their monthly incomes?
   (a) Rs. 1500, Rs. 2250 (b) Rs. 1200, Rs. 1800
   (c) Rs. 1600, Rs. 2400 (d) Rs. 1400, Rs. 2100

7. A farmer had 120 apples. He sold 1/4 of them to one shop, 1/3 of the remaining to another shop, and gave 10 apples to his neighbor. How many apples are left?
   (a) 50 (b) 60 (c) 70 (d) 55

8. A room is 12¼ m long and 7 m wide. The floor is to be covered with square tiles such that there are no cut tiles. What is the largest possible side of each tile?
   (a) 200 cm (b) 175 cm (c) 125 cm (d) 150 cm

9. Ria is multiplying three numbers for a school project: 584, 428, and 213. She wants to know only the last digit of the product without calculating the full multiplication. Can you help her in finding that.
   (a) 2 (b) 3 (c) 4 (d) 6

10. simplify: [{64 – (12 + 13)} ÷ 3] + 15
    (a) 28 (b) 40 (c) 22 (d) 35

11. Two numbers multiply to give 117, and they share no common factor except 1. What should be their LCM?
    (a) 1 (b) 117 (c) Equal to their H.C.F. (d) cannot be calculated

12. A counter on a scoreboard shows the largest possible 7-digit number. If the next point is scored, the counter rolls over to show which number?
    (a) 9,99,999 (b) 1,00,00,000 (c) 10,00,00,001 (d) 10,00,000

13. A hall in a community center measures 14 m in length and 9 m in width. The management wants to cover the entire floor with a carpet that is 63 cm wide, laying it in strips along the width of the hall. How many meters of carpet will be needed to cover the hall completely?
    (a) 200 m (b) 210 m (c) 220 m (d) 185 m

14. Amulya and Amar visited two places A and B respectively in Kashmir and recorded the minimum temperatures on a particular day as -4°C at A and -1°C at B. Which of the following statement is true?
    (a) B is cooler than A
    (b) There is a difference of 2°C in the temperature
    (c) The temperature at A is 4°C higher than that at B.
    (d) A is cooler than B

15. Two electronic timers are set in a lab. The first timer beeps every 60 seconds, and the second timer beeps every 62 seconds. If both timers beep together at exactly 10:00 a.m., at what time will they beep together again for the first time?
    (a) 10:30 am (b) 10:31 am (c) 10:59 am (d) 11:00 am

16. A carpenter has wooden planks of lengths 3 m, 5 m, 10 m, and 12 m 90 cm. He wants to cut them into smaller pieces of equal maximum length without any wood left unused. What should be the length of each smaller piece?
    (a) 10cm (b) 20cm (c) 25cm (d) 30cm

17. A school had boys and girls in the ratio 4:5. After a sudden transfer, 100 girls left the school, and the ratio of boys to girls changed to 6:7. How many boys are currently in the school?
    (a) 1300 (b) 1500 (c) 1600 (d) None of these

18. Simplify: $[\{(40 - 7 - 6) \div 3\} \times 6 + 6]$
    (a) 22 (b) 52 (c) 60 (d) 74

19. Two friends each pick an odd number of marbles, with the second friend always picking exactly 2 more marbles than the first. No matter which numbers they pick, the total number of marbles they have together is always divisible by which of the following?
    (a) 1 (b) 2 (c) 3 (d) None of These

20. A rectangular plot has its length three times its breadth. If the area of the plot is 6075 m^2, what is the length of the plot?
    (a) 45 m (b) 75 m (c) 130 m (d) None of these

Logical Reasoning:

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

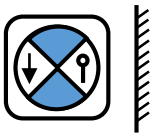
21. If 'SNAKE' is coded as 'UPCMG', then what will be the code for 'JAPAN'?
    (a) NAPAJ (b) LCRCP (c) APJAN (d) AJPAN

22. It is 3 O' clock in a watch and it is rotated in a manner such that if the minute hand points towards the North-East, then hour hand will point towards which direction?
    (a) South (b) South – West (c) North – West (d) South – East

23. How many 7s are there in the following series which are preceded by 6 but not followed by 8?
    8 7 6 7 8 6 7 5 6 7 9 7 6 1 6 7 7 6 8 8 6 9 7 6 8 7
    (a) Nil (b) 1 (c) 2 (d) 3

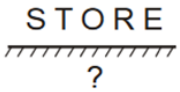
24. In a row of boys, Jeevan is 7th from the start and 11th from the end. In another row of boys, Vikas is 10th from the start and 12th from the end. How many boys are there in both the rows together?
    (a) 38 (b) 40 (c) 32 (d) Cannot be determined

25. Select the correct mirror image of the given figure?



(a)  (b)  (c)  (d) 

26. Find the correct option for the water images for the following?



(a) S⊥ORE (b) S⊥OЯE (c) S⊥OЯE (d) S⊥OЯE

27. 'A + B' means 'A is the daughter of B', 'A – B' means 'A is the husband of B', 'A × B' means 'A is the brother of B'. Then which option is best to denote P + Q × R?
    (a) P is the niece of R (b) P is the daughter of R
    (c) P is the cousin of R (d) P is the daughter in law of R

28. In each of the below question, fig. (x) is exactly embedded in any one of the four option figures [a], [b], [c] and [d]. Find the option which contains fig.(x) as its part.

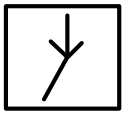
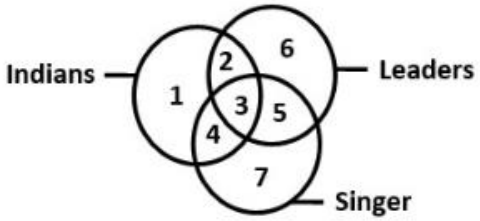


Fig.(x)

(a)  (b)  (c)  (d) 

29. Which region denotes Indian leaders who are not singers?



(a) 2 (b) 3 (c) 4 (d) 5

30. Choose the odd numeral pair / group

(a) 12-144 (b) 13-156 (c) 15-180 (d) 16-176

31. There is a certain relationship between the pair words on the either side of : : identify the relationship between the left pair and find the missing figure?

South : North-West : : West : ?

(a) North (b) South-West (c) North-East (d) East

32. If '–' stands for 'division','+' stands for 'multiplication', '÷' stands for 'subtraction' and '×' stands for addition', then which one of the following equations is correct?

(a) 6 + 20 − 12 ÷ 7 − 1 = 38 (b) 6 − 20 + 12 ÷ 7 + 1 = 57

(c) 6 ÷ 20 × 12 + 7 − 1 = 70 (d) 6 + 20 − 12 ÷ 7 × 1 = 62

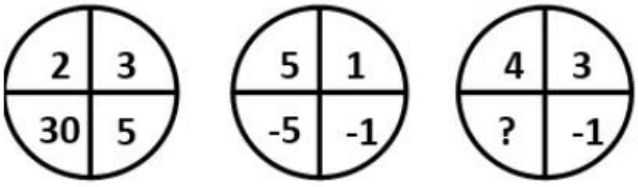
33. If the 25th of August in a year is Thursday, the number of Mondays in that month is:

(a) 3 (b) 4 (c) 5 (d) 6

34. In the series 2, 6, 18, 54, …… what will be the 8th term?

(a) 4370 (b) 4374 (c) 7443 (c) 7434

35. A set of figure carrying certain characters is given. Assume that the characters in each set follow a similar pattern, find the missing character in each case?



(a) 7 (b) 12 (c) -12 (d) -9

36. Five words are given. Which of them will come in the middle if all of them are arranged alphabetically as in a dictionary?

(a) Intense (b) Intellect (c) Intend

(d) Intelligent (e) Integument

37. Find out which of the letter-series follows the given rule?

Number of letters skipped in between adjacent letters in the series is odd.

(a) BDHLR (b) EIMQV (c) FIMRX (d) MPRUX

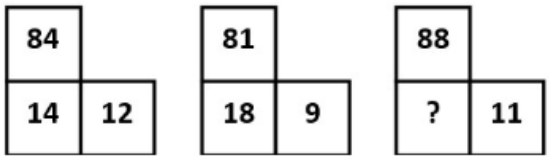
38. How many triangles are there in the given figures?

(a) 15 (b) 16 (c) 18 (d) 20

39. In the following question, some group of letters are given, three of which share a similarity while one is different. Choose the odd one out.

(a) UX (b) OR (c) WZ (d) FG

40. A set of figure carrying certain characters is given. Assume that the character in each set follow a similar pattern, find the missing character in each case?



(a) 10 (b) 12 (c) 14 (d) 16

Daily Life Problems

Every year, Hilltop School organizes a Winter Carnival with stalls, games, and decorations. This year, the principal has hidden math puzzles inside the preparations. Only the students who solve them can unlock free carnival passes! Let's see if you can crack them all.

41. Each carnival ticket has a 3-digit number. The tickets go from **201 to 350**. How many tickets are divisible by **both 3 and 5**?
    (a) 8 (b) 9 (c) 10 (d) 11

42. Each ride requires **(48 ÷ 6) + (36 ÷ 9)** tokens. If a student wants to go on 5 rides, how many tokens will he need?
    (a) 50 (b) 55 (c) 60 (d) 65

43. There are **84 red lanterns** and **126 blue lanterns** to be hung equally on poles, with no lantern left. What is the maximum number of poles required?
    (a) 36 (b) 12 (c) 42 (d) 21

44. Two bands play at the carnival. The first band plays a drum every 18 seconds, the second every 24 seconds. If they start together at 7:00:00, after how many seconds will they next play together?
    (a) 72 (b) 84 (c) 96 (d) 108

45. A food stall sells samosas and sandwiches in the ratio **3 : 4**. Each samosa gives a profit of ₹8 and each sandwich gives a profit of ₹12. If the stall's **total profit is ₹360**, how many samosas were sold?
    (a) 12 (b) 15 (c) 18 (d) 20

46. During carnival week, temperatures recorded were: Day 1 = 6°C, Day 2 = –4°C, Day 3 = –7°C, Day 4 = 5°C. What is the **sum of the lowest and highest temperatures**?
    (a) -2 (b) -1 (d) 0 (d) 1

47. The game zone is shaped like a rectangle 30 m × 20 m with a small square stage of side 10 m placed in one corner of the game zone. Find the total area available for the game zone.
    (a) 500 m² (b) 200 m² (c) 300 m² (d) 600 m²

48. A magician divides candies equally among children. If he divides among 7 children, 4 are left. If among 5 children, 2 are left. What is the smallest number of candies he could have?
    (a) 32 (b) 37 (c) 47 (d) 52

49. Two groups decorate stalls. Group A can finish in 12 hours, Group B in 18 hours. If both work together for 6 hours, how much work is left?
    (a) 1/4 (b) 1/3 (c) 1/2 (d) 1/6

50. The carnival committee decided to fence the entire rectangular playfield (50 m × 30 m) and also fence a square seating area inside it for VIP guests. The square seating area has side equal to one-fifth of the shorter side of the playfield. What is the **total length of fencing** required (outer fence + inner square fence)?

    (a) 172m (b) 160m (c) 184m (d) 206m

ANSWER

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