Mental Ability

Ganit Bodh Series

Self Evaluation Test -13 (Linear Inequalities)

1. In the first four examinations, each of 100 marks, Kanishk 89, 73, 72, 81 marks. If a final average greater than or equal to 75 and less than 80 is needed to obtain a final grade B in a course, Then the minimum marks on the fifth (last) examination will be required by Kanishk receiving 'B' in the course?

   a) 85   b) 65
   c) 68   d) 88

2. The marks obtained by a student in two tests were 70 and 75. Find the number of minimum marks he should get in the third test to have an average of at least 60 marks.

   a) 42   b) 42
   c) 35   d) 34

3. The number of all pairs of consecutive even positive integers, both of which are larger than 5, such that their sum is less than 23.

   a) 3   b) 5
   c) 6   d) 7

4. The longest side of a triangle is 3 times the shortest side and the third side is 2 cm shorter than the longest side. If the perimeter of the triangle is at least 61 cm, find the minimum length of the shortest side.

   a) 18   b) 10
   c) 22   d) 9

5. A man wants to cut three lengths from a single piece of board of length 91 cm. The second length is to be 3 cm longer than the shortest and the third length is to be twice as long as the shortest. What are the maximum possible lengths for the shortest board if the third piece is to be at least 5 cm longer than the second?

   a) 12   b)8
   c)22   d) 18

6. A solution is to be kept between 68^0F and 77^0F. What is the minimum temperature in degree Celsius (C) if the Celsius/Fahrenheit (F) conversion formula is given by $F = \frac{9}{5}C + 32$?

   a) 25   b) 20
   c) 30   d) 35

7. A solution of 8% boric acid is to be diluted by adding 2% boric acid solution to it. The resulting mixture is to be more than 4% but less than 6% boric acid. If we have 640 litres of the 8% solution, how many maximum litres of the 2% solution will have to be added?

   a) 1280   b)320
   c) 1080   d)None

8. How many minimum litres of water will have to be added to 1125 litres of the 45% solution of acid so that the resulting mixture will contain more than 25% but less than 30% acid content?

   a) 225   b) 900
   c) 562.5   d) 720

9. The water acidity in a pool is considered normal when the average pH reading of three daily measurements is between 7.2 and 7.8. If the first two pH readings are 7.48 and 7.85, find the range of pH value for the third reading that will result in the acidity level being normal.

   a) (6.27,8.70)
   b) (6.27,8.07)
   c) (6.07,8.07)
   d) None

10. In drilling world's deepest hole. It was found that the temperature T in degree Celsius, x km below the surface of Earth, was given by
   T = 30 + 25 (x – 3), 3 < x < 15.
   what is the minimum depth will the temperature be between 200^0C and 300^0C?

   a) 13.8   b) 9.8
   c) 12.8   d) 10.8

11. I.Q. of a person is given by the formula I.Q. = $\frac{MA}{CA} \times 100$ where MA is mental age and CA is chronological age. If $80 \leq$ I.Q. ≤ 140 for a group of 12-year children, find the maximum range of their mental age.

   a) 9.6   b) 16.8
   c) 12.8   d) 18.8

12. A company manufactures cassettes and its cost equation for a week is C = 300 + 1.5x and its revenue equation is R = 2x, where x is the number of cassettes sold in a week. How many cassettes must be sold for the company to realize a profit?

   a) atleast 600

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b)   more than 500

c)   atleast 500

d) more than 600

13. To receive grade 'A' in a course one must obtain an average of 90 marks or more in five examinations (each of 100 marks). If Harsh's marks in first four examinations are 87, 92, 94 and 95, find minimum marks that Harsh must obtain in fifth examination to get grade 'A' in the course.

a)   72   b) 82

c)   85   d) 88

14. The number of all pairs of consecutive odd natural numbers, both of which are larger than 10, such that their sum is less than 40.

a)   4   b) 5

c)   7   d) 9

15. In an experiment, a solution of hydrochloric acid is to be kept between 30^0 and 35^0 Celsius. What is maximum range of temperature in degree Fahrenheit if conversion formula is given by C

$= \frac{5}{9}$ (F – 32), where C and F represent

temperature in degree celsius and degree Fahrenheit respectively.

a) 86   b) 96

c) 93   d) 95

16. A manufacturer has 600 litres of a 12% solution of acid. How many litres of a 30% acid solution must be added to it so that acid content in the resulting mixture will be more than 15% but less than 18%?

a)   at least 120

b) more than 120

c)   at most 300

d) none

17. The number of all pairs of consecutive odd positive integers, both of which are smaller than 18, such that their sum is more than 20.

a)   5   b) 4

c)   3   d) 7

18. The cost and revenue functions of a product are given by C(x) = 2x + 400 and R (x) = 6x + 20 respectively, where x is the number of items produced by the manufacturer. How many items the manufacturer must sell to realize some profit?

a)   95   b) 100

c)   88   d) 90

19. In the first four papers each of 100 marks, Anubhav got 95, 72, 73, 83 marks. If he wants an average of greater than or equal to 75 marks and less than 80 marks, find the range of marks he should score in the fifth paper.

a)   52 & 77   b) 55 & 77

c)   42 & 67   d) None

20. Pritee needs a minimum of 360 marks in four tests in a course to obtain an A grade. On her first three tests, she scored 88, 96, 79 marks. What should be her minimum score be in the fourth test so that she can make an A grade?

a)   95   b) 90

c)   88   d) None