



# 50+ Number System Questions (English)

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1. Simplify the following.

$$\frac{\sqrt{10 + \sqrt{25 + \sqrt{108 + \sqrt{154 + \sqrt{225}}}}}}{\sqrt{16 + 19.25 \times 4^2}}$$

- A.  $\frac{7}{18}$
- B.  $\frac{2}{9}$
- C.  $\frac{5}{18}$
- D.  $\frac{1}{9}$

Answer ||| B

2. Find the value of the given expression.

$$\sqrt{8 + \sqrt{1681}}$$

- A. 5
- B. 6
- C. 4
- D. 7

Answer ||| D

3. In a class of students, the first student has 2 toffees, second has 4 toffees, third has 6 toffees and so on. If the number of students in the class is 25, then the total number of toffees are divisible by \_\_\_\_\_.

- A. 5 and 7
- B. 11 and 13
- C. 5 and 13
- D. 7 and 11

Answer ||| C

4. What is the value of  $99\frac{11}{99} + 99\frac{13}{99} + 99\frac{15}{99} + \dots + 99\frac{67}{99}$ ?

- A. 94220/33
- B. 95120/33
- C. 96220/33



D. 96220/33

Answer ||| B

5.If  $\sqrt[3]{N}$  lies between 6 and 7, where N is an integer then how many values N can take?

A. 126

B. 127

C. 128

D. 125

Answer ||| A

6.If the digits of a two digit number is reversed, then the number is decreased by 36. Which of the is correct?

I. The difference of the digits is 4.

II. The value of number can be 84.

III. Number is always a composite number.

A. I, II, and III

B. II and III

C. I and III

D. I and II

Answer ||| D

7.What is the sum of all the common terms between the given series S1 and S2?

$$S_1 = 2, 9, 16, \dots, 632$$

$$S_2 = 7, 11, 15, \dots, 743$$

A. 6974

B. 6750

C. 7140

D. 6860

Answer ||| A

8.What is the sum of first 25 terms of the following series?

$$1 \times 2 + 2 \times 3 + 3 \times 4 + 4 \times 5 + \dots$$

A. 5550

B. 6120

C. 6480



- D. 5850  
E. None of the above/More than one of the above

Answer ||| D

9.If a 10-digit number  $54726x79y6$  is divisible by 72, then what is the value of  $5x - 3y$ , for the least value of  $y$ ?

- A. 17  
B. 16  
C. 19  
D. 23

Answer ||| B

10.How many numbers are there from 500 to 650 (including both) which are neither divisible by 3 nor by 7?

- A. 21  
B. 121  
C. 87  
D. 99

Answer ||| C

11.If  $\frac{\sqrt{38 - 5\sqrt{3}}}{\sqrt{26 + 7\sqrt{3}}} = \frac{a + b\sqrt{3}}{23}$ ,  $b > 0$ , then the value of  $(b - a)$  is:

- A. 7  
B. 18  
C. 29  
D. 11

Answer ||| C

12.The value of  $0.4\bar{6} + 0.7\bar{23} - 0.3\bar{9} \times 0.\bar{7}$  is:

- A.  $0.\bar{97}$   
B.  $0.\bar{57}$   
C.  $0.\bar{77}$   
D.  $0.\bar{87}$

Answer ||| D



13. If  $x = \sqrt{1 + \frac{\sqrt{3}}{2}} - \sqrt{1 - \frac{\sqrt{3}}{2}}$ , then the value of  $\frac{\sqrt{3} - x}{\sqrt{3} + x}$  (corrected to two decimal places) is:

- A. 0.25
- B. 0.17
- C. 0.19
- D. 0.27

Answer ||| D

14. If  $\frac{22\sqrt{2}}{4\sqrt{2} - \sqrt{3} + \sqrt{5}} = a + \sqrt{5}b$ , with  $a, b > 0$ , then what is the value of  $(ab) : (a + b)$ ?

- A. 7 : 8
- B. 7 : 4
- C. 4 : 7
- D. 8 : 7

Answer ||| A

15. In a nine-digit number  $7698x138y$  is divisible by 72, then the value of  $\sqrt{4x + y}$  is:

- A. 5
- B. 6
- C. 8
- D. 9

Answer ||| B

16. Which among the following can be expressed as  $(10p + q)(10q + p)$ , where  $p$  and  $q$  are integers?

- A. 1456
- B. 1205
- C. 1729
- D. 1500

Answer ||| C



17. If  $a = 49$ ,  $b = 16$ , then find the value of  $\frac{a - 2\sqrt{ab} + b}{\sqrt{b} - \sqrt{a}} + \frac{a + 2\sqrt{ab} + b}{\sqrt{a} + \sqrt{b}}$ :

- A. 8
- B. 14
- C. 28
- D. 21

Answer ||| A

18. Find the unit digit of  $6237^{53^{23}} + 234^{38^{37}} + 69^{57^{64}}$

Answer |||

19. Find the value of  $\frac{\sqrt{45} - \sqrt{54}}{\sqrt{20} - \sqrt{24}}$ :

- A.  $1\frac{1}{3}$
- B.  $1\frac{1}{2}$
- C. 1
- D.  $1\frac{1}{4}$

Answer ||| B

20. Find the value of  $2.\overline{93} \times 1.\overline{2} \div 0.\overline{148}$

- A. 25.25
- B. 23.25
- C. 24.25
- D. None of these

Answer ||| C

21. Find the value of  $0.\overline{73} \times 0.\overline{136} + 1.\overline{83} \times 1.\overline{09} - 0.\overline{7} \div 1.\overline{94}$ ?

- A.  $1.\overline{7}$
- B. 1.6
- C.  $1.\overline{6}$
- D. 1.7

Answer ||| D



22. The value of  $4.0\overline{735}$  is

- A.  $\frac{40695}{9999}$
- B.  $\frac{40735}{99990}$
- C.  $\frac{40735}{9990}$
- D.  $\frac{40695}{9990}$

Answer ||| D

23. The value of  $0.18\overline{43}$  is

- A.  $\frac{73}{396}$
- B.  $\frac{1843}{9900}$
- C.  $\frac{1843}{9999}$
- D.  $\frac{1825}{9000}$

Answer ||| A

24. Find the value of  $5.\overline{632} + 4.\overline{354} + 7.\overline{489}$ ?

- A.  $17.\overline{480}$
- B.  $17.\overline{477}$
- C.  $17.\overline{476}$
- D.  $17.\overline{475}$

Answer ||| C

25. A two-digit number exceeds the sum of the squares of its digits by 10 and the double of product of its digits by 11. Find the number.

- A. 27
- B. 67
- C. 23
- D. 34

Answer ||| C



26. The maximum value of 'n' that results in integer solution of the equation  $\frac{330 \times 200 \times 600 \times 80 \times 30 \times 70}{20^n}$  is:

- A. 6
- B. 7
- C. 5
- D. 8

Answer ||| A

27. The expression  $(y^{2^{n-1}} + z^{2^{n-1}})(y^{2^{n-1}} - z^{2^{n-1}})$  is equal to:

- A.  $y^{2^n} - z^{2^n}$
- B.  $y^{2^n} - z^{2^n}$
- C.  $y^{4^{n-1}} - z^{4^{n-1}}$
- D.  $y^{2^{2(n-1)}} - z^{2^{2(n-1)}}$

Answer ||| B

28. The value of

$$\frac{3}{1^2 \cdot 2^2} + \frac{5}{2^2 \cdot 3^2} + \frac{7}{3^2 \cdot 4^2} + \frac{9}{4^2 \cdot 5^2} + \frac{11}{5^2 \cdot 6^2} + \frac{13}{6^2 \cdot 7^2} + \frac{15}{7^2 \cdot 8^2} + \frac{17}{8^2 \cdot 9^2} + \frac{19}{9^2 \cdot 10^2}$$

is

- A.  $\frac{1}{100}$
- B.  $\frac{99}{100}$
- C.  $\frac{101}{100}$
- D. 1

Answer ||| B

$$29. \left(1 - \frac{1}{3}\right) \left(1 - \frac{1}{4}\right) \left(1 - \frac{1}{5}\right) \dots \left(1 - \frac{1}{25}\right)$$

Is equal to

- A.  $\frac{2}{25}$





B.  $\frac{1}{25}$

C.  $1\frac{19}{25}$

D.  $\frac{1}{325}$

Answer ||| A

30.  $1^2 - 2^2 + 3^2 - 4^2 + \dots - 10^2$  is equal to

A. 45

B. - 45

C. - 54

D. -55

Answer ||| D

31.  $[2^2 + 3^2 + 4^2 + 5^2 + 6^2 + 7^2 + 8^2 + 9^2 + 10^2]$  is equal to

A. 385

B. 2916

C. 540

D. 384

Answer ||| D

32. The last 5 digits of the expression will be

$$(1!)^5 + (2!)^4 + (3!)^3 + (4!)^2 + (5!)^1 + (10!)^5 + (100!)^4 + (1000!)^3 + (10000!)^2 + (100000!)^1$$

A. 00929

B. 45932

C. 20929

D. C .N.D

Answer ||| A

33. If  $x = 5 - \sqrt{21}$

Find  $\frac{\sqrt{x}}{\sqrt{3z - 2x - \sqrt{21}}}$

A.  $(\sqrt{7} - \sqrt{3})/\sqrt{2}$

B.  $(\sqrt{7} - \sqrt{3})$



C. 1

D. 0

Answer ||| A

34.  $\sqrt[3]{20+14\sqrt{2}} + \sqrt[3]{20-14\sqrt{2}}$

A. 20

B. 4

C. 6

D. 14

Answer ||| B

35.  $\frac{0.12\bar{3}+0.21\bar{7}}{0.12}$

A. 3481 / 1200

B. 3481 / 600

C. 1271 / 1200

D. 1382 / 800

Answer ||| B

36.  $\frac{0.\bar{3}+0.1\bar{2}}{0.27} + 0.2$

A. 35 / 99

B. 11 / 37

C. 34 / 42

D. 101 / 54

Answer ||| D

37.  $\frac{1}{3} + 0.6\bar{9}$

A. 1/9

B. 52/37

C. 31/30

D. 51/50

Answer ||| C



38.  $9 + 67 + 517 + 5103 + \dots + nth \text{ term.}$

A.  $\frac{8^n(8^{n+1}-1)}{9} + n^2$

B.  $\frac{8(8^n-1)}{7} + n^2$

C.  $\frac{8(8^n+1)}{7} - n^2$

D. N.O.T.

Answer ||| B

39. 7 is added to a certain number and the sum is multiplied by 5. The product is then divided by 3 and 4 is subtracted from the quotient. If the result comes to 16, then what is the original number?

A. 1

B. 5

C. 4

D. 3

Answer ||| B

40. Simplify  $x^9 \times x^5 \times x^{-4} \times x^0 \times x^{-6}$ .

A.  $x^{-4}$

B.  $x^4$

C.  $x^{-6}$

D.  $x^6$

Answer ||| B

41. What is the product of two consecutive even numbers, the difference of whose squares is 76?

A. 500

B. 440

C. 400

D. 360

Answer ||| D

42. Which of the following given value is greater than  $\sqrt[3]{12}$ ?

A.  $\sqrt[5]{121}$

B.  $\sqrt[12]{33214}$

C.  $\sqrt[5]{60}$

D.  $\sqrt[3]{1500}$

Answer ||| B



43. If  $A = \frac{\sqrt{0.0004} \times \sqrt[3]{0.000008}}{\sqrt[4]{16000} \times \sqrt[3]{125000} \times \sqrt[4]{810}}$  and  $B = \frac{\sqrt[3]{0.729} \times \sqrt[4]{0.0016}}{\sqrt{0.16}}$ , then what is  $A \times B$ ?

A.  $7 \times 10^{-7}$

B.  $\left(\frac{7}{4}\right) \times 10^{-8}$

C.  $6 \times 10^{-8}$

D.  $\left(\frac{7}{3}\right) \times 10^{-7}$

Answer ||| C

44. What is the sum of first 20 terms of the following series?

$$1 \times 2 + 2 \times 3 + 3 \times 4 + 4 \times 5 + \dots$$

A. 3160

B. 2940

C. 3240

D. 3080

Answer ||| D

45. What is the value of  $\frac{7}{2} + \frac{11}{3} + \frac{7}{6} + \frac{11}{15} + \frac{7}{12} + \frac{11}{35} + \dots + \frac{7}{156} + \frac{11}{575}$ ?

A. 3917/355

B. 3816/325

C. 3714/345

D. 3216/315

Answer ||| B

46.  $x$ ,  $y$  and  $z$  are distinct prime number where  $x < y < z$ . If  $x + y + z = 70$ , then what is the value of  $z$ ?

A. 29

B. 43

C. 31

D. 37

Answer ||| D

47. How many numbers are there from 400 to 700 in which the digit 6 occurs exactly twice?

A. 19

B. 18

C. 21

D. 20

Answer ||| D



48. How many composite numbers are there from 53 to 97?

- A. 36
- B. 38
- C. 37
- D. 35

Answer ||| D

49. Which fraction among the following is the least?

$$\frac{5}{11}, \frac{7}{12}, \frac{8}{13}, \frac{9}{17}$$

- A.  $\frac{5}{11}$
- B.  $\frac{7}{12}$
- C.  $\frac{9}{17}$
- D.  $\frac{8}{13}$

Answer ||| A

50. In a two-digit number, the unit's digit exceeds its ten's digit by 4. If the product of the given number and the sum of its digits is 370, then what is the number?

- A. 62
- B. 37
- C. 26
- D. 73

Answer ||| B

51. If the number  $48k2048p6$  is divisible by 99, then  $(k \times p)$  is equal to :

- A. 2
- B. 6
- C. 4
- D. 0

Answer ||| D



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