

## NUMBER SYSTEM

### EXERCISE

#### YEAR 1999

- Which of the following fraction is the smallest ?  $\frac{7}{6}, \frac{7}{9}, \frac{4}{5}, \frac{5}{7}$   
(a)  $\frac{7}{6}$  (b)  $\frac{7}{9}$  (c)  $\frac{4}{5}$  (d)  $\frac{5}{7}$
- The cube of 997 is  
(a) 991026973 (b) 991029673  
(c) 991029773 (d) 991027273
- A number when divided by 899 gives a remainder 63. If the same number is divided by 29, the remainder will be:  
(a) 10 (b) 5 (c) 4 (d) 2
- $9^6 - 11$  when divided by 8 would leave a remainder of:  
(a) 6 (b) 16 (c) 1 (d) 2
- $(49)^{15} - 1$  is exactly divisible by:  
(a) 50 (b) 51 (c) 29 (d) 8
- If  $5432*7$  is divisible by 9, then the digit in place of \* is :  
(a) 0 (b) 1 (c) 6 (d) 9
- One-fourth of a tank holds 135 litres of water. What part of the tank is full if it contains 180 litres of water?  
(a)  $\frac{2}{5}$  (b)  $\frac{2}{3}$  (c)  $\frac{1}{3}$  (d)  $\frac{1}{6}$
- What is two-third of half of 369?  
(a) 123 (b) 246  
(c)  $246\frac{3}{8}$  (d)  $271\frac{3}{8}$
- $\frac{1}{5}$  of a number exceeds  $\frac{1}{7}$  of the same number by 10. The number is:  
(a) 25 (b) 150 (c) 175 (d) 200
- In a class,  $\frac{3}{5}$  of the students are girls and rest are boys. If  $\frac{2}{9}$  of the girls and  $\frac{1}{4}$  of the boys are absent. What part of the

total number of students are present?

- (a)  $\frac{23}{30}$  (b)  $\frac{23}{36}$  (c)  $\frac{18}{49}$  (d)  $\frac{17}{25}$
- An 85m long rod is divided into two parts. If one part is  $\frac{2}{3}$  of the other part, then the longer part (in metres) is:  
(a) 34 (b)  $56\frac{2}{3}$  (c) 85 (d) 51
- Fraction between  $\frac{2}{5}$  and  $\frac{4}{9}$  is:  
(a)  $\frac{3}{7}$  (b)  $\frac{2}{3}$  (c)  $\frac{4}{5}$  (d)  $\frac{1}{2}$
- $\frac{2}{3}$  of three-fourth of a number is:  
(a)  $\frac{1}{2}$  of the number  
(b)  $\frac{1}{3}$  of the number  
(c)  $\frac{8}{9}$  of the number  
(d)  $\frac{17}{12}$  of the number
- If 3 times a number exceeds its  $\frac{3}{5}$  by 60, then what is the number?  
(a) 25 (b) 35 (c) 45 (d) 60
- A man spends  $\frac{1}{4}$ th of his income on food,  $\frac{2}{3}$ rd of it on house rent and the remaining income which is Rs. 630 on other commodities. Find his house rent.  
(a) Rs. 5040 (b) Rs. 3520  
(c) Rs. 4890 (d) Rs. 4458
- $1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{7} + \frac{1}{14} + \frac{1}{28}$  is equal to:  
(a) 2 (b) 2.5 (c) 3  
(d) 3.5

- Unit digit in  $(264)^{102} + (264)^{103}$  is:  
(a) 0 (b) 4 (c) 6 (d) 8
- The sum of three consecutive odd natural numbers is 147, Then the middle number is :  
(a) 47 (b) 48 (c) 49 (d) 51
- If we write 45 as sum of four numbers so that when 2 is added to first number, 2 subtracted from second number, third multiplied by 2 and fourth divided by 2, we get the same result, then the four numbers are:  
(a) 1, 8, 15, 21 (b) 8, 7, 10, 20  
(c) 8, 12, 10, 15 (d) 2, 12, 5, 26
- Sum of two number is 40 and their product is 375. What will be the sum of their reciprocals?  
(a)  $\frac{8}{75}$  (b)  $\frac{1}{40}$  (c)  $\frac{75}{4}$  (d)  $\frac{75}{4}$
- The sum of three consecutive odd natural numbers each divisible by 3 is 63. What is the largest among them?  
(a) 21 (b) 24 (c) 27 (d) 36
- A number is doubled and 9 is added. If the resultant is tripled, it becomes 75. What is that number?  
(a) 6 (b) 3.5  
(c) 8 (d) None of these
- If the operation "\*" is defined by  $a * b = a + b - ab$ , then  $5 * 7$  equals  
(a) 12 (b) -47 (c) -23 (d) 35

#### YEAR : 2000

- The smallest possible three - place decimal is :  
(a) 0.012 (b) 0.123  
(c) 0.111  
(d) None of the above
- $\frac{1}{0.04}$  is equal to:  
(a)  $\frac{1}{40}$  (b)  $\frac{2}{5}$  (c)  $\frac{5}{2}$  (d) 25



26. A six digit number is formed by repeating a three digit number: for example, 256, 256 or 678, 678 etc. Any number of this form is always exactly divisible by:  
(a) 7 only (b) 11 only  
(c) 13 only (d) 1001
27. The smallest number to be added to 1000, so that 45 divides the sum exactly is:  
(a) 35 (b) 80 (c) 20 (d) 10
28. If  $17^{200}$  is divided by 18, the remainder is:  
(a) 17 (b) 16 (c) 1 (d) 2
29. If a number is divisible by both 11 and 13, then it must be divisible by:  
(a) divisible by  $(11 + 13)$   
(b) divisible by  $(13 - 11)$   
(c) divisible by  $(11 \times 13)$   
(d) 429
30. If \* is a digit such that 5824\* is divisible by 11, then \* equals:  
(a) 2 (b) 3 (c) 5 (d) 6
31. Half of 1 percent written as a decimal is:  
(a) 0.2 (b) 0.02  
(c) 0.05 (d) 0.005
32. A runner runs  $1\frac{1}{4}$  laps of a 5 laps race. What laps of the race remains to be run?  
(a)  $15/4$  (b)  $4/5$   
(c)  $5/6$  (d)  $2/3$
33. Unit digit  

$$[(251)^{98} + (21)^{29} - (106)^{100} + (705)^{35} - 16^4 + 259]$$
 is  
(a) 1 (b) 4 (c) 5 (d) 6
34. The sum of first 20 odd natural number is equal to:  
(a) 210 (b) 300 (c) 400 (d) 420
35. The sum of all natural numbers from 75 to 97 is:  
(a) 1598 (b) 1798  
(c) 1958 (d) 1978
36. The sum of all natural numbers between 100 and 200, which are multiples of 3 is:  
(a) 5000 (b) 4950  
(c) 4980 (d) 4900
37. The sum of the squares of three consecutive natural numbers is 2030. Then, what is the middle number?  
(a) 25 (b) 26 (c) 27 (d) 28
38.  $12345679 \times 72$  is equal to :  
(a) 88888888 (b) 999999998  
(c) 888888888 (d) 898989898
39. Given that  $0.111 \dots = \frac{1}{9}$ ,  $0.444$  is equal to :  
(a)  $\frac{1}{90}$  (b)  $\frac{2}{45}$  (c)  $\frac{1}{99}$  (d)  $\frac{4}{9}$
40. The sum and product of two numbers are 12 and 35 respectively. What will be the sum of their reciprocals?  
(a)  $\frac{1}{3}$  (b)  $\frac{1}{5}$  (c)  $\frac{12}{35}$  (d)  $\frac{35}{12}$
41. If the sum of two numbers is 3 and the sum of their squares is 12, then their product is equal to:  
(a)  $\frac{3}{2}$  (b)  $\frac{2}{3}$  (c)  $-\frac{3}{2}$  (d)  $-\frac{2}{3}$
42. 800 chocolates were distributed among the students of a class. Each student got twice as many chocolates as the number of students in the class. The number of students in the class was:  
(a) 25 (b) 30 (c) 35 (d) 20
43. The number 2, 4, 6, 8 .... 98, 100 are multiplied together. The number of zeros at the end of the product must be :  
(a) 13 (b) 12 (c) 11 (d) 10
44. How many digits are required to write numbers from 1 to 50 ?  
(a) 100 (b) 92 (c) 91 (d) 50
45. If doubling a number and adding 20 to the result gives the same answer as multiplying the number by 8 and taking away 4 from the product, the number is :  
(a) 2 (b) 3 (c) 4 (d) 6
46. A number of friends decided to go on picnic and planned to spend Rs. 108 on eatables. Three of them however did not turn up. As a consequence each one of the remaining had to contribute Rs. 3 extra. The number of them who attended the picnic was :  
(a) 15 (b) 12 (c) 9 (d) 6
47. The numbers 1, 3, 5, 7 ..... 99 and 128 are multiplied together. The number of zeros at the end of the product must be:  
(a) 19 (b) 22 (c) 7 (d) Nil
48. The sum of the squares of two positive numbers is 100 and difference of their squares is 28. Find the sum of the

numbers:

- (a) 12 (b) 13 (c) 14 (d) 15
49. When simplified the product  

$$\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{4}\right)\left(1 - \frac{1}{5}\right) \dots \left(1 - \frac{1}{n}\right) = ?$$
  
 (a)  $\frac{1}{n}$  (b)  $\frac{2}{n}$   
 (c)  $\frac{2(n-1)}{n}$  (d)  $\frac{2}{n(n+1)}$

### YEAR 2002

50. Which of the following fraction is the smallest?  
 $\frac{8}{15}, \frac{14}{33}, \frac{7}{13}, \frac{11}{13}$   
 (a)  $\frac{8}{15}$  (b)  $\frac{7}{13}$  (c)  $\frac{14}{33}$  (d)  $\frac{11}{13}$
51. Which of the following is the smallest fraction?  
 $\frac{8}{25}, \frac{7}{23}, \frac{11}{23}, \frac{14}{53}$   
 $\frac{8}{25}, \frac{7}{23}, \frac{11}{23}, \frac{14}{53}$   
 (a)  $\frac{8}{25}$  (b)  $\frac{7}{23}$  (c)  $\frac{11}{23}$  (d)  $\frac{14}{53}$
52. The divisor is 25 times the quotient and 5 times the remainder. If the quotient is 16, the dividend is :  
 (a) 6400 (b) 6480  
 (c) 400 (d) 480
53. The product of two positive numbers is 11520 and their quotient is  $\frac{9}{5}$ . Find the difference of two numbers.  
 (a) 60 (b) 64 (c) 74 (d) 70
54. When a number is divided by 56, the remainder obtained is 29. What will be the remainder when the number is divided by 8?  
 (a) 4 (b) 5 (c) 3 (d) 7
55. A student was asked to multiply a number by  $\frac{3}{2}$  but he divided that number by  $\frac{3}{2}$ . His result was 10 less than the correct answer. The number was :  
 (a) 10 (b) 12 (c) 15 (d) 20
56. A number being divided by 52 gives remainder 45. If the number is divided by 13, the remainder will be:  
 (a) 5 (b) 6 (c) 12 (d) 7



57. If  $\frac{3}{4}$  of the difference of  $2\frac{1}{4}$  and  $1\frac{2}{3}$  is subtracted from  $\frac{2}{3}$  of  $3\frac{1}{4}$  the result is:  
(a)  $\frac{-48}{83}$  (b)  $\frac{48}{83}$  (c)  $\frac{-83}{48}$  (d)  $\frac{83}{48}$
58. By which number should 0.022 be multiplied so that product becomes 66?  
(a) 3000 (b) 3200  
(c) 4000 (d) 3600
59. The value of  $(0.34\overline{67} + 0.13\overline{33})$  is:  
(a) 0.48 (b)  $0.48\overline{01}$   
(c)  $0.4\overline{8}$  (d)  $0.4\overline{8}$
60. A man engaged a servant on the condition that he would pay him Rs. 90 and a shirt after service of one year. He served only for nine months and received the shirt and an amount of Rs. 65. The price of shirt is:  
(a) 12 (b) 10 (c) 2.5 (d) 25
61. The product of two fractions is  $\frac{14}{15}$  and their quotient is  $\frac{35}{24}$ . The greater fraction is:  
(a)  $\frac{7}{4}$  (b)  $\frac{7}{6}$  (c)  $\frac{4}{7}$  (d)  $\frac{4}{5}$
62. What part of  $\frac{4}{7}$  must be added to itself to make the sum  $1\frac{1}{14}$ ?  
(a)  $\frac{7}{8}$  (b)  $\frac{1}{2}$  (c)  $\frac{4}{7}$  (d)  $\frac{15}{14}$
63. If  $\frac{4}{5}$  of an estate be worth Rs. 16800, then the value of  $\frac{3}{7}$  of it is:  
(a) Rs. 90000 (b) Rs. 9000  
(c) Rs. 72000 (d) Rs. 21000
64. A boy on being asked what  $\frac{6}{7}$  of a certain fraction was made the mistake of dividing the fraction by  $\frac{6}{7}$  and so got an answer which exceeded the correct answer by  $\frac{13}{70}$ . Find the fraction:  
(a)  $\frac{2}{3}$  (b)  $\frac{3}{5}$  (c)  $\frac{4}{5}$  (d)  $\frac{7}{9}$
65.  $\frac{1}{2}$  of  $\frac{3}{4}$  of a number is  $2\frac{1}{2}$  of 10. What is the number?  
(a) 50 (b) 60 (c)  $66\frac{2}{3}$  (d) 56
66. If one-third of one-fourth of a number is 15, then three-tenth of the number is:  
(a) 35 (b) 36 (c) 45 (d) 54
67. Express 45 minutes as the fraction of one day.  
(a)  $\frac{1}{40}$  (b)  $\frac{1}{32}$  (c)  $\frac{1}{60}$  (d)  $\frac{1}{24}$
68. If 1 is added to the denominator of a fraction it becomes  $\frac{1}{2}$ . If 1 is added to the numerator it becomes 1. The product of numerator and denominator of the fraction is:  
(a) 6 (b) 10 (c) 12 (d) 14
69. A student was asked to find  $\frac{5}{16}$  of a number. By mistake he found  $\frac{5}{6}$  of that number and his answer was 250 more than the correct answer. Find the given number.  
(a) 300 (b) 480 (c) 450 (d) 500
70.  $\frac{1}{20} + \frac{1}{30} + \frac{1}{42} + \frac{1}{56} + \frac{1}{72} + \frac{1}{90} + \frac{1}{110} + \frac{1}{132}$  is equal to:  
(a)  $\frac{1}{8}$  (b)  $\frac{1}{7}$  (c)  $\frac{1}{6}$  (d)  $\frac{1}{10}$
71. Arrange  $\frac{4}{5}, \frac{7}{8}, \frac{6}{7}, \frac{5}{6}$  in the ascending order:  
(a)  $\frac{4}{5}, \frac{7}{8}, \frac{6}{7}, \frac{5}{6}$  (b)  $\frac{5}{6}, \frac{6}{7}, \frac{7}{8}, \frac{4}{5}$   
(c)  $\frac{4}{5}, \frac{5}{6}, \frac{6}{7}, \frac{7}{8}$  (d)  $\frac{4}{5}, \frac{7}{8}, \frac{6}{7}, \frac{5}{6}$
72. The sum of three consecutive odd natural numbers is 87. The smallest of these numbers is:  
(a) 29 (b) 31 (c) 23 (d) 27
73. Sum of three consecutive even integers is 54. Find the least integer among them.  
(a) 18 (b) 15 (c) 14 (d) 16
74. The sum of three consecutive numbers is 87. The middle number is:  
(a) 27 (b) 29 (c) 30 (d) 28
75.  $8.3\overline{1} + 0.6\overline{6} + 0.00\overline{2}$  is equal to:  
(a)  $8.9\overline{12}$  (b)  $8.9\overline{12}$   
(c) 30 (d)  $8.97\overline{9}$
76. Find the sum of all positive multiples of 3 less than 50.  
(a) 400 (b) 408 (c) 404 (d) 412
77. The least number that must be added to 8961 to make it exactly divisible by 84 is  
(a) 27 (b) 57  
(c) 141 (d) 107
78. 380 mangoes are distributed among some boys and girls who are 85 in numbers. Each boys gets four mangoes and each girls gets five. The number of boys is:  
(a) 15 (b) 38 (c) 40 (d) 45
79. The product of two positive numbers is 2500. If one number is four times the other, then the sum of the two numbers is:  
(a) 25 (b) 125 (c) 225 (d) 250

#### YEAR : 2003

80. Which of the following is the largest fraction?  $\frac{6}{7}, \frac{5}{6}, \frac{7}{8}, \frac{4}{5}$   
(a)  $\frac{6}{7}$  (b)  $\frac{4}{5}$  (c)  $\frac{5}{6}$  (d)  $\frac{7}{8}$
81. A number when divided by 296 gives a remainder 75. When the same number is divided by 37 the remainder will be  
(a) 1 (b) 2 (c) 8 (d) 11
82. A number when divided successively by 4 and 5 leave the remainder 1 and 4 respectively. When it is successively divided by 5 and 4 the respective remainders will be:  
(a) 4, 1 (b) 3, 2 (c) 2, 3 (d) 1, 2
83. In a division problem, the divisor is 4 times the quotient and 3 times the remainder. If remainder is 4, the dividend is:  
(a) 36 (b) 40 (c) 12 (d) 30
84. Each member of a picnic party contributed twice as many rupees as the total number of members and the total collection was Rs. 3042. The number of members present in the party was:  
(a) 2 (b) 32 (c) 40 (d) 39
85. How many natural numbers divisible by 7 are there between 3 and 200?  
(a) 27 (b) 28 (c) 29 (d) 36



86. The sum of first sixty numbers from one to sixty is divisible by  
(a) 13 (b) 59 (c) 60 (d) 61

87. The value of

$$\frac{3.157 \times 4126 \times 3.198}{63.972 \times 2835.121}$$

- (a) 0.002 (b) 0.02  
(c) 0.2 (d) 2

88. Find the no. of prime factors in the product of  $25^{12} \times 10^7 \times 14^7$

- (a) 54 (b) 52 (c) 50 (d) 68

89.  $4^{61} + 4^{62} + 4^{63} + 4^{64}$  is divisible by:  
(a) 3 (b) 10 (c) 11 (d) 13

90. A number exceeds its one-fifth by 20. The number is :

- (a) 100 (b) 25 (c) 20 (d) 5

91. Two-third of a positive number and  $\frac{25}{216}$  of its reciprocal are equal. The number is:

- (a)  $\frac{25}{144}$  (b)  $\frac{5}{12}$  (c)  $\frac{144}{25}$  (d)  $\frac{12}{5}$

92. 0.1 and  $\frac{5}{8}$  of a bamboo are in mud and water respectively and the rest of length 2.75 m is above water. What is the length of the bamboo?

- (a) 10 m (b) 30 m  
(c) 27.5 m (d) 20 m

93. A man spends  $\frac{1}{3}$  of his income on food,  $\frac{2}{5}$  of his income on house rent and  $\frac{1}{5}$  of his income on clothes. If he still has Rs. 400 left with him, his income is:

- (a) Rs. 4000 (b) Rs. 5000  
(c) Rs. 6000 (d) Rs. 7000

94. When  $0.\overline{47}$  is converted as a fraction, the result is :

- (a)  $\frac{47}{90}$  (b)  $\frac{46}{90}$  (c)  $\frac{46}{99}$  (d)  $\frac{47}{99}$

95. By how much does  $\frac{6}{7/8}$  exceed  $\frac{6/7}{8}$ ?

- (a)  $6\frac{1}{8}$  (b)  $6\frac{3}{4}$  (c)  $7\frac{3}{4}$  (d)  $7\frac{5}{6}$

96. Arrange the following fractions in decreasing order:

$$\frac{3}{5}, \frac{7}{9}, \frac{11}{13}$$

- (a)  $\frac{3}{5}, \frac{7}{9}, \frac{11}{13}$  (b)  $\frac{7}{9}, \frac{3}{5}, \frac{11}{13}$

- (c)  $\frac{11}{13}, \frac{7}{9}, \frac{3}{5}$  (d)  $\frac{11}{13}, \frac{3}{5}, \frac{7}{9}$

97. The digit in unit's place of the product  $81 \times 82 \times 83 \times \dots \times 89$  is  
(a) 0 (b) 2 (c) 6 (d) 8

98. The unit digit in the expansion of  $(2137)^{754}$  is

- (a) 1 (b) 3 (c) 7 (d) 9

99. What is the sum of two consecutive even numbers, the difference of whose square is 84?

- (a) 38 (b) 34 (c) 42 (d) 46

100. If \* means adding 6 times the second number to the first number then  $(1 * 2) * 3$  equals:

- (a) 121 (b) 31 (c) 93 (d) 91

101. The value of  $999\frac{995}{999} \times 999$  is

- (a) 990809 (b) 998996  
(c) 999824 (d) 998999

102. The simplified value of

$$\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{4}\right)\left(1 - \frac{1}{5}\right) \dots \left(1 - \frac{1}{99}\right)\left(1 - \frac{1}{100}\right)$$

- (a)  $\frac{2}{99}$  (b)  $\frac{1}{25}$  (c)  $\frac{1}{50}$  (d)  $\frac{1}{100}$

103. In a two digit number if it is known that its unit digit exceeds its tens digit by 2 and that the product of the given number and the sum of its digits is equal to 144, then the number is

- (a) 46 (b) 42 (c) 26 (d) 24

104. In a test, 1 marks is awarded for each correct answer and one mark is deducted for each wrong answer. If a boy answer all 20 questions of the test and gets 8 marks, the number of question answered correct by him was:

- (a) 16 (b) 14 (c) 12 (d) 8

105. A number of boys raised Rs. 400 for a famine relief fund, each boy giving as many 25 paise coins as there were boys. The number of boys was:

- (a) 40 (b) 16 (c) 20 (d) 100

106. Thrice the square of a natural number decreased by four times the number is equal to 50 more than the number. The number is:

- (a) 4 (b) 5 (c) 10 (d) 6

107. The difference between two positive numbers is 3. If the sum of their squares is 369, then the sum of the numbers is:

- (a) 81 (b) 33 (c) 27 (d) 25

108. A number consists of two digits such that the digit in the ten's place is less by 2 than the digit in the unit's place. Three times

the number added to  $\frac{6}{7}$  times

the number obtained by reversing the digits equals 108. The sum of digits in the number is :

- (a) 8 (b) 9 (c) 6 (d) 7

109. Of the three numbers, the second is twice the first and it is also thrice the third. If the average of three numbers is 44, the difference of the first number and the third number is:

- (a) 24 (b) 18 (c) 12 (d) 6

110. The value of

$$\left(1 + \frac{1}{2}\right)\left(1 + \frac{1}{3}\right)\left(1 + \frac{1}{4}\right) \dots \left(1 + \frac{1}{120}\right)$$

- (a) 30 (b) 40.5 (c) 60.5 (d) 121

111. The product of two positive numbers is 2500. If one number is four times the other, the sum of the two numbers is:

- (a) 25 (b) 125 (c) 225 (d) 250

112. The smallest number that must be added to 803642 in order to obtain a multiple of 11 is

- (a) 1 (b) 4 (c) 7 (d) 9

113. Find the value of  $\frac{1}{5} + 999\frac{494}{495} \times 99$

- (a) 90000 (b) 99000  
(c) 90900 (d) 99990

#### YEAR : 2004

114. The smallest number of five digits exactly divisible by 476

- (a) 47600 (b) 10000  
(c) 10476 (d) 10472

115. The greatest number among the following:

$$0.7 + \sqrt{0.16}, 1.02 - \frac{0.6}{24},$$

$$1.2 \times 0.83 \text{ and } \sqrt{1.44} :$$

- (a)  $0.7 + \sqrt{0.16}$  (b)  $\sqrt{1.44}$

- (c)  $1.2 \times 0.83$  (d)  $1.02 - \frac{0.6}{24}$

116. The product of two numbers is 9375 and the quotient, when



the larger one is divided by the smaller, is 15. The sum of the numbers is:

- (a) 395 (b) 380 (c) 400 (d) 425  
117.  $(3^{25} + 3^{26} + 3^{27} + 3^{28})$  is divisible by:

- (a) 11 (b) 16 (c) 25 (d) 30  
118. The least number, which must be added to 6709 to make it exactly divisible by 9, is

- (a) 5 (b) 4 (c) 7 (d) 2  
119. The total number of integers between 100 and 200, which are divisible by both 9 and 6, is

- (a) 5 (b) 6 (c) 7 (d) 8  
120. If  $78*3945$  is divisible by 11 where \* is a digit, then \* is equal to :

- (a) 1 (b) 0 (c) 3 (d) 5  
121. If one-ninth of a certain number exceeds its one-tenth by 4, the number is:

- (a) 320 (b) 360 (c) 400 (d) 440  
122.  $\frac{1}{10}$  of a rod is coloured red,  $\frac{1}{20}$

orange,  $\frac{1}{30}$  yellow,  $\frac{1}{40}$  green,

$\frac{1}{50}$  blue,  $\frac{1}{60}$  black and the rest is violet. If the length of the violet part of the rod is 12.08 metres, then the length of the rod is:

- (a) 16m (b) 18 m  
(c) 20 m (d) 30 m  
123. The fractions  $\frac{1}{3}$ ,  $\frac{4}{7}$  and  $\frac{2}{5}$  written in ascending order given by:

- (a)  $\frac{4}{7} < \frac{1}{3} < \frac{2}{5}$  (b)  $\frac{2}{5} < \frac{4}{7} < \frac{1}{3}$   
(c)  $\frac{1}{3} < \frac{2}{5} < \frac{4}{7}$  (d)  $\frac{4}{7} < \frac{1}{3} < \frac{2}{5}$

124. The digit in unit's place of the product  $(2153)^{167}$  is :  
(a) 1 (b) 3 (c) 7 (d) 9

125. The digit in unit's place of the product  $(2464)^{1793} \times (615)^{317} \times (131)^{491}$  is  
(a) 0 (b) 2  
(c) 3 (d) 5

126.  $999\frac{1}{7} + 999\frac{2}{7} + 999\frac{3}{7} + 999\frac{4}{7} + 999\frac{5}{7} + 999\frac{6}{7}$  is simplified to:

$$999\frac{1}{7} + 999\frac{2}{7} + 999\frac{3}{7} + 999\frac{4}{7} + 999\frac{5}{7} + 999\frac{6}{7}$$

- (a) 5997 (b) 5979  
(c) 5994 (d) 2997

#### YEAR : 2005

127. A number, when divided by 119, leaves a remainder of 19. If it is divided by 17, it will leave a remainder of:

- (a) 19 (b) 10 (c) 7 (d) 2  
128.  $(7^{19} + 2)$  is divided by 6, the remainder is :

- (a) 5 (b) 3 (c) 2 (d) 1  
129. When a number is divided by 357 the remainder is 39. If that number is divided by 17, the remainder will be:

- (a) 0 (b) 3 (c) 5 (d) 11  
130. A number divided by 68 gives the quotient 269 and remainder zero. If the same number is divided by 67, the remainder is:

- (a) 0 (b) 1 (c) 2 (d) 3

131. A number when divided by 6 leaves remainder 3. When the square of the same number is divided by 6, the remainder is:  
(a) 0 (b) 1 (c) 2 (d) 3

132. When a number is divided by 893, the remainder is 193. What will be remainder when it is divided by 47?  
(a) 3 (b) 5 (c) 25 (d) 33

133. A number divided by 13 leaves a remainder 1 and if the quotient, thus obtained, is divided by 5, we get a remainder of 3. What will be the remainder if the number is divided by 65?  
(a) 28 (b) 16 (c) 18 (d) 40

134. Which of the following number is NOT divisible by 18 ?  
(a) 54036 (b) 50436  
(c) 34056 (d) 65043

135. How many 3-digit numbers, in all, are divisible by 6 ?  
(a) 140 (b) 150 (c) 160 (d) 170  
136. If  $n$  is an integer, then  $(n^3 - n)$  is always divisible by :

- (a) 4 (b) 5 (c) 6 (d) 7  
137. If  $n$  is a whole number greater than 1, then  $n^2(n^2 - 1)$  is always divisible by:

- (a) 16 (b) 12 (c) 10 (d) 8  
138. A 4-digit number is formed by repeating a 2-digit number such as 2525, 3232, etc. Any number of this form is always exactly divisible by :

- (a) 7 Only (b) 11 Only  
(c) 13 Only  
(d) Smallest 3-digit prime number

139.  $0.\overline{423}$  is equivalent to the fraction:  
(a)  $\frac{491}{990}$  (b)  $\frac{419}{990}$  (c)  $\frac{49}{99}$  (d)  $\frac{94}{99}$

140. Which of the following fraction is greater than  $\frac{3}{4}$  but less than  $\frac{5}{6}$ ?  
(a)  $\frac{2}{3}$  (b)  $\frac{1}{2}$  (c)  $\frac{4}{5}$  (d)  $\frac{9}{10}$

141. A tank of oil was  $\frac{4}{5}$  full. When 6 bottles of oil was taken out and 4 bottles of oil was poured

- into it, it was  $\frac{3}{4}$  full. How many bottles of oil can the contain in the tank?  
(a) 10 (b) 20 (c) 30 (d) 40

142. If  $4x^2 - 12x + k$  is a perfect square, then the value of  $k$  is  
(a) 2 (b) 9 (c) 12 (d) 10

143. In an examination, a student was asked to find  $\frac{3}{14}$  of a certain number. By mistake, he found  $\frac{3}{4}$  of it. His answer was 150 more than the correct answer. The given number is:  
(a) 500 (b) 280 (c) 240 (d) 180

144. If  $a + b = 17$ , and  $a - b = 9$ , then the value of  $(4a^2 + 4b^2)$  is-  
(a) 710 (b) 720  
(c) 730 (d) 740

145. What will be the unit digit in the  $7^{105}$  ?  
(a) 5 (b) 7 (c) 9 (d) 1

146. The sum of all the 2-digit numbers is:  
(a) 4995 (b) 4950  
(c) 4945 (d) 4905

147. what is the number of unit place in  $(329)^{78}$   
(a) 1 (b) 7 (c) 9 (d) 3

148. The value of  $0.\overline{2} + 0.\overline{3} + 0.\overline{32}$  is :  
(a)  $0.\overline{87}$  (b)  $0.\overline{77}$  (c)  $0.\overline{82}$  (d)  $0.\overline{86}$

149. How many numbers less than 1000 are multiples of both 10 and 13 ?  
(a) 9 (b) 8 (c) 6 (d) 7



150. The number 1, 2, 3, 4, ..... 1000 are multiplied together. The number of zeros at the end (on the right) of the product must be:  
(a) 30 (b) 200 (c) 211 (d) 249

151. If the difference of two numbers is 3 and the difference of their squares is 39, then the larger number is:  
(a) 8 (b) 9 (c) 12 (d) 13

#### YEAR : 2006

152. What is the least number of 5 digits is divisible by 41?  
(a) 10045 (b) 10004  
(c) 10041 (d) 41000
153. If the difference between the reciprocal of a positive proper fraction and fraction itself be  $\frac{9}{20}$  then the fraction is:

- (a)  $\frac{3}{5}$  (b)  $\frac{3}{10}$  (c)  $\frac{4}{5}$  (d)  $\frac{5}{4}$

154.  $2.8\overline{768}$  is equal to

- (a)  $2\frac{4394}{4995}$  (b)  $2\frac{292}{333}$   
(c)  $2\frac{9}{10}$  (d)  $2\frac{878}{999}$

155. On multiplying a number by 7 all the digits in the product appear as 3's, the smallest such number is:  
(a) 47649 (b) 47719  
(c) 47619 (d) 48619

#### YEAR : 2007

156. 64329 is divided by a certain number, 175, 114 and 213 appear as three successive remainders. The divisor is:  
(a) 184 (b) 224 (c) 234 (d) 296
157. In a question on division, the divisor is 7 times the quotient and 3 times the remainder. If the remainder is 28, then the dividend is:  
(a) 588 (b) 784  
(c) 823 (d) 1036
158. If two numbers are each divided by the same divisor, the remainders are respectively 3 and 4. If the sum of the two numbers be divided by the same divisor, the remainder is 2. The divisor is:  
(a) 9 (b) 7 (c) 5 (d) 3
159. It is given that  $(2^{32} + 1)$  is exactly divisible by a certain

number, which one of the following is also definitely divisible by the same number?  
(a)  $2^{96} + 1$  (b)  $7 \times 2^{33}$   
(c)  $2^{16} - 1$  (d)  $2^{16} + 1$

160. The greatest whole number, by which the expression  $n^4 + 6n^3 + 11n^2 + 6n + 24$  is divisible for every natural number  $n$ , is:  
(a) 6 (b) 24 (c) 12 (d) 48

161. If the difference between the reciprocal of a positive proper fraction and fraction itself be  $\frac{17}{72}$ , then the fraction is:

- (a)  $\frac{9}{8}$  (b)  $\frac{8}{9}$  (c)  $\frac{5}{8}$  (d)  $\frac{7}{9}$

162.  $0.393939 \dots$  is equal to

- (a)  $\frac{39}{100}$  (b)  $\frac{13}{33}$  (c)  $\frac{93}{100}$  (d)  $\frac{39}{990}$

163. Given that  $3.718 = \frac{1}{0.2689}$ ,

then  $\frac{1}{0.0003718}$  is equal to

- (a) 2689 (b) 2.689  
(c) 26890 (d) 0.2689

164. If  $a$  and  $b$  are two distinct natural numbers, which one of the following is true?

- (a)  $\sqrt{a+b} > \sqrt{a} + \sqrt{b}$  (b)  $\sqrt{a+b} = \sqrt{a} + \sqrt{b}$   
(c)  $\sqrt{a+b} < \sqrt{a} + \sqrt{b}$  (d)  $ab = 1$

165.  $0.142857 \div 0.285714$  is equal to

- (a) 10 (b) 2 (c)  $\frac{1}{2}$  (d)  $\frac{1}{3}$

166. A 2-digit number is 3 times the sum of its digits. If 45 is added to the number, its digits are interchanged. The sum of digits of the number is:

- (a) 11 (b) 9 (c) 7 (d) 5

167. The number 2272 and 875 are divided by a 3 digit number  $N$ , giving the same remainders. The sum of the digits of  $N$  is :

- (a) 10 (b) 11 (c) 12 (d) 13

168. Find the least no. of five digits which is divisible by 333.

- (a) 10328 (b) 10323  
(c) 10333 (d) 10332

169. Of the three numbers, the second is twice the first and is also thrice the third. If the average of these three numbers is 44, the largest number is:

- (a) 24 (b) 36 (c) 72 (d) 108

170.  $\left(999\frac{999}{1000} \times 7\right)$  is equal to :

- (a)  $6993\frac{7}{1000}$  (b)  $7000\frac{7}{1000}$   
(c)  $6633\frac{7}{1000}$  (d)  $6999\frac{993}{1000}$

#### YEAR : 2008

171. A number consists of two digits. If the number formed by interchanging the digits is added to the original number, the resulting number (i.e. the sum) must be divisible by  
(a) 11 (b) 9 (c) 5 (d) 3

172. A number when divided by 5 leaves remainder 3. What is the remainder when the square of the same number is divided by 5?  
(a) 1 (b) 2 (c) 3 (d) 4

173. If the number  $48327*8$  is divisible by 11, then the missing digit (\*) is  
(a) 5 (b) 3 (c) 2 (d) 1

174. How many number between 1000 and 5000 are exactly divisible by 225?  
(a) 16 (b) 18 (c) 19 (d) 12

175. Find the largest number, which exactly divides every number of the form  $(n^3 - n)(n - 2)$  where  $n$  is a natural number greater than 2.  
(a) 6 (b) 12 (c) 24 (d) 48

176. A boy was asked to find  $\frac{3}{5}$  of a fraction. Instead of this he divided the fraction by  $\frac{3}{5}$  and got an answer which exceeded the correct answer by  $\frac{32}{75}$ . The correct answer is:

- (a)  $\frac{3}{25}$  (b)  $\frac{6}{25}$  (c)  $\frac{2}{25}$  (d)  $\frac{2}{15}$

177. The least number that must be subtracted from 63520 to make the result a perfect square is  
(a) 30 (b) 24 (c) 14 (d) 16

178.  $\frac{1}{11}$  is equal to :

- (a) 0.009 (b)  $0.0\overline{9}$   
(c)  $0.\overline{09}$  (d)  $0.0\overline{09}$

179. unit digit of the number  $(22)^{23}$  is :  
(a) 4 (b) 6 (c) 6 (d) 8



180. The sum of first 50 odd natural number is :

- (a) 1000 (b) 1250  
(c) 5200 (d) 2500

181. Which one of the following numbers is not a square of any natural number ?

- (a) 17956 (b) 18225  
(c) 63592 (d) 53361

182. Number 2, 4, 6, 8, 10 ..... 196, 198, 200 are multiplied together. The number of zeros at the end of the product on the right will be equal to:

- 2, 4, 6, 8, 10 ..... 196, 198, 200  
(a) 21 (b) 22 (c) 24 (d) 25

183. If two numbers  $x$  and  $y$  separately divided by a number  $d$ , remainders obtained are 4375 and 2986 respectively. If the sum of the numbers i.e.  $(x + y)$  is divided by the same number  $d$  remainder obtained is 2361. The value of number  $d$  is:

- (a) 7361 (b) 5000  
(c) 4000 (d) 2542

184. A farmer divides his herd of  $n$  cows among his four sons so that the first son gets one - half the herd, the second son gets one - fourth, the third son gets one - fifth and the fourth son gets 7 cows. The value of  $n$  is:

- (a) 80 (b) 100 (c) 140 (d) 180

185. The product of two numbers is 120 and the sum of their squares is 289. The sum of the two numbers is :

- (a) 23 (b) 7 (c) 13 (d) 169

186. The sum of all the 3-digit numbers, each of which on divide by 5 leaves remainder 3, is

- (a) 180 (b) 1550  
(c) 6995 (d) 99090

187. The sum of all the 3 digit numbers is

- (a) 98901 (b) 494550  
(c) 8991 (d) 899

#### YEAR : 2009

188. A number when divided by 192 gives a remainder of 54. What remainder would be obtained on dividing the same number by 16 ?

- (a) 2 (b) 4 (c) 6 (d) 8

189. A man read  $\frac{2}{5}$  th of a book on the first day. He read  $\frac{1}{3}$  rd more

on second day than he read on the first day. 15 pages were left for the third day. The number of pages in the book is:

- (a) 100 (b) 105 (c) 225 (d) 250

190. The sum of the digits of a two digit number is 10. The number formed by reversing the digit is 18 less than the original number. Find the original number.

- (a) 81 (b) 46 (c) 64 (d) 60

191. Five times of a positive integer is 3 less than twice the square of that number. The number is

- (a) 3 (b) 13 (c) 23 (d) 33

192. The product of two number is 24 times the difference of these two numbers. If the sum of these numbers is 14, the larger number is:

- (a) 9 (b) 8 (c) 7 (d) 10

193. The product of two positive integers is 2048 and one of them is twice the other. Then the small of the number is

- (a) 32 (b) 64  
(c) 16 (d) 1024

194. A man ate 100 grapes in 5 days. Each day, he ate 6 more grapes than those he ate on the earlier day. How many grapes did he eat on the first day?

- (a) 8 (b) 12 (c) 54 (d) 76

195. Instead of multiplying a number by 0.72, but student multiplied it by 7.2. If his answer was 2592 more than the correct answer, the original number was :

- (a) 400 (b) 420 (c) 500 (d) 560

196. The value of  $99\frac{95}{99} \times 99$  is

- (a) 9798 (b) 9997  
(c) 9898 (d) 9896

197.  $7, 77, 777, 7777 \div 77$  equals

- (a) 1111 (b) 101001  
(c) 10101 (d) 1010101

#### YEAR : 2010

198. The least among the fractions  $\frac{15}{16}, \frac{19}{20}, \frac{24}{25}, \frac{34}{35}$  is

- (a)  $\frac{34}{35}$  (b)  $\frac{15}{16}$  (c)  $\frac{19}{20}$  (d)  $\frac{24}{25}$

199. Largest fraction among

$$\frac{2}{3}, \frac{5}{6}, \frac{11}{15}, \text{ and } \frac{7}{8} \text{ is}$$

- (a)  $\frac{7}{8}$  (b)  $\frac{11}{15}$  (c)  $\frac{5}{6}$  (d)  $\frac{2}{3}$

200. Which of the following number is the greatest of all

$$0.9, 0.\bar{9}, 0.0\bar{9}, 0.\overline{09}?$$

- (a) 0.9 (b)  $0.\bar{9}$   
(c)  $0.0\bar{9}$  (d)  $0.\overline{09}$

201. A number, when divided by 136, leaves remainder 36. If the same number is divided by 17, the remainder will be

- (a) 9 (b) 7 (c) 3 (d) 2

202. Two numbers, when divided by 17, leaves remainder 13 and 11 respectively. If the sum of those two numbers is divided by 17, the remainder will be :

- (a) 13 (b) 11 (c) 7 (d) 4

203. A number, when divided by 221, leaves a remainder 64. What is the remainder if the same number is divided by 13?

- (a) 0 (b) 1 (c) 11 (d) 12

204. If the sum of a number and its reciprocal be 2 then number is

- (a) 0 (b) 1 (c) -1 (d) 2

205. When two numbers are separately divided by 33, the remainders are 21 and 28 respectively. If the sum of the two numbers is divided by 33, the remainder will be:

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

206.  $999\frac{998}{999} \times 999$  is equal to :

- (a) 998999 (b) 999899  
(c) 989999 (d) 999989

207.  $(2^{71} + 2^{72} + 2^{73} + 2^{74})$  is divisible by :

- (a) 9 (b) 10 (c) 11 (d) 13

208. If 'n' be any natural number, then by which number  $(n^4 - n)$  is always divisible?

- (a) 3 (b) 2 (c) 6 (d) 5

209. The greatest number less than 1500, which is divisible by both 16 and 18, is

- (a) 1440 (b) 1404  
(c) 1386 (d) 1368

210. The number  $0.121212 \dots$  in the form  $\frac{p}{q}$  is equal to

- (a)  $\frac{4}{11}$  (b)  $\frac{2}{11}$  (c)  $\frac{4}{33}$  (d)  $\frac{2}{33}$



211.  $0.\overline{001}$  is equal to  
(a)  $\frac{1}{1000}$  (b)  $\frac{1}{999}$  (c)  $\frac{1}{99}$  (d)  $\frac{1}{9}$
212.  $1.\overline{27}$  in the form  $\frac{p}{q}$  is equal to  
(a)  $\frac{127}{100}$  (b)  $\frac{73}{100}$  (c)  $\frac{14}{11}$  (d)  $\frac{11}{14}$
213. How many  $\frac{1}{6}$  of together make  $41\frac{2}{3}$ ?  
(a) 125 (b) 150 (c) 250 (d) 350
214. A fraction having denominator 30 and lying between  $\frac{5}{8}$  and  $\frac{7}{11}$  is:-  
(a)  $\frac{18}{30}$  (b)  $\frac{19}{30}$  (c)  $\frac{20}{30}$  (d)  $\frac{21}{30}$
215. Out of six consecutive natural numbers, if the sum of first three is 27, what is the sum of the other three?  
(a) 36 (b) 35 (c) 25 (d) 24
216. Which one of the following is a factor of the sum of first twenty-five natural numbers?  
(a) 26 (b) 24 (c) 13 (d) 12
217. The sum of all even numbers between 21 and 51 is :  
(a) 518 (b) 540 (c) 560 (d) 596
218. The sum of four consecutive even numbers is 748. The smallest among them is :  
(a) 188 (b) 186 (c) 184 (d) 174
219.  $(0.\overline{11} + 0.\overline{22}) \times 3$  is equal to  
(a) 3 (b)  $1.\overline{9}$  (c) 1 (d)  $0.\overline{3}$
220. The difference of  $5.\overline{76}$  and  $2.\overline{3}$  is  
(a)  $2.\overline{54}$  (b)  $3.\overline{73}$   
(c)  $3.\overline{46}$  (d)  $3.\overline{43}$
221.  $\left(99\frac{1}{7} + 99\frac{2}{7} + 99\frac{3}{7} + 99\frac{4}{7} + 99\frac{5}{7} + 99\frac{6}{7}\right)$  is equal to  
(a) 603 (b) 600 (c) 598 (d) 597
222. The product of two numbers is 0.008. One of the number is  $\frac{1}{5}$  of the other. The smaller number is :  
(a) 0.2 (b) 0.4  
(c) 0.02 (d) 0.04
223. In an examination, a student scores 4 marks for every correct answer and losses 1 mark for every wrong answer. A student attempted all the 200 questions and scored 200 marks. The number of questions, he answered correctly was:  
(a) 82 (b) 80 (c) 68 (d) 60
224.  $999\frac{98}{99} \times 99$  is equal to :  
(a) 98999 (b) 99899  
(c) 99989 (d) 99998
225. The sum of two number is 8 and their product is 15. The sum of their reciprocals is :  
(a)  $\frac{8}{15}$  (b)  $\frac{15}{8}$  (c) 23 (d) 7
226. The greatest value among the fractions  $\frac{2}{7}, \frac{1}{3}, \frac{5}{6}, \frac{3}{4}$  is :  
(a)  $\frac{3}{4}$  (b)  $\frac{5}{6}$  (c)  $\frac{1}{3}$  (d)  $\frac{2}{7}$
227. When 'n' is divisible by 5 the remainder is 2. What is the remainder when  $n^2$  is divided by 5?  
(a) 2 (b) 3 (c) 1 (d) 4
228. The remainder when  $3^{21}$  is divided by 5 is:  
(a) 1 (b) 2 (c) 3 (d) 4
229. The difference between the greatest and least five-digit numbers formed by the digits 2,5,0,6,8 is (repetition of digits are not allowed)  
(a) 69552 (b) 65925  
(c) 65952 (d) 63952
230. When a number is divided by 36, the remainder is 19. What will be the remainder when the number is divided by 12 ?  
(a) 7 (b) 5 (c) 3 (d) 0
231. When  $2^{31}$  is divided by 5 the remainder is :  
(a) 4 (b) 3 (c) 2 (d) 1
232. A student was asked to divide a number by 6 and add 12 to the quotient. He, however, first added 12 to the number and then divided it by 6, getting 112 as the answer. The correct answer should have been  
(a) 124 (b) 122 (c) 118 (d) 114
233. In a division sum, the divisor is 10 times the quotient and 5 times the remainder. If the remainder is 46, then the dividend is:  
(a) 4236 (b) 4306  
(c) 4336 (d) 5336
234. The sum of three consecutive natural numbers each divisible by 5, is 225. The largest among them is?  
(a) 85 (b) 75 (c) 70 (d) 80
235. The expression  $8^n - 4^n$ , where  $n$  is a natural number is always divisible by  
(a) 15 (b) 18 (c) 36 (d) 48
236.  $(4^{61} + 4^{62} + 4^{63})$  is divisible by  
(a) 3 (b) 11 (c) 13 (d) 17
237. 47 is added to the product of 71 and an unknown number. The new number is divisible by 7 giving the quotient 98. The unknown number is a multiple of  
(a) 2 (b) 5 (c) 7 (d) 3
238. When an integer K is divided by 3, the remainder is 1, and when  $K + 1$  is divided by 5, the remainder is 0. Of the following, a possible value of K is:  
(a) 62 (b) 63 (c) 64 (d) 65
239. A number when divided by 91 gives a remainder 17. When the same number is divided by 13, the remainder will be :  
(a) 0 (b) 4 (c) 6 (d) 3
240. If the sum of the two numbers is 120 and their quotient is 5, then the difference of the two numbers is:  
(a) 115 (b) 100 (c) 80 (d) 72
241. The greatest perfect square number of digits is  
(a) 999001 (b) 998001  
(c) 998009 (d) 998101
242. A certain number when divided by 175 leaves a remainder 132. When the same number is divided by 25, the remainder is:  
(a) 6 (b) 7 (c) 8 (d) 9
243.  $2^{16} - 1$  is divisible by  
(a) 11 (b) 13 (c) 17 (d) 19
244. Which one of the following will completely divide  $5^{71} + 5^{72} + 5^{73}$ ?  
(a) 150 (b) 160 (c) 155 (d) 30
245. The least number, which is to be added to the greatest number of 4 digits so that the sum may be divisible by 345, is:  
(a) 50 (b) 6 (c) 60 (d) 5
246. Three numbers are in the ratio 1 : 2 : 3 and the sum of their cubes is 4500. The smallest numbers is.  
(a) 4 (b) 5 (c) 6 (d) 10
247. The sum of the numerator and denominator of a positive fraction is 11. If 2 is added to both numerator and denominator, the fraction is increased by  $\frac{1}{24}$ . The



- difference of numerator and denominator of the fraction is:  
(a) 5 (b) 3 (c) 1 (d) 9
248. The denominator of a fraction is 3 more than its numerator. If the numerator is increased by 7 and the denominator is decreased by 2, we obtain 2. The sum of numerator and denominator of the fraction is  
(a) 5 (b) 13 (c) 17 (d) 19
249. A fraction becomes  $\frac{1}{3}$  when 1 is subtracted from both the numerator and the denominator. The same fraction becomes  $\frac{1}{2}$  when 1 is added to both the numerator and denominator. The sum of numerator and denominator of the fraction is:  
(a) 10 (b) 18 (c) 7 (d) 16
250. A girl was asked to multiply a number by  $\frac{7}{8}$ , instead she divided the number by  $\frac{7}{8}$  and got the result 15 more than the correct result. The sum of the digits of the number was:  
(a) 4 (b) 8 (c) 6 (d) 11
251. What least value must be assigned to '\*' so that the numbers 451\*603 is exactly divisible by 9?  
(a) 7 (b) 8 (c) 5 (d) 9
252. If 1 is added to both the numerator and the denominator of a fraction, it becomes  $\frac{1}{4}$ . If 2 is added to both the numerator and the denominator of that fraction it becomes  $\frac{1}{3}$ . The sum of the numerator and the denominator of the fraction is:  
(a) 8 (b) 13 (c) 22 (d) 27
253. A number whose one-fifth part increased by 4 is equal to its one-fourth part diminished by 10 is:  
(a) 260 (b) 280 (c) 240 (d) 270
254. The unit digit in  $(122)^{173}$  is:  
(a) 2 (b) 4 (c) 6 (d) 8
255. The unit digit in the sum of  $(124)^{372} + (124)^{373}$  is:  
(a) 5 (b) 4 (c) 2 (d) 0
256. The last digit of  $(1001)^{2008} + (1002)$  is:  
(a) 0 (b) 3 (c) 4 (d) 6
257. Find the unit digit in the product:  $(4387)^{245} \times (621)^{72}$ .  
(a) 1 (b) 2 (c) 5 (d) 7
258. The unit digit of the expression  $25^{6251} + 36^{528} + 73^{54}$  is  
(a) 6 (b) 5 (c) 4 (d) 0
259. The unit's digit in the product  $7^{71} \times 6^{63} \times 3^{65}$  is  
(a) 1 (b) 2 (c) 3 (d) 4
260. If the sum of five consecutive integers is S, then the largest of those integers in term of S is:  
(a)  $\frac{S-10}{4}$  (b)  $\frac{S+4}{4}$   
(c)  $\frac{S+5}{4}$  (d)  $\frac{S+10}{5}$
261. The sum of the squares of 3 consecutive positive numbers is 365. The sum of the numbers is:  
(a) 30 (b) 33 (c) 36 (d) 45
262. A natural number is multiplied by 18 and another by 21 and added the products. Which one of the following could be the sum?  
(a) 2007 (b) 2008  
(c) 2006 (d) 2002
263. If the sum of two numbers be multiplied by each number separately, the products so obtained are 247 and 114. The sum of the numbers is:  
(a) 19 (b) 20 (c) 21 (d) 23
264. If a and b are odd numbers, then which of the following is even?  
(a)  $a + b + ab$  (b)  $a + b - 1$   
(c)  $a + b + 1$  (d)  $a + b + 2ab$
265. In an examination, a student scores 4 marks for every correct answer and loses 1 marks for every wrong answer. If he attempts all 75 question and scores 125 marks, the number of questions, he attempts correctly is?  
(a) 35 (b) 40 (c) 42 (d) 46
266. Of the three numbers, the sum of the first two is 55, sum of the second and third is 65 and sum of third with thrice of the first is 110. The third number is:  
(a) 25 (b) 30 (c) 35 (d) 28
267. A number consists of two digits and the digit in the ten's place exceeds that in the unit's place by 5. If 5 times the sum of the digits be subtracted from the number, the digits of the number are reversed. Then the sum of digits of the number is:  
(a) 11 (b) 7 (c) 9 (d) 13
268. In a three-digit number, the digit at the hundred's place is two times the digit at the unit's place and the sum of the digits is 18. If the digits are reversed, the number is reduced by 396. The difference of hundred's and ten's digit of the number is:  
(a) 1 (b) 2 (c) 3 (d) 5
269. If the digits in the unit and the ten's places of a Two digit number are interchanged, a new number is formed, which is greater than the original number by 63. Suppose the digit in the unit place of the original number the x. Then, all the possible values of x are  
(a) 7, 8, 9 (b) 2, 7, 9  
(c) 0, 1, 2 (d) 1, 2, 8
270. The sum of a two digit number and the number obtained by reversing its digits is a square number. How many such numbers are there?  
(a) 5 (b) 6 (c) 7 (d) 8
271. Which of the following numbers will always divide a six-digit number of the form  $xyxyxy$  (where  $1 \leq x \leq 9, 1 \leq y \leq 9$ )?  
(a) 1010 (b) 10101  
(c) 11011 (d) 11010

#### YEAR : 2012

272. The least number of five digits which is divisible by 123?  
(a) 10037 (b) 10086  
(c) 10081 (d) 10063
273. The largest among the numbers  $(0.1)^2, \sqrt{0.0121}, 0.12$  and  $\sqrt{0.0004}$  is  
(a)  $(0.1)^2$  (b)  $\sqrt{0.0121}$   
(c) 0.12 (d)  $\sqrt{0.0004}$
274. The number of integers in between 100 and 600, which are divisible by 4 and 6 both, is:  
(a) 40 (b) 42 (c) 41 (d) 50
275. The value of  $\lambda$  for which the expression  $x^3 + x^2 - 5x + \lambda$  will be divisible by  $(x - 2)$  is:  
(a) 2 (b) -2 (c) -3 (d) 4
276. If m and n are positive integers and  $(m - n)$  is an even number, then  $(m^2 - n^2)$  will always be divisible by:  
(a) 4 (b) 6 (c) 8 (d) 12



277. Both the end digits of a 99 digit number N are 2. N is divisible by 11, then all the middle digits are:  
(a) 1 (b) 2 (c) 3 (d) 4

278. The value of  $\frac{1}{15} + \frac{1}{35} + \frac{1}{63} + \frac{1}{99} + \frac{1}{143}$  is

(a)  $\frac{5}{39}$  (b)  $\frac{4}{39}$  (c)  $\frac{2}{39}$  (d)  $\frac{7}{39}$

279. A tree increases annually by  $\frac{1}{8}$ th of its height. By how much

will it increase after 2 years, if it stands today 64 cm high?

(a) 72 cm (b) 74 cm  
(c) 75 cm (d) 81 cm

280. A person gives  $\frac{1}{4}$  of his property

to his daughter,  $\frac{1}{2}$  to his sons

and  $\frac{1}{5}$  for charity. How much has he given away?

(a)  $\frac{1}{20}$  (b)  $\frac{19}{20}$  (c)  $\frac{1}{10}$  (d)  $\frac{9}{10}$

281.  $0.\overline{123}$  is equal to

(a)  $\frac{14}{333}$  (b)  $\frac{41}{333}$

(c)  $\frac{123}{1000}$  (d)  $\frac{441}{333}$

282. The decimal fraction  $2.\overline{349}$  is equal to

(a)  $2326/999$  (b)  $2326/990$   
(c)  $2347/999$  (d)  $2347/990$

283. The last digit of  $3^{40}$  is

(a) 1 (b) 3 (c) 7 (d) 9

284. The digit in unit's place of the number  $(1570)^2 + (1571)^2 + (1572)^2 + (1573)^2$  is :

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

285. The sum of all those prime numbers which are not greater than 17 is

(a) 59 (b) 58 (c) 41 (d) 42

286. The value of  $(0.\overline{63} + 0.\overline{37})$  is

(a) 1 (b)  $\frac{100}{99}$  (c)  $\frac{99}{100}$  (d)  $\frac{100}{33}$

287. If  $\frac{51.84}{4.32} = 12$ , then the value of

$\frac{0.005184}{0.432}$  is

(a) 0.12 (b) 0.012  
(c) 0.0012 (d) 1.2

288. The sum of a natural number and its square equals the product of the first three prime numbers. The number is:

(a) 2 (b) 3 (c) 5 (d) 6

289. A man has some hens and some cows. If the number of heads : number of feet = 12 : 35, find out the number of hens, if the number of heads alone is 48.

(a) 28 (b) 26 (c) 24 (d) 22

290. The length of a road is one kilometre. The number of plants required for plantation at a gap of 20 metres in both sides of the road is:

(a) 102 (b) 100 (c) 51 (d) 50

### YEAR : 2013

291. The greatest among the following numbers is :

$(3)^{\frac{1}{3}}$ ,  $(2)^{\frac{1}{2}}$ , 1,  $(6)^{\frac{1}{6}}$

(a)  $(2)^{\frac{1}{2}}$  (b) 1 (c)  $(6)^{\frac{1}{6}}$  (d)  $(3)^{\frac{1}{3}}$

292. When 335 is added to 5A7, the result is 8B2. 8B2 is divisible by 3. What is the largest possible value of A?

(a) 8 (b) 5 (c) 1 (d) 4

293. If a number is as much greater than 31 as it is less than 75, then the number is :

(a) 106 (b) 44 (c) 74 (d) 53

294. If the number formed by the last two digits of a three digit integer is an integral multiple of 6, the original integer itself will always be divisible by

(a) 6 (b) 3 (c) 2 (d) 12

295. Divide 37 into two parts so that 5 times one part and 11 times the other are together 227.

(a) 15, 22 (b) 20, 17  
(c) 25, 12 (d) 30, 7

296.  $1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{7} + \frac{1}{14} + \frac{1}{28}$  is equal to

(a) 2 (b) 2.5 (c) 3 (d) 3.5

297. How many numbers between 400 and 800 are divisible by 4, 5 and 6?

(a) 7 (b) 8 (c) 11 (d) 10

298. A positive integer when divided by 425 gives a remainder 45. When the same number is divided by 17, the remainder will be

(a) 7 (b) 8 (c) 11 (d) 10

299. A number x when divided by 289 leaves 18 as the remainder. The same number when divided by 17 leaves y as a remainder. The value of y is

(a) 5 (b) 2 (c) 3 (d) 1

300. When n is divided by 6, the remainder is 4. When 2n is divided by 6, the remainder is:  
(a) 2 (b) 0 (c) 4 (d) 1

301. Two number 11284 and 7655, when divided by a certain number of three digits, leaves the same remainder. The sum of digits of such a three-digits number is :

(a) 8 (b) 9 (c) 10 (d) 11

302. In a division sum, the divisor is 3 times the quotient and 6 times the remainder. If the remainder is 2, then the dividend is:

(a) 50 (b) 48 (c) 36 (d) 28

303.  $\frac{1}{7} + \left(999\frac{692}{693}\right) \times 99$  is equal to :

(a) 1 (b) 99000  
(c) 99800 (d) 99900

304. If the sum of the digits of any integer lying between 100 and 1000 is subtracted from the number, the result always is :

(a) divisible by 6  
(b) divisible by 2  
(c) divisible by 9  
(d) divisible by 5

305. The difference of a number consisting of two digits from the number formed by interchanging the digits is always divisible by:

(a) 10 (b) 9 (c) 11 (d) 6

306. The least number which must be added to the greatest number of 4 digits in order that the sum may be exactly divisible by 307 is :

(a) 132 (b) 32 (c) 43 (d) 75

307. In an office, there are 108 tables and 132 chairs. If  $\frac{1}{6}$  of

the tables and  $\frac{1}{4}$  of the chairs are broken. How many people can work in the office if each person requires one table and one chair?

(a) 86 (b) 90 (c) 92 (d) 99

308. A, B, C and D purchase a gift worth Rs. 60. A pays  $\frac{1}{2}$  of what others are paying. B pays  $\frac{1}{3}$  of what others are paying and C pays  $\frac{1}{4}$  of what others are



- paying. What is the amount paid by D ?  
 (a) 13 (b) 15 (c) 12 (d) 14
309. In a school  $\frac{1}{10}$  of the boys are same in number as  $\frac{1}{4}$  of the girls and  $\frac{5}{8}$  of the girls are same in number as  $\frac{1}{4}$  of the boys. The ratio of the boys to girls in that school is :  
 (a) 2 : 1 (b) 5 : 2  
 (c) 4 : 3 (d) 3 : 2
310. A rational number between  $\frac{3}{4}$  and  $\frac{3}{8}$  is:  
 (a)  $\frac{7}{9}$  (b)  $\frac{7}{3}$  (c)  $\frac{5}{9}$  (d)  $1\frac{9}{16}$
311. The numerator of a fraction is 4 less than its denominator. If the numerator is decreased by 2 and the denominator is increased by 1, the denominator becomes eight times the numerator. Find the fraction.  
 (a)  $\frac{3}{8}$  (b)  $\frac{3}{7}$  (c)  $\frac{4}{8}$  (d)  $\frac{2}{7}$
312. In a class, there are 'z' students. Out of them 'x' are boys. What part of the class is composed of girls ?  
 (a)  $\frac{x}{z}$  (b)  $\frac{z}{x}$   
 (c)  $1 - \frac{x}{z}$  (d)  $\frac{x}{z} - 1$
313. Divide 50 into two parts so that the sum of their reciprocals is  $\frac{1}{12}$   
 (a) 35, 15 (b) 20, 30  
 (c) 24, 36 (d) 28, 22
314. The unit digit in the product of  $3 \times 38 \times 537 \times 1256$  is  
 (a) 4 (b) 2 (c) 6 (d) 8
315. In a two-digit number, the digit at the unit's place is 1 less than twice the digit at the ten's place. If the digits at unit's and ten's place are interchanged, the difference between the new and the original number is less than the original number by 20. The original number is:  
 (a) 59 (b) 23 (c) 35 (d) 47
316. Find three consecutive numbers such that twice of the first, three times of the second and four times of the third together make 191.  
 (a) 19, 20, 21 (b) 21, 22, 23  
 (c) 20, 21, 22 (d) 22, 23, 24
317. There are 50 boxes and 50 persons. Person 1 keeps 1 marble in every box, person 2 keeps 2 marbles in every 2nd box, person 3 keeps 3 marbles in every third box. This process goes on till person 50 keeps 50 marbles in the 50th box. Find the total number of marbles kept in the 50th box.  
 (a) 43 (b) 78 (c) 6 (d) 93
318. 252 m of pant cloth and 141 m of shirt cloth are available in a cloth store. To stitch one pant and one shirt,  $2\frac{1}{2}$  m and  $1\frac{3}{4}$  m of cloth are needed respectively. Then the approximate number of pants and shirts that can be made out of it are:  
 (a) (80, 100) (b) (100, 80)  
 (c) (100, 90) (d) (90, 80)
319. The number of prime factors of 323 has  
 (a) three prime factors  
 (b) five prime factors  
 (c) two prime factors  
 (d) no prime factor
320. Mohan gets 3 marks for each correct answer and loses 2 marks for each wrong answer. He attempts 30 sums and obtains 40 marks. The number of sums solved correctly is:  
 (a) 15 (b) 20 (c) 25 (d) 10
321. If  $a * b = a + b + \frac{a}{b}$ , then the value of  $12 * 4$  is :  
 (a) 20 (b) 21 (c) 48 (d) 19
322. Find the maximum number of trees which can be planted, 20 metres apart, on the two sides of a straight road 1760 metres long  
 (a) 180 (b) 178 (c) 174 (d) 176
323. A and B have together three times what B and C have, while A, B, C together have thirty rupees more than that of A. If B has 5 times that of C, then A has  
 (a) Rs. 60 (b) Rs. 65  
 (c) Rs. 75 (d) Rs. 45
324. If sum of two numbers be a and their product be b, then the sum of their reciprocals is :  
 (a)  $\frac{1}{a} + \frac{1}{b}$  (b)  $\frac{b}{a}$   
 (c)  $\frac{a}{b}$  (d)  $\frac{1}{ab}$
325. In a factory one out of every 9 is a female worker. If the number of female workers is 125, the total number of workers is:  
 (a) 1250 (b) 1125  
 (c) 1025 (d) 1000
326. 'a' divides 228 leaving a remainder 18. The biggest two-digit value of 'a' is  
 (a) 70 (b) 21 (c) 35 (d) 30
327. The sum of the cubes of two numbers in the ratio 3:4 is 5824. The sum of the numbers is:  
 (a)  $(5824)^{1/3}$  (b) 28  
 (c) 24 (d) 14

**YEAR : 2014**

328. Which is the largest of the following fractions?  
 $\frac{2}{8}, \frac{3}{5}, \frac{8}{11}, \frac{11}{17}$   
 (a)  $\frac{8}{11}$  (b)  $\frac{3}{5}$  (c)  $\frac{11}{17}$  (d)  $\frac{2}{8}$
329. If  $a = 4011$  and  $b = 3989$ , then value of  $ab = ?$   
 (a) 15999879 (b) 15899879  
 (c) 15989979 (d) 15998879
330. For any integral value of n,  $3^{2n} + 9n + 5$  when divided by 3 will leave the remainder  
 (a) 1 (b) 2 (c) 0 (d) 5
331. The solution to the inequality  $12x - 66 \leq 6$  is  
 (a)  $x \leq 6$  (b)  $0 \leq x \leq 6$   
 (c)  $-6 \leq x \leq 6$  (d)  $-6 \leq x \leq 0$
332. 5349 is added to 3957. Then 7062 is subtracted from the sum. The result is not divisible by.  
 (a) 4 (b) 3 (c) 7 (d) 11



333. The product of all the prime numbers between 80 and 90 is  
(a) 83 (b) 89  
(c) 7387 (d) 598347

334. Find the sum of all positive multiples of 3 less than 50  
(a) 400 (b) 404  
(c) 408 (d) 412

335. If the operation ' $*$ ' is defined by  $a * b = a + b - ab$ , then  $5 * 7$  equals  
(a) 12 (b) -47  
(c) -23 (d) 35

336. A man engaged a servant on the condition that he would pay him Rs. 90 and a turban after service of one year. he served only for nine months and received the turban and an amount of Rs. 65. The price of turban is :  
(a) 25 (b) 18.75  
(c) 10 (d) 2.50

337. If  $\frac{3}{4}$  of a number is 7 more than  $\frac{1}{6}$  of the number then  $\frac{5}{3}$  of the number is;  
(a) 12 (b) 18 (c) 15 (d) 20  
(SSS CGL 16-8-2015 Morning)

338. If  $x = \frac{1}{\sqrt{2}+1}$  then  $(x+1)$  equal to  
(a)  $\sqrt{2} + 1$  (b)  $\sqrt{2} - 1$   
(c)  $\sqrt{2}$  (d) 2  
(SSS CGL 16-8-2015 Morning)

339. Find the square root of  $\frac{(0.064 - 0.008)(0.16 - 0.04)}{(0.16 + 0.08 + 0.04)(0.4 + 0.2)^3}$   
(a)  $\frac{2}{3}$  (b)  $\frac{1}{3}$  (c) 3 (d)  $\frac{3}{2}$   
(SSS CGL 9-8-2015 Evening)

340. If the cube root of 79507 is 43, then the value of  $\sqrt[3]{79.507} + \sqrt[3]{0.079507} + \sqrt[3]{0.000079507}$  is  
(a) 4.773 (b) 47.73  
(c) 0.4773 (d) 477.3  
(SSS CGL 9-8-2015 Evening)

341. A number exceeds its two fifth by 75. The number is:  
(a) 125 (b) 100 (c) 112 (d) 150  
(SSS CGL 9-8-2015 Evening)

342. The simplified value of  $\frac{(0.0539 - 0.002) \times 0.4 + 0.56 \times 0.07}{0.04 \times 0.25}$   
(a) 599.6 (b) 0.5996  
(c) 5.996 (d) 59.96  
(CPO 21-6-2015 Morning)

343. The smallest whole number that is to be multiplied with 59535 to make a perfect square number is x. The sum of digits of that number is ?  
(a) 6 (b) 5 (c) 7 (d) 9  
(CPO 21-6-2015 Morning)

344. When Simplified the product  $\left(2 - \frac{1}{3}\right)\left(2 - \frac{3}{5}\right)\left(2 - \frac{5}{7}\right) \dots \dots \left(2 - \frac{997}{999}\right)$  equals  
(a)  $\frac{1001}{3}$  (b)  $\frac{5}{3}$   
(c)  $\frac{5}{999}$  (d)  $\frac{1001}{999}$   
(CPO 21-6-2015 Evening)

345. The value of  $\left[(.87)^2 + (.13)^2 + (.87 \times .13)\right]^{2013}$   
(a) 0 (b) 1  
(c) -1 (d) 2013  
(CPO 21-6-2015 Evening)

346. The simplified value of  $\frac{4}{15}$  of  $\frac{5}{8} \times 6 + 15 - 10$   
(a) 3 (b) 5 (c) 6 (d) 4  
(CPO 21-6-2015 Evening)

347. The maximum value of F in the following equation  $5E9 + 2F8 + 3G7 = 1114$  is  
(a) 8 (b) 5 (c) 9 (d) 7  
(CPO 21-6-2015 Evening)

348. The unit digit in the product  $(2467)^{153} \times (341)^{72}$  is  
(a) 1 (b) 3 (c) 7 (d) 9  
(SSS CGL main 25-10-2015)

349. The greatest number among  $3^{50}$ ,  $4^{40}$ ,  $5^{30}$ , and  $6^{20}$  is  
(a)  $4^{40}$  (b)  $5^{30}$  (c)  $6^{20}$  (d)  $3^{50}$   
(SSS CGL main 25-10-2015)

350. While solving a problem, by mistake, Anita squared a number and then subtracted 25 from it rather than first subtracting 25 from the number and then squaring it. But she got the right answer. What was the given number?  
(a) 48  
(b) Cannot be determined  
(c) 13 (d) 38  
(SSS CGL main 12-6-2015)

351. In a farm there are cows and hens. If heads are counted

there are 180, if legs are counted there are 420. The number of cows in the farm is  
(a) 130 (b) 50 (c) 150 (d) 30  
(SSS CGL main 12-6-2015)

352. The number which can be written in the form of  $n(n+1)(n+2)$ , where n is a natural number, is  
(a) 7 (b) 5 (c) 3 (d) 6  
(SSS CGL main 12-6-2015)

353. A school group charters three identical buses and occupies  $\frac{4}{5}$  of the seats. After  $\frac{1}{4}$  of the the passengers leave, the remaining passengers use only two of the buses. The fraction of the seats on the two buses that are now occupied is  
(a)  $\frac{8}{9}$  (b)  $\frac{7}{9}$  (c)  $\frac{7}{10}$  (d)  $\frac{9}{10}$   
(SSS CGL main 12-6-2015)

354. If the product of two positive numbers be 1575 and their ratio is 7 : 9, then the greater number is  
(a) 45 (b) 135 (c) 35 (d) 63  
(SSS CGL main 12-6-2015)

355. If the arithmetic mean of  $3a$  and  $4b$  is greater than 50, and  $a$  is twice  $b$ , then the smallest possible interger value of  $a$  is  
(a) 20 (b) 21 (c) 18 (d) 19  
(SSS CGL main 12-6-2015)

356. The weight of a container completely filled with water is 2.25 kg. The container weights 0.77 kg when its 0.2 part is filled with water. The weight (in kg) of the container when 0.4 part of its is filled with water, is  
(a) 0.40 (b) 1.14  
(c) 0.74 (d) 1.88  
(LDC 1-11-2015 Morning)

357. The difference between the greatest and the least four digit numbers that begins with 3 and ends with 5 is :  
(a) 900 (b) 999 (c) 909 (d) 990  
(LDC 1-11-2015 Evening)

358. The greatest four digit number which is exactly divisible by each one of the numbers 12, 18, 21 and 28.  
(a) 9828 (b) 9882  
(c) 9928 (d) 9288  
(LDC 1-11-2015 Evening)



359. The sum of two numbers is 37 and the difference of their squares is 185, then the difference of the two numbers is:  
(a) 10 (b) 5 (c) 4 (d) 3

(LDC 15-11-2015 Morning)

360. The sum of two numbers is 75 and their difference is 25. The product of the two numbers is:  
(a) 1350 (b) 1250  
(c) 125 (d) 1000

(LDC 15-11-2015 Morning)

361. Among the following statements, the statement which is **not correct** is:

- (a) Every natural number is a real number  
(b) Every real number is a rational number  
(c) Every integer is a rational number  
(d) Every natural number is an integer

(LDC 15-11-2015 Evening)

362. A number  $x$  is divisible by 7. When this number is divided by 8, 12 and 16, it leaves a remainder 3 in each case. The least value of  $x$  is:

- (a) 149 (b) 150 (c) 147 (d) 148

(LDC 15-11-2015 Evening)

363. The quotient when  $10^{100}$  is divided by  $5^{75}$  is:

- (a)  $10^{25}$  (b)  $2^{75}$   
(c)  $2^{75} \times 10^{25}$  (d)  $2^{25} \times 10^{75}$

(LDC 15-11-2015 Evening)

364. The smallest five digit number which is divisible by 12, 18 and 21 is:

- (a) 10080 (b) 30256  
(c) 10224 (d) 50321

(LDC 6-12-2015 Evening)

365. Two positive whole numbers are such that the sum of the first and twice the second number is 8 and their difference is 2. The numbers are:

- (a) 7, 5 (b) 3, 5 (c) 6, 4 (d) 4, 2

(LDC 6-12-2015 Evening)

366. If  $1^3 + 2^3 + \dots + 10^3 = 3025$ , then the value of

$$2^3 + 4^3 + \dots + 20^3 \text{ is:}$$

- (a) 7590 (b) 5060  
(c) 24200 (d) 12100

(LDC 6-12-2015 Evening)

367. In an exam the sum of the scores of A and B is 120, that of B and C is 130 and that of C and A is 140. Then the score of C is:  
(a) 70 (b) 75 (c) 60 (d) 65

(LDC 6-12-2015 Evening)

368. If  $p = -0.12$ ,  $q = -0.01$  &  $r = -0.015$ , then the correct relationship among the three is:

- (a)  $p < r < q$  (b)  $p > r > q$   
(c)  $p < q < r$  (d)  $q > p > r$

(LDC 6-12-2015 Evening)

369. Arrangement of the fractions  $\frac{4}{3}, -\frac{2}{9}, -\frac{7}{8}, \frac{5}{12}$  into ascending order:

- (a)  $-\frac{2}{9}, -\frac{7}{8}, \frac{4}{3}, \frac{5}{12}$  (b)  $-\frac{7}{8}, -\frac{2}{9}, \frac{5}{12}, \frac{4}{3}$   
(c)  $-\frac{7}{8}, -\frac{2}{9}, \frac{4}{3}, \frac{5}{12}$  (d)  $-\frac{2}{9}, -\frac{7}{8}, \frac{5}{12}, \frac{4}{3}$

(LDC 12-12-2015 Morning)

370. The difference between the greatest and least prime numbers which are less than 100 is

- (a) 95 (b) 96 (c) 97 (d) 94

(LDC 12-12-2015 Morning)

371. Two numbers are in ratio 5 : 8. If their difference is 48, then the smallest number is

- (a) 64 (b) 80 (c) 96 (d) 128

(LDC 12-12-2015 Morning)

372. The number  $142^2 - 1$  is divisible by:

- (a) 19 (b) 7 (c) 9 (d) 13

(LDC 12-12-2015 Evening)

373. Fill in the smallest digit that will make 93856\_294 divisible by 9?

- (a) 0 (b) 4 (c) 5 (d) 8

(SSC CPO(Re) 04-06-2016, Morning)

374. Which of the following is a perfect square?

- (a) 3497497 (b) 4587632  
(c) 1046529 (d) 1034758

(SSC CPO(Re) 04-06-2016, Evening)

375. If  $\frac{1}{25.25} = 0.0396$ , then the

$$\text{value of } \frac{1}{0.0002525} \text{ will be}$$

- (a) 3960 (b) 39600  
(c) 0.0000396 (d) 0.000396

(SSC CPO(Re) 05-06-2016, Morning)

376. Given that, three numbers are such that the second number is twice the first and thrice the third. Also the average of the three numbers is 44. Then the difference of the first and the third is:

- (a) 10 (b) 11 (c) 12 (d) 13

(SSC CPO(Re) 06-06-2016, Evening)

377. Fill in the largest digit that will make 236953\_876 divisible by 11?

- (a) 7 (b) 8 (c) 9 (d) 3

(SSC CPO(Re) 07-06-2016, Morning)

378. If  $a = (0.4)^2$ ,  $b = 0.04$  and  $c = \frac{2}{5}$ , then the correct relationship among the three is:

- (a)  $b > a > c$  (b)  $a > b > c$   
(c)  $a > c > b$  (d)  $c > a > b$

(SSC CPO(Re) 07-06-2016, Evening)

379. Which is the largest among the number  $\sqrt[3]{7}$ ,  $\sqrt[4]{13}$ ,  $\sqrt{5}$ , (a)

- $\sqrt{5}$  (b)  $3\sqrt{7}$

- (c)  $\sqrt[4]{13}$  (d) All are equal

(SSC CPO(Re) 08-06-2016, Morning)

380. A number when divided by 44, gives 432 as quotient and 0 as remainder. What will be the remainder when dividing the same number by 31?

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

(SSC CPO(Re) 08-06-2016, Evening)

381. The number  $334 \times 545 \times 7p$  is divisible by 3340 then what is the minimum value of  $P$ ?

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

(SSC CPO(Re) 09-06-2016, Morning)

382. The digit at Hundred's place value of  $17!$  is

- (a) 1 (b) 0  
(c) 2 (d) 3

(SSC CPO(Re) 09-06-2016, Evening)

383. What is least possible number when it is divided by 13 leaves 8 and when divided by 7 leaves remainder 6?

- (a) 48 (b) 34 (c) 40 (d) 41

(SSC CPO(Re) 10-06-2016, Morning)

384. What decimal of a week is an hour?

- (a) .0059 (b) .0062  
(c) .062 (d) .059

(SSC CPO(Re) 10-06-2016, Evening)

385. When a number is divided by 5, the remainder is 3. What will be the remainder when sum of cube of that number and square of that number is divided by 5?

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

(SSC CPO(Re) 11-06-2016, Morning)



386. There are 2 teams-A and B. If 3 people are shifted from Team A to Team B, then Team B has thrice the number of members than Team A. If 2 people are shifted from Team B to Team A, then Team B has double the number of members than Team A. How many members does Team B have originally?  
(a) 15 (b) 18 (c) 42 (d) 45

(SSC CPO(Re) 11-06-2016, Morning)

387. Find the sum of all positive multiples of 5 less than 100.  
(a) 925 (b) 960  
(c) 950 (d) 990

(SSC CPO(Re) 11-06-2016, Morning)

388. If in a three-digit number the last two digits' places are interchanged, a new number is formed which is greater than the original number by 45. What is the difference between the last two digits of that number?  
(a) 9 (b) 8  
(c) 6 (d) 5

(SSC CPO(Re) 11-06-2016, Evening)

389. A number when divided by 729 gives a remainder of 56. What will we get as remainder if the same number is divided by 27?  
(a) 4 (b) 2 (c) 0 (d) 1

(SSC CPO(Re) 11-06-2016, Evening)

390. Find the least number which must be subtracted from 18265 to make it a perfect square.  
(a) 30 (b) 38 (c) 40 (d) 45

(SSC CGL Pre Exam 2016)

391. Sum of two numbers is thrice their difference. Their ratio is  
(a) 1 : 2 (b) 2 : 1  
(c) 3 : 1 (d) 1 : 3

(SSC CGL Pre Exam 2016)

392. Number of composite numbers lying between 67 and 101 is  
(a) 27 (b) 24 (c) 26 (d) 23

(SSC CGL Pre Exam 2016)

393. The reciprocals of the squares of the number  $1\frac{1}{2}$  and  $1\frac{1}{3}$  are in the ratio:

- (a) 64 : 81 (b) 8 : 9  
(c) 81 : 64 (d) 9 : 8

(SSC CGL Pre Exam 2016)

394. If sum of the two number is 80 and ratio is 3 : 5, then find numbers.  
(a) 50, 30 (b) 60, 20  
(c) 20, 60 (d) 30, 50

(SSC CGL Pre Exam 2016)

395. If the numbers  $\sqrt[3]{9}$ ,  $\sqrt[4]{20}$ ,  $\sqrt[5]{25}$  are arranged in ascending order, then the right arrangement is

- (a)  $\sqrt[5]{25} < \sqrt[4]{20} < \sqrt[3]{9}$   
(b)  $\sqrt[3]{9} < \sqrt[4]{20} < \sqrt[5]{25}$   
(c)  $\sqrt[5]{25} < \sqrt[3]{9} < \sqrt[4]{20}$   
(d)  $\sqrt[4]{20} < \sqrt[3]{9} < \sqrt[5]{25}$

(SSC CGL Pre Exam 2016)

396. Sum of three consecutive integers is 51. The middle one is  
(a) 14 (b) 15 (c) 16 (d) 17

(SSC CGL Pre Exam 2016)

397. The least number that must be subtracted from 1294 so that the remainder when divided by 9, 11, 13 will leave in each case the same remainder 6 is:  
(a) 2 (b) 3 (c) 1 (d) 4

(SSC CGL Pre Exam 2016)

398. The real number to be added to 13851 to get a number which is divisible by 87 is  
(a) 18 (b) 43 (c) 54 (d) 69

(SSC CGL Pre Exam 2016)

399. Which one of the following is the minimum value of the sum of two integers whose products is 24?  
(a) 25 (b) 11 (c) 8 (d) 10

(SSC CGL Pre Exam 2016)

400. The ratio of two positive numbers is 3 : 4. The sum of their squares is 400. What is the sum of the numbers?  
(a) 28 (b) 22 (c) 22 (d) 24

(SSC CGL Pre Exam 2016)

401. What least value must be assigned to '\*' so that the number  $63576 * 2$  is divisible by 8?  
(a) 1 (b) 2 (c) 3 (d) 4

(SSC CGL Pre Exam 2016)

402. The sum of 10 terms of the arithmetic series is 390. If the third term of the series is 19. Find the first term  
(a) 3 (b) 5 (c) 7 (d) 8

(SSC CGL Pre Exam 2016)

403. Each member of a club contributes as much rupees and as much paise as the number of members of the club. If the total contribution is ₹ 2525, then the number of members of the club is  
(a) 60 (b) 45 (c) 55 (d) 50

(SSC CGL Mains Exam 2016)

404. The numerator of a fraction is multiple of two numbers. One of the numbers is greater than the other by 2. The greater number is smaller than the denominator by 4. If the denominator  $7 + C$  ( $C > -7$ ) is a constant, then the minimum value of the fraction is

(SSC CGL Mains Exam 2016)

- (a) 5 (b)  $1/5$   
(c) -5 (d)  $-1/5$

405. A number when divided by the sum of 555 and 445 gives two times their difference as quotient and 30 as the remainder. The number is

(SSC CGL Mains Exam 2016)

- (a) 220030 (b) 22030  
(c) 1220 (d) 1250

406. On dividing a certain number by 342 we get 47 as remainder. If the same number is divided by 18, what will be the remainder?

(SSC CGL Mains Exam 2016)

- (a) 15 (b) 11 (c) 17 (d) 13

407. The sum of three numbers is 252. If the first number is thrice the second and third number is two-third of the first, then the second number is

(SSC CGL Mains Exam 2016)

- (a) 41 (b) 21 (c) 42 (d) 84

408. The sum of squares of three positive integers is 323. If the sum of squares of two numbers is twice the third, their product is

(SSC CGL Mains Exam 2016)

- (a) 255 (b) 260  
(c) 265 (d) 270

409. The sum of three numbers is 2, the 1st number is  $\frac{1}{2}$  times the 2nd and the 3rd number is  $\frac{1}{4}$  times the 2nd number. The 2nd number is

(SSC CGL Mains Exam 2016)

- (a)  $\frac{7}{6}$  (b)  $\frac{8}{7}$  (c)  $\frac{9}{8}$  (d)  $\frac{10}{9}$

410. Three numbers are in Arithmetic progression (AP) whose sum is 30 and the product is 910. Then the greatest number in the AP is  
(a) 17 (b) 15 (c) 13 (d) 10

(SSC CGL Mains Exam 2016)



411. Twenty one times of a positive number is less than its square by 100. The value of the positive number is

(SSC CGL Mains Exam 2016)

(a) 25 (b) 26 (c) 42 (d) 41

412. The smallest number, which should be added to 756896 so as to obtain a multiple of 11, is

(SSC CGL Mains Exam 2016)

(a) 1 (b) 2 (c) 3 (d) 5

413. The product of two number is 48. If one number equals "The number of wings of a bird plus 2 times the number of figure on your hand divided by the number of wheels of a Tricycle." Then the other number is

(SSC CGL Mains Exam 2016)

(a) 9 (b) 10 (c) 12 (d) 18



## ANSWER KEY

1. (d)	43. (b)	85. (b)	127. (d)	169. (c)	211. (b)	253. (b)	295. (d)	337. (d)	379. (a)
2. (a)	44. (c)	86. (d)	128. (b)	170. (d)	212. (c)	254. (a)	296. (a)	338. (c)	380. (c)
3. (b)	45. (c)	87. (c)	129. (c)	171. (a)	213. (c)	255. (d)	297. (a)	339. (b)	381. (a)
4. (a)	46. (c)	88. (b)	130. (b)	172. (d)	214. (b)	256. (b)	298. (c)	340. (a)	382. (b)
5. (d)	47. (c)	89. (b)	131. (d)	173. (d)	215. (a)	257. (d)	299. (d)	341. (a)	383. (b)
6. (c)	48. (c)	90. (b)	132. (b)	174. (b)	216. (c)	258. (d)	300. (a)	342. (c)	384. (a)
7. (c)	49. (b)	91. (b)	133. (d)	175. (c)	217. (b)	259. (d)	301. (d)	343. (a)	385. (a)
8. (a)	50. (c)	92. (a)	134. (d)	176. (b)	218. (c)	260. (d)	302. (a)	344. (a)	386. (c)
9. (c)	51. (d)	93. (c)	135. (b)	177. (d)	219. (c)	261. (b)	303. (b)	345. (b)	387. (c)
10. (a)	52. (b)	94. (d)	136. (c)	178. (c)	220. (d)	262. (a)	304. (c)	346. (c)	388. (d)
11. (d)	53. (b)	95. (b)	137. (b)	179. (d)	221. (d)	263. (a)	305. (b)	347. (c)	389. (b)
12. (a)	54. (b)	96. (c)	138. (d)	180. (d)	222. (d)	264. (d)	306. (a)	348. (c)	390. (c)
13. (a)	55. (b)	97. (a)	139. (b)	181. (c)	223. (b)	265. (b)	307. (b)	349. (a)	391. (b)
14. (a)	56. (b)	98. (d)	140. (c)	182. (c)	224. (a)	266. (c)	308. (a)	350. (c)	392. (a)
15. (a)	57. (d)	99. (c)	141. (d)	183. (b)	225. (a)	267. (c)	309. (b)	351. (d)	393. (a)
16. (a)	58. (a)	100. (b)	142. (b)	184. (c)	226. (b)	268. (b)	310. (c)	352. (d)	394. (d)
17. (a)	59. (b)	101. (b)	143. (b)	185. (a)	227. (d)	269. (a)	311. (b)	353. (d)	395. (c)
18. (c)	60. (b)	102. (c)	144. (d)	186. (d)	228. (c)	270. (d)	312. (c)	354. (a)	396. (d)
19. (b)	61. (b)	103. (d)	145. (b)	187. (b)	229. (c)	271. (b)	313. (b)	355. (b)	397. (c)
20. (a)	62. (a)	104. (b)	146. (d)	188. (c)	230. (a)	272. (b)	314. (d)	356. (b)	398. (d)
21. (c)	63. (b)	105. (a)	147. (a)	189. (c)	231. (b)	273. (c)	315. (d)	357. (d)	399. (d)
22. (c)	64. (b)	106. (b)	148. (a)	190. (c)	232. (b)	274. (c)	316. (c)	358. (a)	400. (a)
23. (c)	65. (c)	107. (c)	149. (d)	191. (a)	233. (d)	275. (b)	317. (d)	359. (b)	401. (c)
24. (d)	66. (d)	108. (c)	150. (d)	192. (b)	234. (d)	276. (a)	318. (b)	360. (b)	402. (a)
25. (d)	67. (b)	109. (c)	151. (a)	193. (a)	235. (d)	277. (d)	319. (c)	361. (b)	403. (d)
26. (d)	68. (a)	110. (c)	152. (b)	194. (a)	236. (a)	278. (a)	320. (b)	362. (c)	404. (d)
27. (a)	69. (b)	111. (b)	153. (c)	195. (a)	237. (d)	279. (d)	321. (d)	363. (c)	405. (a)
28. (c)	70. (c)	112. (c)	154. (b)	196. (d)	238. (c)	280. (b)	322. (b)	364. (a)	406. (b)
29. (c)	71. (c)	113. (b)	155. (c)	197. (d)	239. (b)	281. (b)	323. (b)	365. (d)	407. (c)
30. (c)	72. (d)	114. (d)	156. (c)	198. (b)	240. (c)	282. (b)	324. (c)	366. (c)	408. (a)
31. (d)	73. (d)	115. (b)	157. (d)	199. (a)	241. (b)	283. (a)	325. (b)	367. (b)	409. (b)
32. (a)	74. (b)	116. (c)	158. (c)	200. (b)	242. (b)	284. (a)	326. (a)	368. (a)	410. (c)
33. (b)	75. (d)	117. (d)	159. (a)	201. (d)	243. (c)	285. (b)	327. (b)	369. (b)	411. (a)
34. (c)	76. (b)	118. (a)	160. (d)	202. (c)	244. (c)	286. (b)	328. (a)	370. (a)	412. (c)
35. (d)	77. (a)	119. (b)	161. (b)	203. (d)	245. (b)	287. (b)	329. (a)	371. (b)	413. (c)
36. (b)	78. (d)	120. (d)	162. (b)	204. (b)	246. (b)	288. (c)	330. (b)	372. (d)	
37. (b)	79. (b)	121. (b)	163. (a)	205. (d)	247. (c)	289. (b)	331. (a)	373. (d)	
38. (c)	80. (d)	122. (a)	164. (c)	206. (a)	248. (b)	290. (a)	332. (c)	374. (c)	
39. (d)	81. (a)	123. (c)	165. (c)	207. (b)	249. (a)	291. (d)	333. (c)	375. (a)	
40. (c)	82. (c)	124. (c)	166. (b)	208. (b)	250. (d)	292. (d)	334. (c)	376. (c)	
41. (c)	83. (b)	125. (a)	167. (a)	209. (a)	251. (b)	293. (d)	335. (c)	377. (c)	
42. (d)	84. (d)	126. (a)	168. (b)	210. (c)	252. (a)	294. (c)	336. (c)	378. (d)	



# EXPLANATION

1. (d)  $\frac{7}{6}, \frac{7}{9}, \frac{4}{5}, \frac{5}{7}$

**Setp 1:** Compare two fractions

$$\frac{7}{6} \times \frac{7}{9}$$

Cross multiply

$$\begin{array}{cc} 63 & 42 \\ \uparrow & \uparrow \\ \frac{7}{6} & \times \frac{7}{9} \end{array}$$

42 is smaller than 63

So,  $\frac{7}{9}$  is smaller than  $\frac{7}{6}$

**Setp 2:** Compare

(i)  $\frac{7}{9}, \frac{4}{5}$

(ii)  $\frac{7}{9} \times \frac{4}{5}$

Cross multiply it

$$\begin{array}{cc} 35 & 36 \\ \uparrow & \uparrow \\ \frac{7}{9} & \times \frac{4}{5} \end{array}$$

35 is smaller than 36

So,  $\frac{7}{9}$  is smaller than  $\frac{4}{5}$

**Setp 3:** compare

(i)  $\frac{7}{9}, \frac{5}{7}$

(ii)  $\frac{7}{9} \times \frac{5}{7}$

Cross multiply it

$$\begin{array}{cc} 49 & 45 \\ \uparrow & \uparrow \\ \frac{7}{9} & \times \frac{5}{7} \end{array}$$

45 is smaller than 49

So  $\frac{5}{7}$  is the smallest.

**Alternate**

$$\frac{7}{6} = 1.166, \frac{7}{9} = 0.777$$

$$\frac{4}{5} = 0.8, \frac{5}{7} = 0.714$$

Thus,  $\frac{5}{7}$  is the smallest.

2. (a)  $997 = (1000 - 3)^3$   
 $= 1000000000 - 27$   
 $- 3 \times 1000 \times 3 (1000 - 3)$   
 $= 1000000000 - 27 - 9000000$   
 $+ 27000 = 991026973$

3. (b)  $\frac{\text{Remainder}}{29} = \frac{63}{29}$

$$\Rightarrow \text{remainder} = 5$$

4. (a)  $\frac{9^6 - 11}{8}$

$$\Rightarrow \frac{9^6 - 11}{8}$$

$$\Rightarrow \frac{(8+1)^6 - 11}{8}$$

$$\Rightarrow \frac{1-3}{8} = \frac{-2}{8}$$

$$\Rightarrow \text{remainder} = 8 - 2 = 6$$

5. (d)  $(49)^{15} - 1$

$(x^n - a^n)$  is exactly divisible by  $(x - a)$

$49 - 1 = 48$  and 48 is multiple of 8. So 8 is answer.

6. (c)  $\frac{5+4+3+2+x+7}{9} = \frac{21+x}{9}$

put the value of 'x'. So the number is completely divisible by 9.

Put  $x = 6$ ,

$$= \frac{21+6}{9} = \frac{27}{9} = '0' \text{ remainder}$$

**Property**

A number is completely divisible by 9 if the sum of the digits of the number is completely divisible by 9 and gives no remainder.

7. (c) According to question

$$\frac{1}{4} \text{ of the tank} = 135 \text{ litres.}$$

$$\text{tank} = 135 \times \frac{4}{1} = 540 \text{ litres}$$

$$180 \text{ litres} = \frac{180}{540} = \frac{1}{3} \text{ part}$$

8. (a)  $\frac{2}{3} \times \frac{1}{2} \times 369 = 123$

9. (c) let the number be 'x'  
According to question,

$$\frac{1}{5}x - \frac{1}{7}x = 10$$

$$\frac{7x-5x}{35} = 10$$

$$2x = 350$$

$$x = \frac{350}{2}$$

$$x = 175$$

10. (a) Take L.C.M of 5,9,4 = 180  
let the total students are 180  
No. of girls

$$= \frac{3}{5} \times 180 = 108$$

No. of boys

$$= 180 - 108 = 72$$

No. of girls who are absent

$$= \frac{2}{9} \times 108 = 24$$

No. of boys who are absent

$$= \frac{1}{4} \times 72 = 18$$

Total no. of absent students

$$= 24 + 18 = 42$$

No. of present students

$$= 180 - 42 = 138$$

Part of the present students

$$= \frac{138}{180} = \frac{23}{30}$$

11. (d)  $\frac{2}{3} : \frac{3}{5} = 5 \text{ units}$

$$5 \text{ units} = 85 \text{ m}$$

$$1 \text{ unit} = \frac{85}{5} = 17 \text{ m}$$

$$3 \text{ units} = 17 \times 3 = 51 \text{ m}$$

12. (a)  $\frac{2}{5} = 0.40$   $\frac{4}{9} = 0.44$

$$\frac{3}{7} = 0.43$$

$$\frac{2}{3} = 0.66$$

$$\frac{4}{5} = 0.80$$

$$\frac{1}{2} = 0.50$$

Clearly,  $\frac{3}{7}$  lies between  $\frac{2}{5}$  and  $\frac{4}{9}$

13. (a)  $\frac{2}{3} \times \frac{3}{4} \times n$  (n is a number)

$$= \frac{1}{2} n$$

14. (a) Let the number is = x  
According to question

$$3x - \frac{3}{5}x = 60$$

$$15x - 3x = 60 \times 5$$

$$12x = 300$$

$$x = 25$$



15. (a) Let the total income is  
spend on food

$$= \frac{1}{4} \times 12x = 3x$$

spend on rent

$$= \frac{2}{3} \times 12x = 8x$$

Remaining income

$$= 12x - 3x - 8x = x$$

$$x = 630$$

spend on rent

$$(8x) = 630 \times 8 = \text{₹}5040$$

16. (a)  $1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{7} + \frac{1}{14} + \frac{1}{28}$

$$\frac{28+14+7+4+2+1}{28} = \frac{56}{28} = 2$$

17. (a)  $(264)^{102} + (264)^{103}$

unit digit

$$4^1 \rightarrow 4 \rightarrow 4$$

$$4^2 \rightarrow 16 \rightarrow 6$$

$$4^3 \rightarrow 64 \rightarrow 4$$

**Rule:** When 4 has odd power, then  
unit digit is: 4

When 4 has even power, then  
unit digit is 6

$$264^{102} + 264^{103}$$

$$\downarrow \quad \downarrow$$

$$4^{102} + 4^{103}$$

$$\text{unit digit} = 6 + 4 = 10 \rightarrow 0$$

(even power) (odd power)

**Alternate**

$$\Rightarrow (264)^{102} + (264)^{103}$$

$$\Rightarrow (264)^{102} (1 + 264)$$

$$\Rightarrow (264)^{102} \times 265$$

Multiple of 5 & 2

So, unit digit is 0.

18. (c)  $x = \text{any odd number}$

According to the question,

$$(x) + (x+2) + (x+4) = 147$$

$$3x + 6 = 147$$

$$x = \frac{141}{3} = 47$$

Middle number  $(x+2) = 47 + 2 = 49$

**Alternate**

If you have the sum of consecutive odd numbers divided by the total numbers of number, we get middle number.

$$\frac{147}{3} = 49 \text{ is a middle no.}$$

19. (b) By option, Only (b) is the same answer

$$(8+2) + (7-2) + (10 \times 2) + \left(\frac{20}{2}\right)$$

$$10 + 5 + 20 + 10 = 45$$

(hence proved)

20. (a) Let one number is  $x$

According to question,

$$x + y = 40$$

$$xy = 375$$

$$\Rightarrow \frac{1}{x} + \frac{1}{y} = \frac{y+x}{xy}$$

$$\Rightarrow \frac{40}{375} = \frac{8}{75}$$

21. (c)  $(x) + (x+6) + (x+12) = 63$

$$3x + 18 = 63$$

$$3x = 45$$

$$x = 15$$

$$\text{So, largest no.} = 15 + 12 = 27$$

22. (c) Let the number is ' $x$ '

According to question

$$3(2x+9) = 75$$

$$2x + 9 = 25$$

$$x = \frac{16}{2} = 8$$

23. (c)  $5 * 7 = 5 + 7 - 5 \times 7$   
 $= 12 - 35 = -23$

24. (d) Smallest number in case of decimal = **0.001**

25. (d)  $\frac{1}{0.04} = \frac{100}{4} = 25$

26. (d)  $(xyz \ xyz)$  is number

$$\Rightarrow 100000x + 10000y + 1000z + 100x + 10y + z$$

$$\Rightarrow 1001(100x + 10y + z)$$

Since 1001 has factors **11**, 11 and 13

So answer is **1001**

$$27. (a) \begin{array}{r} 45 \overline{) 1000} \phantom{00} \\ \underline{90} \phantom{00} \\ 100 \phantom{00} \\ \underline{90} \phantom{00} \\ 10 \end{array}$$

So, Smallest number of be added is

$$45 - 10 = 35$$

28. (c)  $17^{200} \div 18$

$$\Rightarrow (18-1)^{200} \div 18$$

Apply Binomial theorem

$$\Rightarrow (18)^{200} (-1)^0 + (18)^{199} (-1)^1 + \dots + (18)^1 (-1)^{199} + (18)^0 (-1)^{200}$$

$\Rightarrow$  Remainder always comes

from last term is

$$(18)^0 (-1)^{200}$$

$$\Rightarrow \frac{(18)^0 (-1)^{200}}{18} = 1 \times 1^{200} = 1$$

$\therefore$  Remainder = 1

29. (c) It must be divisible by  $(11 \times 13)$

- 30 (c)  $\overbrace{5 \ 8 \ 2 \ 4}^*$

$$\Rightarrow 5 + 2 + * = 8 + 4$$

$$7 + * = 12$$

$$* = 12 - 7 = 5$$

**Property**

A number will be exactly divisible by 11 when the difference of the sum of odd place digits and even place digits is zero or divisible by 11.

31. (d)  $\frac{1}{2}$  of 1%

$$\Rightarrow \frac{1}{2} \times \frac{1}{100} = \frac{1}{200} = 0.005$$

32. (a) Remaining distance to be

$$\text{run} = 5 - \frac{5}{4}$$

$$= \frac{20-5}{4} = \frac{15}{4} \text{ laps}$$

- 33 (b)  $[(251)^{98} + (21)^{29} - (106)^{100} + (705)^{35} - (16)^4 + (259)]$

unit place of 1, 5 and 6 will remain same

there is no change, they will be 1, 5 and 6.

$$[(1)^{98} + (1)^{29} - (6)^{100} + (5)^{35} - (6)^4 + 9]$$

$$[1 + 1 - 6 + 5 - 6 + 9]$$

$$16 - 12 = 4$$

34. (c) 1, 3, 5, 7 ..... 20th term

$$a = 1, d = 2, n = 20$$

$$\text{sum} = \frac{n}{2} [2a + (n-1)d]$$

$$= \frac{20}{2} [2 \times 1 + (20-1)2]$$

$$= 10[2 \times 1 + 19 \times 2] = 400$$

**Alternate**

The sum of first  $n$  odd natural numbers =  $n^2 = 20^2 = 400$

35. (d) Sum of all natural numbers upto 97 - Sum of all natural numbers upto 74.

The sum of  $n$  natural numbers

$$\Rightarrow \frac{n(n+1)}{2} \text{ (formula)}$$

$$= \frac{97 \times 98}{2} - \frac{74 \times 75}{2}$$

$$= 4753 - 2775 = 1978$$



So  $\frac{14}{53}$  is smallest



52. (b) Dividend = (divisor  $\times$  quotient) + Remainder

According to question

$$\text{Divisor} = 16 \times 25 = 5 \times R$$

$$\Rightarrow R = \frac{1}{5} \times 16 \times 25$$

Dividend

$$= [(16 \times 25) \times 16] + \frac{1}{5} \times 16 \times 25$$

$$= [16 \times 25 \times 16] + 80$$

$$= 6480$$

53. (b) Let  $x$  and  $y$  are two numbers ( $x > y$ )

According to question

$$xy = 11520 \quad \dots\dots(i)$$

$$\frac{x}{y} = \frac{9}{5} \Rightarrow \boxed{x = \frac{9y}{5}}$$

Put value of  $x$  in eq. (i)

$$\Rightarrow \frac{9y}{5} \times y = 11520 \Rightarrow y^2 = 6400$$

$$\Rightarrow \boxed{y = 80}$$

$$\Rightarrow 80x = 11520 \Rightarrow \boxed{x = 144}$$

$$x - y = 144 - 80 = 64 \text{ Ans.}$$

54. (b)  $\frac{\text{remainder}}{8} = \frac{29}{8}$

$$\text{Remainder} = 5$$

55. (b) According to question,

$$\frac{3}{2}x - \frac{2}{3}x = 10$$

$$\frac{9x - 4x}{6} = 10$$

$$5x = 60$$

$$\Rightarrow x = 12$$

56. (b) since 13 is factor of 52. so divide its remainder directly by 13

$$\Rightarrow \frac{\text{remainder}}{13} = \frac{45}{13} \Rightarrow \text{remainder} = 6$$

57. (d) According to question

$$\left(\frac{2}{3} \text{ of } \frac{13}{4}\right) - \frac{3}{4} \text{ of } \left(\frac{9}{4} - \frac{5}{3}\right)$$

$$\Rightarrow \left(\frac{2}{3} \times \frac{13}{4}\right) - \frac{3}{4} \times \left(\frac{27 - 20}{12}\right)$$

$$\Rightarrow \frac{13}{6} - \frac{3}{4} \times \frac{7}{12}$$

$$\Rightarrow \frac{13}{6} - \frac{7}{16} \Rightarrow \frac{104 - 21}{48} = \frac{83}{48}$$

58. (a) Let the number multiplied by  $x$

$$x \times 0.022 = 66$$

$$x = \frac{66}{0.022} \times 1000 = 3000$$

59. (b)  $0.34676767\dots + 0.13333333\dots$

$$= 0.480101\dots$$

$$= 0.480\overline{1}$$

60. (b) 12 month's salary = Rs. 90 + shirt

9 month's salary

$$= (\text{Rs. } 90 + \text{shirt}) \times \frac{9}{12}$$

$$= 90 \times \frac{3}{4} + \frac{3}{4} \text{ shirt}$$

$$65 + \text{shirt} = \frac{135}{2} + \frac{3}{4} \text{ shirt}$$

$$2.5 = \frac{1}{4} \text{ shirt}$$

$$\text{shirt} = \text{Rs. } 10$$

61. (b) Let  $x$  and  $y$  are two fractions  
According to question

$$x \cdot y = \frac{14}{15} \quad \dots(i)$$

( $x > y$ ,  $x$  and  $y$  are 2 different fractions)

$$\frac{x}{y} = \frac{35}{24}$$

$$y = \frac{24x}{35}$$

Put in eq. (i)

$$x \times \frac{24}{35}x = \frac{14}{15} \Rightarrow x^2 = \frac{49}{36} \Rightarrow x = \frac{7}{6}$$

$$y = \frac{24}{35} \times \frac{7}{6} = \frac{4}{5}$$

$x$  is greater fraction

62. (a) According to the question

$$\frac{x}{y} + \frac{4}{7} = \frac{15}{14} \text{ (let } \frac{x}{y} \text{ is fraction)}$$

$$\frac{x}{y} = \frac{15}{14} - \frac{4}{7} = \frac{15 - 8}{14} = \frac{7}{14} = \frac{1}{2}$$

$$\text{Part} = \frac{\frac{1}{2}}{\frac{4}{7}} = \frac{1}{2} \times \frac{7}{4} = \frac{7}{8}$$

63. (b)  $\frac{4}{5}$  of an estate = 16800

$$1 \text{ of an estate} = 16800 \times \frac{5}{4} = 21,000$$

$$\frac{3}{7} \text{ of an estate} = 21000 \times \frac{3}{7} = \text{₹}9000$$

64. (b) let the fraction be  $\frac{x}{y}$

According to question

$$\frac{7x}{6y} - \frac{6x}{7y} = \frac{13}{70}$$

$$\frac{49x - 36x}{42y} = \frac{13}{70}$$

$$\frac{13x}{42y} = \frac{13}{70} \Rightarrow \frac{x}{y} = \frac{42}{70} = \frac{3}{5}$$

65. (c) let the number be  $x$

According to question,

$$\frac{1}{2} \text{ of } \frac{3}{4} \text{ of } x = \frac{5}{2} \text{ of } 10$$

$$\frac{1}{2} \times \frac{3}{4} \times x = \frac{5}{2} \times 10$$

$$x = \frac{200}{3} = 66\frac{2}{3}$$

66. (d) let the number be  $x$   
According to question,

$$\frac{1}{3} \times \frac{1}{4} \times x = 15$$

$$\Rightarrow x = 15 \times 12$$

$$\Rightarrow \frac{3}{10} \text{ of } x \Rightarrow 15 \times 12 \times \frac{3}{10} = 54$$

67. (b) 45 minutes =  $\frac{3}{4}$  of hour

So fraction for one day is

$$\Rightarrow \frac{\frac{3}{4}}{24} \Rightarrow \frac{3}{4 \times 24} = \frac{1}{32}$$

68. (a) Let the fraction be  $= \frac{x}{y}$

According to question

$$\frac{x}{y+1} = \frac{1}{2} \Rightarrow 2x = y+1 \Rightarrow 2x - y = 1 \quad \dots(i)$$

$$\frac{x+1}{y} = 1 \Rightarrow x+1 = y \quad \dots(ii)$$

From eq (i) + (ii)

$$x = 2 \text{ \& } y = 3$$

$$x \times y = 2 \times 3 = 6 \text{ Ans.}$$

69. (b) let the number be  $x$

According to question

$$\frac{5}{6}x - \frac{5}{16}x = 250$$

$$\frac{40x - 15x}{48} = 250$$

$$25x = 250 \times 48$$

$$x = \frac{250 \times 48}{25} = 480$$

70. (c)

$$\frac{1}{20} + \frac{1}{30} + \frac{1}{42} + \frac{1}{56} + \frac{1}{72} + \frac{1}{90} + \frac{1}{110} + \frac{1}{132}$$

$$\Rightarrow \left(\frac{1}{4 \times 5}\right) + \left(\frac{1}{5 \times 6}\right) + \left(\frac{1}{6 \times 7}\right) \dots + \left(\frac{1}{11 \times 12}\right)$$

$$\Rightarrow \left(\frac{1}{4} - \frac{1}{5}\right) + \left(\frac{1}{5} - \frac{1}{6}\right) + \left(\frac{1}{6} - \frac{1}{7}\right) \dots + \left(\frac{1}{11} - \frac{1}{12}\right)$$

$$\Rightarrow \frac{1}{4} - \frac{1}{5} + \frac{1}{5} - \frac{1}{6} + \frac{1}{6} - \frac{1}{7} \dots + \frac{1}{11} - \frac{1}{12}$$

$$\Rightarrow \frac{1}{4} - \frac{1}{12} = \frac{3-1}{12} = \frac{2}{12} = \frac{1}{6}$$

71. (c)  $\frac{4}{5}, \frac{7}{8}, \frac{6}{7}, \frac{5}{6}$

$$\frac{4}{5} = 0.80, \frac{7}{8} = 0.87$$

$$\frac{6}{7} = 0.85, \frac{5}{6} = 0.83$$

$$\Rightarrow \frac{4}{5} < \frac{5}{6} < \frac{6}{7} < \frac{7}{8}$$



72. (d) let the smallest no. =  $x$   
 According to question  
 $x + (x + 2) + (x + 4) = 87$   
 $3x + 6 = 87$   
 $3x = 81$   
 $x = 27$

**Alternate**

sum of three consecutive odd natural number =  $\frac{87}{3}$   
 Total odd natural no. = 29 (middle no.)  
 Here no. is 27, 29, 31  
 in option 27 is smallest no.

73. (d)  $x + (x + 2) + (x + 4) = 54$   
 $3x + 6 = 54$   
 $3x = 48$   
 $x = 16$

**Alternate**

$$\text{Middle no.} = \frac{54}{3} = 18$$

Then, number is 16, 18, 20  
 Smallest no. is = 16

74. (b) let the three consecutive no. is  $x, x+1, x+2$   
 According to question,  
 $x + (x + 1) + (x + 2) = 87$   
 $3x + 3 = 87$   
 $3x = 84$   
 $x = 28$

$$\text{Middle no.}(x + 1) = 28 + 1 = 29$$

**Alternate**

$$\text{Middle number} = \frac{87}{3} = 29$$

75. (d)  $8.3\bar{1} = \frac{831 - 83}{90} = \frac{748}{90}$

$$0.\bar{6} = \frac{6}{9}$$

$$0.00\bar{2} = \frac{2}{900}$$

$$\text{Now, } 8.3\bar{1} + 0.\bar{6} + 0.00\bar{2}$$

$$\Rightarrow \frac{748}{90} + \frac{6}{9} + \frac{2}{900}$$

$$= \frac{8082}{900} = 8\frac{882}{900} = 8\frac{979 - 97}{900} = 8.97\bar{9}$$

76. (b)  $3 + 6 + 9 + \dots + 48$

$$a = 3, d = 3, n = \frac{48}{3} = 16$$

$$S_n = \frac{n}{2} [2a + (n - 1)d]$$

$$= \frac{16}{2} [2 \times 3 + (16 - 1)3]$$

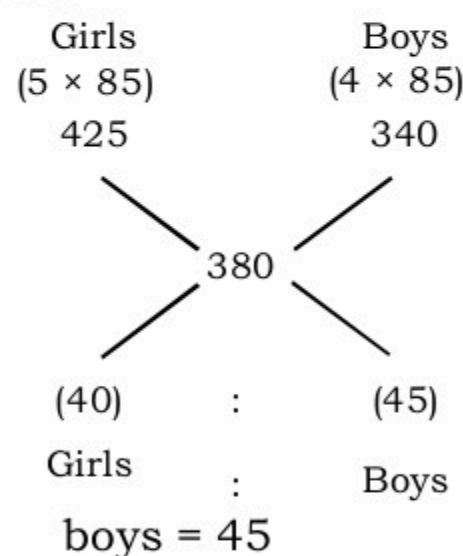
$$= 8 [6 + 45] = 8 \times 51 = 408$$

77. (a) By hit and trial method.  
 Select option a =  $8961 + 27$   
 $= 8988$   
 $=$  Which is completely divisible by 84.

78. (d) let the number of boys be ' $x$ '  
 So, number of girls will be  $(85 - x)$

$$\begin{aligned} \text{According to question} \\ 4x + 5(85 - x) &= 380 \\ 4x + 425 - 5x &= 380 \\ x &= 45 \end{aligned}$$

**Alternate:-**



79. (b) let the one number is  $x$   
 and other number will be  $= 4x$

According to question

$$\Rightarrow (4x)(x) = 2500$$

$$4x^2 = 2500$$

$$x^2 = 625$$

$$\text{I}^{\text{st}} \text{ no.} \rightarrow x = 25$$

$$\text{II}^{\text{st}} \text{ no.} \rightarrow 4x = 4 \times 25 = 100$$

$$\text{sum} = 100 + 25 = 125$$

80. (d)  $\frac{6}{7}, \frac{5}{6}, \frac{7}{8}, \frac{4}{5}$

$$\frac{6}{7} = 0.85 \quad \frac{5}{6} = 0.83$$

$$\frac{7}{8} = 0.87 \quad \frac{4}{5} = 0.80$$

$$\frac{7}{8} \text{ is largest}$$

**Shortcut Method**

**Explanation**

When the fractions are given in this order when the difference between the numerator and denominator is same so largest fraction will be largest numerator fraction and the smallest will be smallest numerator fraction.

**Note:** fraction should be in the order where denominator will be larger than Numerator. In this question : largest is  $\frac{7}{8}$  and

smallest is  $\frac{4}{5}$ .

81. (a)  $\frac{\text{remainder of no.}}{37} = \frac{75}{37}$   
 remainder = 1

82. (c) Number is divided successively

$$\begin{array}{r} \text{Remainder} \\ 4 \overline{) 37} \quad 1 \\ \underline{5} \quad 9 \quad 4 \\ \underline{1} \quad 5 \times 1 + 4 = 9 \\ 9 \times 4 + 1 = 37 \end{array}$$

Number is 37

$$\begin{array}{r} 5 \overline{) 37} \quad 2 \\ \underline{4} \quad 7 \quad 3 \\ \underline{1} \end{array}$$

Remainder is 2, 3

83. (b)  $\begin{array}{c} \text{Divisor} \overline{) \text{Dividend}} \text{Quotient} \\ \underline{\phantom{00}} \\ \text{Remainder} \end{array}$

According to question

$$\begin{array}{r} 12 \overline{) \text{Dividend}} \quad 3 \\ \underline{\phantom{00}} \\ 4 \end{array}$$

Dividend is: (Divisor  $\times$  Quotient) + Remainder  
 $= (12 \times 3) + 4 = 40$

84. (d) Let the total member on picnic party =  $x$

Each member contributed =  $2x$

According to question

$$(2x)(x) = 3042$$

$$2x^2 = 3042$$

$$x^2 = 1521$$

$$x = 39$$

85. (b) No. will be

$$\begin{array}{c} 7, 14, \dots, 196 \\ \downarrow \qquad \qquad \downarrow \end{array}$$

(First term) (Last term)  
 No. of terms

$$= \frac{\text{Last term} - \text{first term}}{\text{difference}} + 1$$

$$\Rightarrow \frac{196 - 7}{7} + 1$$

$$\Rightarrow \frac{189}{7} + 1 \Rightarrow 27 + 1 = 28 \text{ Ans.}$$

86. (d)  $\frac{60 \times (60 + 1)}{2} = \frac{60 \times 61}{2} = 30 \times 61$

It is divisible by 61

87. (c)  $\frac{3.157 \times 4126 \times 3.198}{63.972 \times 2835.121} = 0.22$

$\Rightarrow$  Closest value = 0.2 (approx.)



$$88. (b) 25^{12} \times 10^7 \times 14^7$$

$$= 5^{24} \times (2 \times 5)^7 \times (2 \times 7)^7$$

$$= 5^{24+7} \times 2^{7+7} \times 7^7 = 5^{31} \times 2^{14} \times 7^7$$

number of prime factors

$$= 31 + 14 + 7 = 52$$

$$89. (b) 4^{61} + 4^{62} + 4^{63} + 4^{64}$$

$$\Rightarrow 4^{61}(4^0 + 4^1 + 4^2 + 4^3)$$

$$\Rightarrow 4^{61}(1 + 4 + 16 + 64)$$

$$\Rightarrow 4^{61} \times 85$$

$$\Rightarrow 4^{60} \times 340$$

$$\Rightarrow \text{It is divisible by 10.}$$

$$90. (b) \text{ let number} = x$$

According to question

$$x - \frac{1}{5}x = 20$$

$$5x - x = 20 \times 5$$

$$4x = 100$$

$$x = 25$$

**Alternate:-**

$$\frac{1}{5} \rightarrow \text{Result}$$

$$\frac{1}{5} \rightarrow \text{Original no.}$$

$$4 \text{ units} \rightarrow 20$$

$$1 \text{ unit} \rightarrow 5$$

$$\text{Original no.} = 5 \times 5 = 25$$

$$91. (b) \text{ Let no. be } x$$

According to question

$$\frac{2}{3}x = \frac{25}{216} \times \frac{1}{x}$$

$$x^2 = \frac{25}{216} \times \frac{3}{2} \Rightarrow \frac{25}{144}$$

$$x = \sqrt{\frac{25}{144}} = \frac{5}{12} \text{ Ans.}$$

$$92. (a) 0.1 = \frac{1}{10} \text{ (mud)}$$

$$\frac{5}{8} \text{ (water)}$$

$$\text{let total length of Bamboo} = 40x$$

(LCM of 8 and 10)

$$\text{Mud part} = \frac{1}{10} \times 40x = 4x$$

$$\text{water part} = \frac{5}{8} \times 40x = 25x$$

$$\text{Remaining part} = (40x - 25x - 4x)$$

$$= 11x$$

$$11x \rightarrow 2.75 \text{ m}$$

$$x \rightarrow 0.25 \text{ m}$$

$$40x \rightarrow 10 \text{ m}$$

$$93. (c) \text{ let total income is } 15x \text{ (LCM of 3 and 5)}$$

spend on food

$$= \frac{1}{3} \times 15x = 5x$$

spend on rent

$$= \frac{2}{5} \times 15x = 6x$$

spend on clothes

$$= \frac{1}{5} \times 15x = 3x$$

Income left

$$= 15x - (5 + 6 + 3)x$$

$$= 15x - 14x = x$$

$$x = 400$$

$$15x = \text{Rs. 6000}$$

$$\text{Income} = \text{Rs. 6000}$$

$$94. (d) 0.\overline{47} = \frac{47}{99}$$

$$95. (b) \frac{6}{7/8} = \frac{6 \times 8}{7} = \frac{48}{7}$$

$$\frac{6/7}{8} = \frac{6}{7 \times 8} = \frac{6}{56} = \frac{3}{28}$$

$$\text{Diff:- } \frac{48}{7} - \frac{3}{28}$$

$$\frac{192 - 3}{28} = \frac{189}{28} = \frac{27}{4} = 6\frac{3}{4}$$

$$96. (c) \frac{3}{5}, \frac{7}{9}, \frac{11}{13}$$

As per description made in Q-80 we can spot Answer directly as it satisfies all condition

$$\frac{11}{13} > \frac{7}{9} > \frac{3}{5}$$

**Alternate**

$$\frac{3}{5} = 0.60, \frac{7}{9} = 0.7, \frac{11}{13} = 0.8$$

$$\frac{11}{13} > \frac{7}{9} > \frac{3}{5}$$

$$97. (a) 81 \times 82 \times 83 \dots \times 89$$

take unit digit multiply

$$1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8 \times 9 = 0$$

Since there is 5 and 2 are present

So unit digit will always be

$$98. (d) (2137)^{754}$$

$$= (7)^{754} \text{ will give unit digit}$$

$7^1 = 7$	$\rightarrow 7$	So divide = $\frac{754}{4}$
$7^2 = 49$	$\rightarrow 9$	
$7^3 = 343$	$\rightarrow 3$	
$7^4 = 2401$	$\rightarrow 1$	
$7^5 = 16807$	$\rightarrow 7$	

= remainder is 2  
 $7^2 = 9$

& will repeat

$$\text{Unit Place} = 9$$

$$99. (c) \text{ let first even number is}$$

$$\text{and II}^{\text{nd}} \text{ even no. is}$$

According to question

$$(x + 2)^2 - x^2 = 84$$

$$(x + 2 - x)(x + 2 + x) = 84$$

$$2(2x + 2) = 84$$

$$2x + 2 = 42$$

$$2x = 40$$

$$x = 20$$

$$\text{next no.} = 20 + 2 = 22$$

$$\text{sum} = 20 + 22 = 42$$

$$100. (b) (1 \times 2) \times 3$$

According to question

$$= (1 + 6 \times 2) + 6 \times 3$$

$$= 13 + 18$$

$$= 31$$

$$101. (b) \left(999\frac{995}{999}\right) \times 999$$

$$= \left(999 + \frac{995}{999}\right) \times 999$$

$$= \left((1000 - 1) + \frac{995}{999}\right) \times 999$$

$$= 999000 - 999 + 995$$

$$= 999000 - 4 = 998996$$

$$102. (c)$$

$$\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{4}\right)\left(1 - \frac{1}{5}\right) \dots \left(1 - \frac{1}{99}\right)\left(1 - \frac{1}{100}\right)$$

$$= \frac{2}{3} \times \frac{3}{4} \times \frac{4}{5} \dots \frac{98}{99} \times \frac{99}{100}$$

$$= \frac{2}{100} = \frac{1}{50}$$

$$103. (d) \text{ Let ten's digit number be}$$

$$\therefore \text{unit digit} = x + 2$$

Number

$$\Rightarrow 10x + x + 2$$

$$\Rightarrow 11x + 2 \dots (i)$$

According to question

$$(11x + 2)(x + x + 2) = 144$$

$$(11x + 2)(2x + 2) = 144$$

$$(11x + 2)(x + 1) = 72$$

$$11x^2 + 13x - 70 = 0$$

$$11x^2 - 22x + 35x - 70 = 0$$

$$11x(x - 2) + 35(x - 2) = 0$$

$$(x - 2)(11x + 35) = 0$$

$$x = 2$$

$$\text{No. will be} = 11 \times 2 + 2 = 24$$

**Alternate:-**

In such type of questions take help from options to save your valuable time.

by option D Ist condition unit digit = 4 ten's digit = 2

$$\text{Some of digits} = 2 + 4 = 6$$

$$\text{IInd condition } 24 \times 6 = 144$$

$$104. (b) \text{ let number of correct answer is } a$$

$$\text{and no. of incorrect answer is } (20 - a)$$

According to question

$$a - (20 - a) = 8$$

$$a - 20 + a = 8$$

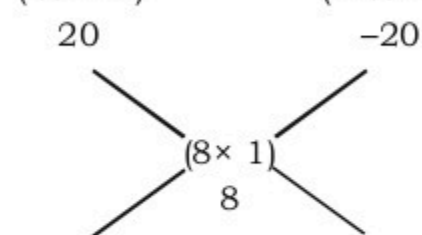
$$2a = 28$$

$$a = 14$$



**Alternate**

correct question (20 × 1)      wrong question (-20 × 1)



$$\begin{array}{r} 28 \quad 12 \\ 7 \quad : \quad 3 \rightarrow 10 \text{ Units} = 20 \\ \times 2 \downarrow \quad \times 2 \downarrow \quad 1 \text{ Unit} = 2 \\ 14 \quad : \quad 6 \\ \text{Correct answers} = 14 \end{array}$$

105. (a) Let number of boys =  $x$   
Number of 25 paise coins =  $x^2$   
According to question

$$\frac{x^2}{4} = 400$$

$$x^2 = 1600$$

$$x = 40 \text{ Ans.}$$

106. (b) let the number be  $x$   
According to question  
 $(3 \times x^2) - (4 \times x) = 50 + x \dots\dots(i)$   
 $3x^2 - 4x = 50 + x$   
 $3x^2 - 5x - 50 = 0$   
 $3x^2 - 15x + 10x - 50 = 0$   
 $3x(x - 5) + 10(x - 5) = 0$   
 $(x - 5)(3x + 10) = 0$

$$x = 5 \text{ or } -\frac{10}{3}$$

since the natural number is  $x = 5$

**Shortcut Method**

$$\Rightarrow 3x^2 - 4x = 50 + x \dots\dots(i)$$

Now put the value of  $x$  from option (b)

$$x = 5$$

$$3 \times (5)^2 - 4 \times 5 = 50 + 5$$

$$75 - 20 = 55$$

$$55 = 55$$

$$\text{LHS} = \text{RHS}$$

(it satisfies the conditions)

$$\text{So, } x = 5$$

107. (c) Let the two numbers are  $a$  and  $b$  ( $a > b$ )

According to Question

$$a - b = 3$$

$$a^2 + b^2 = 369$$

$$\Rightarrow (a - b)^2 = 9$$

Squaring both sides

$$(a - b)^2 = (3)^2$$

$$a^2 + b^2 - 2ab = 9$$

$$369 - 2ab = 9$$

$$-2ab = -360$$

$$2ab = 360$$

$$\Rightarrow (a + b)^2 = (a^2 + b^2) + 2ab$$

$$= 369 + 360$$

$$= 729$$

$$a + b = \sqrt{729} = 27$$

108. (c) Let the unit digit

$$\text{Ten digit} = x - 2$$

$$\therefore \text{Number} = 10(x - 2) + x$$

$$= 10x - 20 + x$$

$$= 11x - 20$$

New number obtained after reversing the digits

$$= 10x + x - 2 = 11x - 2$$

According to the question

$$3(11x - 20) + \frac{6}{7}(11x - 2) = 108$$

$$7(11x - 20) + 2(11x - 2) = 36 \times 7$$

$$77x - 140 + 22x - 4 = 252$$

$$99x = 252 + 144$$

$$x = \frac{396}{99} = 4$$

$$\text{Number} = 11x - 20 = 11 \times 4 - 20$$

$$= 24$$

Sum of digits

$$= 2 + 4 = 6$$

109. (c) No.  $\rightarrow$  I : II : III

$$1 : 2$$

$$3 : 1$$

$$\text{Ratio of no.} \rightarrow 3 : 6 : 2$$

According to question,

$$\frac{3x + 6x + 2x}{3} = 44$$

$$\Rightarrow 11x = 44 \times 3 \Rightarrow x = 12$$

Difference between first number and third number

$$(3x - 2x) = x = 12$$

110. (c)  $\left(1 + \frac{1}{2}\right)\left(1 + \frac{1}{3}\right)\left(1 + \frac{1}{4}\right) \dots \left(1 + \frac{1}{120}\right)$

$$= \frac{3}{2} \times \frac{4}{3} \times \frac{5}{4} \dots \frac{121}{120}$$

$$= \frac{121}{2} = 60.5 \text{ Ans.}$$

111. (b) Let the no. be ' $x$ '

Other no. be  $4x$

A.T.Q

$$(4x)(x) = 2500$$

$$4x^2 = 2500$$

$$x^2 = 625$$

$$x = 25$$

$$4x = 100$$

$$\text{Sum} \Rightarrow 100 + 25 = 125 \text{ Ans.}$$

112. (c) 803642

$$\text{odd place} = 8 + 3 + 4 = 15$$

$$\text{even place} = 0 + 6 + 2 = 8$$

$$\text{Difference} = 15 - 8 = 7$$

So, add 7 in the number in order to obtain a multiple of 11

113. (b)  $\frac{1}{5} + 999\frac{494}{495} \times 99$

$$\Rightarrow \frac{1}{5} + \left[999 + \frac{494}{495}\right] \times 99$$

$$\Rightarrow \frac{1}{5} + \left[999 + 1 - \frac{1}{495}\right] \times 99$$

$$\Rightarrow \frac{1}{5} + \left(1000 - \frac{1}{495}\right) \times 99$$

$$\Rightarrow \frac{1}{5} + 99000 - \frac{1}{5}$$

$$\Rightarrow 99000$$

$$114. (d) \begin{array}{r} 476 \overline{)10000} \left( 21 \right. \\ \underline{952} \phantom{00} \\ 480 \phantom{00} \\ \underline{476} \phantom{00} \\ 4 \end{array}$$

$$476 - 4 = 472 \text{ (add it to 10000)}$$

It will be divisible by 476

$$10,000 + 472 \Rightarrow 10472 \text{ Ans.}$$

115. (b)  $0.7 + \sqrt{0.16} = 0.7 + 0.4 = 1.1$

$$1.02 - \frac{0.6}{24} = 1.02 - 0.025 = 0.995$$

$$1.2 \times 0.83 = 0.996$$

$$\sqrt{1.44} = \sqrt{\frac{144}{100}} = \frac{12}{10} = 1.2$$

So,  $\sqrt{1.44}$  is greatest

116. (c) Let two number be

$x$  &  $y$  where  $x > y$

ATQ

$$x \cdot y = 9375 \dots \text{eq. (i)}$$

$$\frac{x}{y} = 15$$

$$x = 15y$$

Put this in eq. (i)

$$xy = 9375$$

$$15y \times y = 9375$$

$$y^2 = \frac{9375}{15} = 625$$



- $y = 25$   
 $x = 15 \times 25 = 375$   
 sum is  $25 + 375 = 400$  Ans.
117. (d)  $(3^{25} + 3^{26} + 3^{27} + 3^{28})$   
 $3^{25} (3^0 + 3^1 + 3^2 + 3^3)$   
 $3^{25} (1 + 3 + 9 + 27)$   
 $3^{25} \times 40 = 3^{24} \times 120$   
 Now, check with option  
 Only 30 can divide this.
118. (a) 6709  
 $\Rightarrow 6 + 7 + 0 + 9 = 22$   
 [9- (divisibility property) :-  
 Sum of digits must be divisible  
 by 9]  
 So  $22 + 5 = 27$  is divisible by 9  
 5 is answer
119. (b) LCM of 9 & 6 = 18  
 Multiple of 18 will be divisible  
 by both 9 & 6.  
 First no. = 108, Last no. = 198,  
 diff. = 18  
 No. of term  
 $= \frac{\text{Last no.} - \text{First No.}}{\text{diff.}} + 1$   
 $= \frac{198 - 108}{18} + 1$   
 $= \frac{90}{18} + 1 = 5 + 1 = 6$
120. (d)  $\overbrace{78*3945}^{78*3945}$   
 Odd place :  $7 + * + 9 + 5 = 21 + *$   
 Even place :  $8 + 3 + 4 = 15$   
 $(21 + *) - (15) = \text{either } 11 \text{ or } 0$   
 $(21 + *) - 15 = 11$   
 $21 + * = 26$   
 $* = 5$
121. (b) let the number be  
 According to question  
 $\frac{1}{9}x - \frac{1}{10}x = 4$   
 $\frac{10x - 9x}{90} = 4$   
 $x = 90 \times 4 = 360$
122. (a) let the total length of rod is  
 1 unit  
**According to question**  
 $\Rightarrow 1 - \frac{1}{10} - \frac{1}{20} - \frac{1}{30} - \frac{1}{40} - \frac{1}{50} - \frac{1}{60}$   
 $\Rightarrow \frac{600 - 60 - 30 - 20 - 15 - 12 - 10}{600}$   
 $\Rightarrow \frac{453}{600}$   $\leftarrow$  Violet part  
 $\Rightarrow 600$   $\leftarrow$  Total part  
 453 part  $\rightarrow 12.08$  mtr

- 1 part  $\rightarrow \frac{12.08}{453}$   
 600 part (total length)  
 $\rightarrow \frac{12.08}{453} \times 600 = 16$  mtr  
 $\therefore$  total length of rod is 16 mtr
123. (c)  $\frac{1}{3}, \frac{4}{7}, \frac{2}{5}$   
 $\frac{1}{3} = .33, \frac{4}{7} = 0.5, \frac{2}{5} = 0.4$   
 $\frac{1}{3} < \frac{2}{5} < \frac{4}{7}$
124. (c)  $(2153)^{167}$   
 unit digit =  $3^{167}$   
 unit digit  
 $3^1 \rightarrow 3 \rightarrow 3$   
 $3^2 \rightarrow 9 \rightarrow 9$   
 $3^3 \rightarrow 27 \rightarrow 7$   
 $3^4 \rightarrow 81 \rightarrow 1$   
 This cycle will continue  
 $\Rightarrow$  divide the power of 3 by 4  
 $\frac{167}{4} \Rightarrow$  remainder is 3  
 $3^3 \Rightarrow 7$   
 unit digit =  $1 \times 7 = 7$
125. (a)  $(2464)^{1793} \times (615)^{317} \times (131)^{491}$   
 $4^1 \rightarrow 4 \rightarrow 4$   
 $4^2 \rightarrow 16 \rightarrow 6$   
 $4^3 \rightarrow 64 \rightarrow 4$   
 So odd power of 4 will have 4  
 as unit digit and even power  
 will have 6 as unit digit 5 and  
 1 have same unit digits re-  
 spectively  
 $(2464)^{1793} \times (615)^{317} \times (131)^{491}$   
 $\downarrow \quad \quad \quad \downarrow \quad \quad \quad \downarrow$   
 odd power  $\quad \quad \quad$   
 unit digit  $\rightarrow 4 \quad \times 5 \quad \times \quad 1 = 20$   
 $\Rightarrow 20 \Rightarrow 0$  unit digit
126. (a)  $999\frac{1}{7} + 999\frac{2}{7} + 999\frac{3}{7} + 999\frac{4}{7}$   
 $+ 999\frac{5}{7} + 999\frac{6}{7}$   
 $\Rightarrow (999 \times 6) + \left(\frac{1}{7} + \frac{2}{7} + \frac{3}{7} + \frac{4}{7} + \frac{5}{7} + \frac{6}{7}\right)$   
 $\Rightarrow 5994 + \left(\frac{21}{7}\right)$   
 $\Rightarrow 5994 + 3 \Rightarrow 5997$
127. (d)  $\frac{\text{Remainder of number}}{17} = \frac{19}{17}$

- $\Rightarrow \text{Remainder} = 2$
128. (b)  $(7^{19} + 2) \div 6$   
 $\Rightarrow \frac{(6+1)^{19} + 2}{6} \Rightarrow \frac{1^{19} + 2}{6}$   
 $\Rightarrow 3$  remainder
129. (c)  $\frac{\text{Remainder of number}}{17} = \frac{39}{17}$   
 $\Rightarrow \text{remainder} = 5$
130. (b) According to question  
 $\frac{269 \times 68}{67} \Rightarrow \frac{269}{67} \times \frac{68}{67}$   
 Remainder =  $1 \times 1 = 1$
131. (d) Shortcut Method  
 Let number is 9  
 (Gives remainder 3 when  
 divided by 6)  
 Now  $\frac{9^2}{6} = \frac{81}{6}$   
 $\Rightarrow \text{Remainder} = 3$
132. (b)  $\frac{\text{Remainder of no.}}{47} = \frac{193}{47}$   
 $\Rightarrow \text{remainder} = 5$
133. (d)  $\begin{array}{|c|c|c|} \hline 13 & 105 & 1 \\ \hline 5 & 8 & 3 \\ \hline & 1 & \\ \hline \end{array}$   
 $5 \times 1 + 3 = 8$   
 $13 \times 8 + 1 = 105$   
 remainder =  $105 \div 65$   
 $\Rightarrow \text{Remainder} = 40$
134. (d) A number will be divisible  
 by 18 if it is divisible by 2 and 9  
 Clearly we can see 65043 is  
 not divisible by 2.  
 Because unit digit of 65043 is  
 3 so this will not be divisible by 18
135. (b) 100.....999  
 First no. = 102, last no. = 996  
 no. of terms  
 $= \frac{\text{Last term} - \text{First term}}{\text{Difference}} + 1$   
 $\Rightarrow \frac{996 - 102}{6} + 1$   
 $\Rightarrow 149 + 1 = 150$
136. (c)  $(n^3 - n)$  and  $n$  is any inte-  
 ger  
 put  $n = 2$  so,  $2^3 - 2 = 6$   
 It will be always divisible by 6  
 (Put  $n = 2, 3, 4, \dots$ )  
 ( $n = 2, 3, 4, \dots$ )
137. (b)  $n^2(n^2 - 1)$



Put  $n = 2$   
 $\Rightarrow 2^2(2^2 - 1) \Rightarrow 4(4 - 1)$   
 $\Rightarrow 4 \times 3 = 12$   
 Check option it is divisible by 12.  
 Take  $n = 3$   
 $\Rightarrow 3^2(3^2 - 1) \Rightarrow 9(9 - 1)$   
 $\Rightarrow 9 \times 8 = 72$   
 It is divisible by 12  
 So 12 is answer

138. (d) Smallest 3 digit prime number is '101'  
 $xyxy$  is always divisible by 101  
 Hence, 101 Will be the divisor.

139 (b)  $0.4\overline{23} = \frac{423-4}{990} = \frac{423-4}{990}$   
 $= \frac{419}{990}$

140. (c)  $\frac{3}{4} = 75\%$ ,  $\frac{5}{6} = 83.33\%$

(a)  $\frac{2}{3} = 66.66\%$  (b)  $\frac{1}{2} = 50\%$

(c)  $\frac{4}{5} = 80\%$  (d)  $\frac{9}{10} = 90\%$

Hence,  $\frac{4}{5}$  is between the fraction

141. (d)  $\frac{4}{5} = 80\%$  of capacity

$\frac{3}{4} = 75\%$  (after the process.)  
 5% is poured out which is equal to  $= 6 - 4 = 2$  bottles  
 $5\% = 2$  bottles

$100\% = \frac{2}{5} \times 100 = 40$  bottles

142. (b)  $4x^2 - 12x + k$  for perfect square must be  
 $b^2 = 4ac$   
 $12 \times 12 = 4 \times 4 \times k$   
 $9 = k$   
 $k = 9$

143. (b) let the number be  $x$   
 According to question

$\frac{3}{4}x - \frac{3}{14}x = 150$

$\frac{21x - 6x}{28} = 150$

$15x = 150 \times 28$

$x = 280$

144. (d)  $a + b = 17$

$a - b = 9$

From eq (i) and (ii)

$a = 13, b = 4$

$4a^2 + 4b^2 = 4(a^2 + b^2)$

$= 4[(13)^2 + (4)^2]$   
 $= 4[169 + 16]$   
 $= 740$

145. (b)  $7^{105} \Rightarrow$

$7^1 \rightarrow 7 \rightarrow 7$

$7^2 \rightarrow 49 \rightarrow 9$

$7^3 \rightarrow 343 \rightarrow 3$

$7^4 \rightarrow 2401 \rightarrow 1$

Divide power of 7 by 4

$\frac{105}{4} \rightarrow \text{remainder} = 1 \Rightarrow 7^1$  is left  
 unit digit  $= 1 \times 7 = 7$

146. (d) Sum of all 2 digit no. = (sum of first 99 natural number) - (sum of first 9 natural number)  
 (Sum of first 'n' natural no.

$= \frac{n(n+1)}{2}$ )

$\Rightarrow \left[ \left( \frac{99 \times 100}{2} \right) - \left( \frac{9 \times 10}{2} \right) \right]$

$\Rightarrow 4950 - 45 \Rightarrow 4905$

147. (a)  $(329)^{78}$

$\Rightarrow$  If power of 9 is odd, then unit digit number be 9. If power is even then unit digit number be 1.

**So answer is 1.**

148. (a)  $0.\overline{2} + 0.\overline{3} + 0.\overline{32}$

$\frac{2}{9} + \frac{3}{9} + \frac{32}{99}$

$\frac{22+33+32}{99} \Rightarrow \frac{87}{99} = .\overline{87}$

149. (d) Take LCM of 10 and 13 = 130

Any no. divisible by 130 will be divisible by 13 and 10.

ie. 130, 260, 390, 520, 650, 780 and 910

$\Rightarrow$  Total no. are = 7

150. (d)  $1 \times 2 \times 3 \dots \times 1000$

$\Rightarrow \frac{1000}{5} = 200$

$\Rightarrow \frac{200}{5} = 40 \Rightarrow \frac{40}{5} = 8$

$\Rightarrow \frac{8}{5} = 1$

$\Rightarrow 249$

No. of zeros comes from 5 and 2 multiplication

so we divide it by 5

**Alternate**

5	1000
5	200
5	40
5	8
	1

Add All

no. of zero

$= 200 + 40 + 8 + 1 = 249$

Hence, 249 zeros in the right end.

151. (a) Let  $a$  and  $b$  are two numbers ( $a > b$ )

According to question

$a - b = 3$  .....(i)

$\Rightarrow a^2 - b^2 = 39$

$\Rightarrow (a - b)(a + b) = 39$

$\Rightarrow 3(a + b) = 39$

$\Rightarrow a + b = 13$  .....(ii)

Adding equation (i) and (ii)

$\Rightarrow 2a = 16 \Rightarrow a = 8$

152. (b)  $\begin{array}{r} 41 \overline{)10000} \quad 243 \\ \underline{82} \phantom{00} \\ 180 \phantom{00} \\ \underline{164} \phantom{00} \\ 160 \phantom{00} \\ \underline{123} \phantom{00} \\ 37 \end{array}$   
 Diff  $\downarrow$   
 4

Add 4 in 10000 = 10004

153. (c) **Shortcut Method**

Always do these types of questions by option

Let fraction  $= \frac{4}{5}$

According to question

$\frac{5}{4} - \frac{4}{5} = \frac{9}{20}$

$\frac{25-16}{20} = \frac{25-16}{20} = \frac{9}{20}$  Matched

so this is the answer

So, Fraction  $= \frac{4}{5}$

154. (b)  $2.8\overline{768}$

$\Rightarrow 2 \frac{8768-8}{9990}$

$\Rightarrow 2 \frac{8760}{9990}$

$\Rightarrow 2 \frac{292}{333}$

155. (c) According to question

$x \times 7 = 333333$

(In answer 5-digit no are given so we take 6-digit 333333)

$x = \frac{333333}{7} = 47619$

156. (c)  $\begin{array}{r} \times \times \times \overline{)64329} \times \times \times \\ \underline{\times \times \times \dots (1)} \phantom{00} \\ 1752 \phantom{00} \\ \underline{\times \times \times \dots (2)} \phantom{00} \\ 1149 \phantom{00} \\ \underline{\times \times \times \dots (3)} \phantom{00} \\ 213 \end{array}$



$$\text{Number at (1)} = 643 - 175 = 468$$

$$\text{Number at (2)} = 1752 - 114 = 1638$$

$$\text{Number at (3)} = 1149 - 213 = 936$$

$$\text{H.C.F. of } 468, 1638, 936 = 234$$

The divisor is 234.

157. (d)

$$\begin{array}{r} \text{Remainder} = 28(\text{Given}) \xrightarrow{\times 3} 84 \text{ (divisor)} \\ \phantom{\text{Remainder} = 28(\text{Given})} \downarrow 1/7 \\ \phantom{\text{Remainder} = 28(\text{Given})} 12 \text{ (quotient)} \end{array}$$

$$\begin{aligned} \text{Dividend} &= (84 \times 12) + 28 \\ &= 1036 \end{aligned}$$

158. (C) **Shortcut Method**

$$\begin{aligned} \text{divisor} &= 1^{\text{st}} \text{ Remainder} + 2^{\text{nd}} \text{ Remainder} - 3^{\text{rd}} \text{ Remainder} \\ &= 3 + 4 - 2 = 7 - 2 = 5 \end{aligned}$$

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

Take option (a)

$$\begin{aligned} \Rightarrow 2^{96} + 1 &= (2^{32})^3 + (1)^3 = (2^{32} + 1) \\ &\quad [(2^{32})^2 + 1^2 - 2^{32}] \\ &= (2^{32} + 1) [2^{64} + 1 - 2^{32}] \end{aligned}$$

Clearly,  $2^{32} + 1$  is a factor of  $2^{96} + 1$

160. (d) According to the question

$$n^4 + 6n^3 + 11n^2 + 6n + 24$$

$$\text{Put } n = 1$$

$$= 1 + 6 + 11 + 6 + 24 = 48$$

$$\text{put } n = 2$$

$$= 16 + 48 + 44 + 12 + 24 = 144$$

Clearly, it is divisible by 48

161. (b) by option  $\frac{8}{9}$ , proper fraction =

$$\frac{8}{9},$$

$$\text{its reciprocal} = \frac{9}{8}$$

According to question

$$\frac{9}{8} - \frac{8}{9} = \frac{81-64}{72} = \frac{17}{72} \text{ satisfied}$$

162. (b) 0.393939.....

$$= 0.\overline{39} = \frac{39}{99} = \frac{13}{33}$$

163. (a)  $3.718 = \frac{1}{0.2689}$  given

$$\frac{1}{0.0003718} = \frac{10000}{3.718}$$

$$= \frac{10000 \times 0.2689}{1} = 2689$$

164. (c)  $\sqrt{a+b}$  and  $\sqrt{a} + \sqrt{b}$

Squaring both sides

$$\Rightarrow (\sqrt{a+b})^2 \text{ and } (\sqrt{a} + \sqrt{b})^2$$

$$\Rightarrow a + b \text{ \& } a + b + 2\sqrt{a}\sqrt{b}$$

So

$$\sqrt{a+b} < \sqrt{a} + \sqrt{b}$$

165. (c)  $0.\overline{142857} \div 0.\overline{285714}$

$$= \frac{142857}{999999} \div \frac{285714}{999999} = \frac{142857}{285714}$$

$$= \frac{1}{2}$$

166. (b) Let the unit place of the number =  $x$  and the ten place =  $y$

The number will be

$$= 10y + x$$

According to question

$$10y + x = 3(x + y)$$

$$10y + x = 3x + 3y$$

$$7y - 2x = 0 \quad \dots (i)$$

Again

$$(10y + x) + 45 = 10x + y$$

$$10y + x + 45 = 10x + y$$

$$9y - 9x = -45$$

$$x - y = 5$$

$$x = 5 + y$$

From equation (i)

$$7y - 2(5 + y) = 0$$

$$7y - 10 - 2y = 0$$

$$5y = 10$$

$$y = 2$$

$$\text{Then } x = y + 5$$

$$x = 7$$

$$\text{Sum} = x + y = 7 + 2 = 9$$

167. (a) Let the remainder in each case be  $x$

Then,  $(2272 - x)$  and  $(875 - x)$  are exactly divisible by three digit number.

$$\begin{aligned} \text{Difference} &= (2272 - x) - (875 - x) \\ &= 1397 \end{aligned}$$

$$\text{Factor of } 1397 = 11 \times 127$$

Since, Both 11 and 127 are prime number

Three digit number is 127

$$\text{Sum of digits} = 1 + 2 + 7 = 10$$

**Note :** In this type of questions the number which divide the given number and leaves no remainder is either difference of number or a factor of difference.

168. (b)

$$\begin{array}{r} 333 \overline{)10000} \phantom{00} 3 \\ \underline{999} \phantom{00} \\ \text{Diff.} = 323 \end{array}$$

$$\text{Number} = 10000 + 333 - 10 = 10323$$

169. (c) No.  $\rightarrow$  I II III

$$3x \quad 6x \quad 2x = 11x$$

$$\frac{11x}{3} = 44 \Rightarrow x = 12$$

$$\text{largest no.} = 6x = 72$$

170. (d)  $999 \frac{999}{1000} \times 7$

$$= \left( 999 + \frac{999}{1000} \right) \times 7$$

$$= 6993 + \frac{6993}{1000}$$

$$= 6993 + 6 \frac{993}{1000}$$

$$= 6993 + 6 + \frac{993}{1000} = 6999 \frac{993}{1000}$$

171. (a) Let the unit digit of the no. be  $x$

and ten's place be  $y$

$$\text{number} = 10y + x$$

$$\text{Interchange digit's} = 10x + y$$

Adding result

$$= 10y + x + 10x + y$$

$$= 11x + 11y$$

$$= 11(x + y)$$

$\therefore$  Number is divisible by 11

172. (d) Let no be 8

$$\Rightarrow \frac{8^2}{5} = \frac{64}{5} = 4 \text{ remainder}$$

173. (d)  $\overline{48327} \times 8$

$$\text{odd place} \Rightarrow 4 + 3 + 7 + 8$$

$$= 22$$

$$\text{Even place} \Rightarrow 8 + 2 + *$$

$$= 10 + *$$

Difference should be either zero or 11, 22, 33 ..... etc.

$$\Rightarrow 22 - (10 + *) = 11$$

$$22 - 10 - * = 11$$

$$12 - * = 11$$

$$* = 1$$

174. (b) First number = 1125

$$\text{Last number} = 4950$$

No. of term

$$= \frac{4950 - 1125}{225} + 1$$

$$= \frac{3825}{225} + 1 = 17 + 1$$

$$= 18$$

175. (c)  $(n^3 - n)(n - 2)$

$$\text{Put } n = 3$$

$$(3^3 - 3)(3 - 2)$$

$$\Rightarrow (27 - 3) \times 1 \Rightarrow 24$$

It is divisible by 24

176. (b) According to question

$$\frac{5}{3}x - \frac{3}{5}x = \frac{32}{75}$$

$$\frac{25x - 9x}{15} = \frac{32}{75}$$

$$x = \frac{32}{75} \times \frac{15}{16} = \frac{2}{5}$$

$$\frac{3}{5} \text{ of a fraction} = \frac{2}{5} \times \frac{3}{5} = \frac{6}{25}$$



$$\begin{array}{r}
 177. (d) \quad \begin{array}{r} 252 \\ 2 \overline{) 63520} \\ \underline{\times 2} \quad 4 \downarrow \\ 45 \quad 235 \\ \underline{\times 5} \quad -225 \\ 502 \quad 1020 \\ \underline{\times 2} \quad -1004 \\ 16 \end{array} \\
 = 16
 \end{array}$$

$$178. (c) \frac{1}{11} \Rightarrow \frac{1}{11} \times \frac{9}{9} = \frac{9}{99} = 0.\overline{09}$$

$$\begin{array}{c}
 179. (d) (22)^{23} \\
 \begin{array}{ccc}
 \text{Result} & \text{unit digit} & \\
 2^1 & 2 & 2 \\
 2^2 & 4 & 4 \\
 2^3 & 8 & 8 \\
 2^4 & 16 & 6 \\
 2^5 & 32 & 2
 \end{array}
 \end{array}$$

Cycle completes

So divide power of 22 by 4

$$\frac{23}{4} = \text{remainder } 3$$

$$2^3 = 8$$

unit digit = 8

$$180. (d) 1 + 3 + 5 \dots \dots \dots 50\text{th no.}$$

$$\begin{aligned}
 S_n &= \frac{n}{2} [2a + (n-1)d] \\
 &= \frac{50}{2} [2 \times 1 + (50-1)2] \\
 &= 25[2 + 98] = 2500
 \end{aligned}$$

**Alternate:-**

Sum of first 'n' odd numbers  
 $= n^2 = 50^2 = 2500$

$$181. (c) 63592 \text{ is not a square of any natural number}$$

$\therefore$  Any number that have 2,3,7,8 on its unit place, It could not be perfect square of any number.

$$182. (c) 2, 4, 6, 8, 10 \dots \dots \dots 198, 200$$

$$2^{100} (1 \times 2 \times 3 \times 4 \times \dots \times 99 \times 100)$$

$$\begin{array}{r}
 5 \overline{) 100} \\
 \underline{5} \quad 20 \\
 \underline{4} \quad 4
 \end{array}
 = 24 \text{ zero's } (20 + 4)$$

When we multiply the series of  $1 \times 2 \times 3 \dots 100$  then we find 24 zero at the end of the product

$$183. (b) \text{ Direct trick:}$$

In such type of question value of number is  
 (first remainder + second remainder - final remainder)  
 $= (4375 + 2986) - 2361$   
 $= 7361 - 2361 = 5000$

$$184. (c) \text{ Let there is 'n' cows}$$

According to the question

$$n - \frac{1}{2}n - \frac{1}{4}n - \frac{1}{5}n = 7$$

$$\frac{20n - 10n - 5n - 4n}{20} = 7$$

$$n = 140$$

$$185. (a) \text{ Let the two no. are a and b}$$

According to question

$$a^2 + b^2 = 289$$

$$ab = 120$$

$$(a + b)^2 = a^2 + b^2 + 2ab$$

$$(a + b)^2 = (289) + (2 \times 120)$$

$$(a + b)^2 = 529$$

$$(a + b) = 23$$

$$186. (d) \text{ Series: } 103 + 108 + \dots + 998$$

$$a = 103$$

$$d = 5$$

$$\text{Last term} = 998$$

$$\text{No. of term} = \frac{998 - 103}{5} + 1$$

$$= \frac{895}{5} + 1 = 180$$

$$\text{Sum of n terms} = \frac{n}{2} [2a + (n-1)d]$$

$$= \frac{180}{2} [2 \times 103 + (180-1)5]$$

$$= 99090$$

$$187. (b) \text{ sum of first n natural no.}$$

$$= \frac{n(n+1)}{2}$$

(sum of first 999 natural number) - (Sum of first 99 natural no.)

$$\Rightarrow (999 \times 500) - (99 \times 50)$$

$$\Rightarrow 499500 - 4950$$

$$\Rightarrow 494550$$

$$188. (c) \frac{\text{Remainder of no.}}{16} = \frac{54}{16}$$

$$\Rightarrow \text{remainder} = 6$$

$$189 (c) \text{ According to question}$$

(P are the pages (पृष्ठ))

$$\Rightarrow P - \frac{2}{5}P - \frac{8}{15}P = 15, \therefore \left[ \frac{8}{15} = \frac{2}{5} \times \frac{4}{3} \right]$$

$$\Rightarrow \frac{15P - 6P - 8P}{15} = 15$$

$$\Rightarrow P = 225 \text{ pages}$$

$$190. (c) \text{ shortcut Method}$$

Try to do it by option

According to question

$$6 + 4 = 10 \quad \dots (i)$$

$$64 - 46 = 18 \quad \dots (ii)$$

Both condition matched so 64 is answer

$$191. (a) \text{ Let x is the number}$$

According to question

$$5x = 2x^2 - 3$$

$$2x^2 - 5x - 3 = 0$$

$$2x^2 - 6x + x - 3 = 0$$

$$2x(x-3) + 1(x-3) = 0$$

$$(2x+1)(x-3) = 0$$

$$x = 3$$

$$192. (b) \text{ Let x and y are two number } (x > y)$$

According to question

$$xy = 24(x-y) \quad \dots (i)$$

$$x+y = 14 \quad \dots (ii)$$

**Shortcut Method**

Take help from the option  $x = 8$  then  $y = 14 - 8 = 6$  and put value of x and y in equation (i)

$$8 \times 6 = 24(8-6)$$

$$48 = 24 \times 2$$

$$48 = 48 \text{ (Matched)}$$

So this is answer

$$193. (a) \text{ Let first no is x and second no. is } 2x$$

Then, According to question,

$$x \times 2x = 2048$$

$$x^2 = 1024$$

$$x = 32$$

$$\text{Smaller no.} = 32$$

$$194. (a) \text{ Man eats 'G' grapes on 1st day}$$

According to the question

$$G + (G+6) + (G+12) + (G+18) + (G+24)$$

$$= 100$$

$$5G + 60 = 100$$

$$5G = 40$$

$$G = 8$$

$$195. (a) \text{ Let the number be x}$$

According to question

$$7.2x - 0.72x = 2592$$

$$6.48x = 2592$$

$$x = \frac{2592}{6.48}$$

$$x = 400$$

$$196. (d) \left( 99 \frac{95}{99} \right) \times 99$$

$$\Rightarrow \left( 99 + \frac{95}{99} \right) \times 99$$

$$\Rightarrow \left\{ (100-1) + \frac{95}{99} \right\} \times 99$$

$$\Rightarrow 9900 - 99 + 95$$

$$\Rightarrow 9896$$

$$197. (d) \frac{7,77,77,777}{77} = 1010101$$

198. (b) If difference b/w numerator and denominator is same in all fractions and numerator is smaller than denominator in all fractions, then smaller will



be smaller and larger will larger

So  $\frac{15}{16}$  is the smallest value among all

So this is the answer

199. (a)  $\frac{2}{3}, \frac{5}{6}, \frac{11}{15} \& \frac{7}{8}$

$\frac{7}{8}$  is largest among  $\frac{2}{3}, \frac{5}{6} \& \frac{7}{8}$   
(rule used in Q no.198)  
Now compare

(105) (88)  
 $\frac{7}{8} \times \frac{11}{15}$  So  $\frac{7}{8}$  is largest

200. (b)  $0.9, 0.\bar{9}, 0.0\bar{9}, 0.\bar{0}9$

$\frac{9}{10}, \frac{9}{9}, \frac{9}{90}, \frac{9}{99}$

$\frac{9}{10}, 1, \frac{1}{10}, \frac{1}{11}$

= clearly  $0.\bar{9}$  is greatest

201. (d)  $\frac{\text{Remainder of no.}}{17} = \frac{36}{17}$

$\Rightarrow$  remainder = 2

202. (c) dividend = divisor  $\times$  quotient + Remainder

First no. =  $(17 \times n) + 13$

Let 'n' = 1

$\Rightarrow (17 \times 1) + 13 \Rightarrow 30$

Second no. =  $(17 \times n) + 11$

=  $(17 \times 1) + 11 = 28$

According to question

$\frac{30+28}{17} = \frac{58}{17} \Rightarrow$  remainder = 7

**Alternate:-**

divisor = 1<sup>st</sup> Remainder + 2<sup>nd</sup> Remainder - 3<sup>rd</sup> Remainder.

$17 = 13 + 11 - 3^{\text{rd}} \text{ Remainder}$

$3^{\text{rd}} \text{ Remainder} = 24 - 17 = 7$

203. (d)  $\frac{\text{Remainder of no.}}{13} = \frac{64}{13}$

$\Rightarrow$  remainder = 12

204. (b)  $x + \frac{1}{x} = 2$

$x^2 + 1 = 2x$

$x^2 - 2x + 1 = 0$

$(x-1)^2 = 0$

Then  $x = 1$

205. (d) first no. =  $(33 \times n) + 21$

Let  $n = 1 = (33 \times 1) + 21 = 54$

Second no. =  $(33 \times n) + 28$

=  $(33 \times 1) + 28 = 61$

According to question

$\frac{54+61}{33} \Rightarrow \frac{115}{33}$

$\Rightarrow 16$  Remainder

206. (a)  $999 \frac{998}{999} \times 999$

$\Rightarrow \left(999 + \frac{998}{999}\right) \times 999$

$\Rightarrow \left[(1000-1) + \frac{998}{999}\right] \times 999$

$\Rightarrow 999000 - 999 + 998$

$\Rightarrow 998999$

207. (b)  $(2^{71} + 2^{72} + 2^{73} + 2^{74})$

=  $2^{71}(2^0 + 2^1 + 2^2 + 2^3)$

=  $2^{71}(1 + 2 + 4 + 8)$

=  $2^{71} \times 15 = 2^{70} \times 30$

It is divisible by 10

208. (b)  $(n^4 - n)$

$\Rightarrow$  Put  $n = 2$

$(16 - 2) = 14$  Divisible by 2

$\Rightarrow$  Put  $n = 3$

$\Rightarrow (3^4 - 3) = 78$

78 divisible by 2

put  $\Rightarrow n = 4$

$(4^4 - 4) = 252$

252 it is divisible by 2

Put  $n = 5$

$(5^4 - 5) = 620$

620 is divisible by 2 again.

So for any number  $(n > 1)$

$(n^4 - n)$ 's always divisible by '2'

209. (a) LCM of 16 and 18 is 144.

$144 \overline{) 1500} \begin{array}{l} 1 \\ 144 \\ \hline 60 \end{array}$

$1500 - 60 = 1440$

210. (c)  $0.121212\ldots$

$\Rightarrow \overline{.12} = \frac{12}{99} = \frac{4}{33}$

211. (b)  $0.\overline{001} \Rightarrow \frac{1}{999}$

212. (c)  $1.\overline{27} = \frac{127-1}{99} = \frac{126}{99} = \frac{14}{11}$

$\frac{P}{q} = \frac{14}{11}$

213. (c)  $\frac{41\frac{2}{3}}{1/6} = \frac{125}{3} \times \frac{6}{1} = 250$  times

214. (b) A fraction having numerator is  $x$  and denominator is 30

Number lying between  $\frac{5}{8}$  and  $\frac{7}{11}$

$\frac{x}{30} = \frac{5}{8}$  and  $\frac{7}{11}$

Make denominator same in all the number

$\frac{44x}{1320} = \frac{5 \times 165}{1320}$  and  $\frac{7 \times 120}{1320}$

(L.C.M of 30, 8, 11)

$\frac{44x}{1320} = \frac{825}{1320}$  and  $\frac{840}{1320}$

put value with the help of options

$\therefore$  If  $x$  is 19, then  $44x = 44 \times 19 = 836$

so no. is lying between 825 and 840

Number =  $\frac{44 \times 19}{1320} = \frac{19}{30}$

215. (a) Let the first no. be  $n$ .

According to question

$(n) + (n+1) + (n+2) = 27$

$3n + 3 = 27 \Rightarrow n = 8$

So, 8, 9, 10, 11, 12, 13

Sum of last 3 no. =  $11 + 12 + 13 = 36$

**Alternate**

Sum of first three number = 27

middle term =  $\frac{27}{3} = 9$

So, no. 8, 9, 10, 11, 12, 13

9 is a middle term among first three terms sum of last three terms =  $11 + 12 + 13 = 36$

216. (c) sum of first  $n$  natural no.

=  $\left[ \frac{n(n+1)}{2} \right] = 25 \times 13$

Sum of first 25 natural no.

=  $\frac{25(26)}{2} = 25 \times 13$

Now check option

Clearly, we can see 13 is factor.

So '13' is answer

217. (b)

Series =  $22 + 24 + 26 \ldots + 50$

First even no. = 22

Last even no. = 50

difference = 2



Number of terms

$$= \frac{\text{Last no.} - \text{first no.}}{\text{difference}} + 1$$

$$= \frac{50 - 22}{2} + 1 = 14 + 1 = 15$$

Sum of 'n' numbers

$$= \frac{n}{2} [2a + (n-1)d]$$

Where 'a' is first no. and 'd' is difference sum

$$= \frac{15}{2} [(2 \times 22) + (15-1)2] = \frac{15}{2} [72]$$

$$= 15 \times 36 = 540$$

218. (c) Let 'a' be the smallest even no.

According to question

$$(a) + (a+2) + (a+4) + (a+6)$$

$$= 748$$

$$4a + 12 = 748$$

$$4a = 736$$

$$a = 184$$

**Alternate:**

$$\text{Middle term} = \frac{748}{4} = 187$$

$$\frac{184}{\downarrow} \frac{186}{\downarrow} \frac{188}{\downarrow} \frac{190}{\downarrow}$$

$$187$$

$$\text{Smallest no.} = 184$$

219. (c)  $(0.\overline{11} + 0.\overline{22}) \times 3$

$$= \left( \frac{11}{99} + \frac{22}{99} \right) \times 3 = \frac{33}{99} \times 3 = \frac{33}{33} = 1$$

$$\begin{array}{r} 5.76767... \\ - 2.33333... \\ \hline 3.43434... \end{array}$$

$$3.\overline{43}$$

221. (d)

$$\left( 99\frac{1}{7} + 99\frac{2}{7} + 99\frac{3}{7} + 99\frac{4}{7} + 99\frac{5}{7} + 99\frac{6}{7} \right)$$

$$= (99 \times 6) + \left( \frac{1}{7} + \frac{2}{7} + \frac{3}{7} + \frac{4}{7} + \frac{5}{7} + \frac{6}{7} \right)$$

$$= 594 + \left( \frac{1+2+3+4+5+6}{7} \right)$$

$$= 594 + \frac{21}{7} = 597$$

222. (d) Let the one number be x

and the other number be  $\frac{1}{5}x$

According to question

$$x \times \frac{1}{5}x = 0.008$$

$$x^2 = 0.040$$

$$x = 0.2$$

other number

$$= \frac{1}{5} \times 0.2 = 0.04$$

Smaller no. is 0.04

223. (b) let the correct answer are 'n'

According to question

$$\begin{array}{rcccl} \text{Correct marks} & \text{Incorrect marks} & \text{Total marks} & & \\ 4n & - & (200 - n) \times 1 & = & 200 \end{array}$$

$$4n - 200 + n = 200$$

$$5n = 400$$

$$n = 80$$

$$224. (a) 999\frac{98}{99} \times 99$$

$$= (1000 - 1)\frac{98}{99} \times 99$$

$$= \left[ (1000 - 1) + \frac{98}{99} \right] \times 99$$

$$= 99000 - 99 + 98$$

$$= 99000 - 1 = 98999$$

225. (a) Let the numbers be x and y

According to question

$$x + y = 8$$

$$xy = 15$$

$$\frac{1}{x} + \frac{1}{y} = \frac{y+x}{xy} = \frac{8}{15}$$

$$\begin{array}{cccc} 226. (b) & \frac{2}{7} & \frac{1}{3} & \frac{5}{6} & \frac{3}{4} \\ & \downarrow & \downarrow & \downarrow & \downarrow \\ & 0.2857 & 0.333 & 0.8\overline{3} & 0.75 \end{array}$$

$\frac{5}{6}$  is the greatest value

227. (d)  $\frac{n}{5} \Rightarrow$  remainder 2

If we put n = 7 Then it satisfies above situation

So n = 7

$$\frac{n^2}{5} = \frac{7^2}{5} = \frac{49}{5}$$

$\Rightarrow$  remainder = 4

228. (c)  $3^{21} \div 5$

power      Remainder

$$\begin{array}{l} 3^1 \rightarrow 3/5 \rightarrow 3 \\ 3^2 \rightarrow 9/5 \rightarrow 4 \\ 3^3 \rightarrow 27/5 \rightarrow 2 \\ 3^4 \rightarrow 81/5 \rightarrow 1 \\ 3^5 \rightarrow 243/5 \rightarrow 3 \end{array} \begin{array}{l} \text{Cycle1} \\ \text{Cycle2} \end{array}$$

$$\text{Divide} = \frac{21}{4}$$

$\Rightarrow$  remainder 1

$$\frac{3^1}{5} = 3 \text{ remainder}$$

229. (c) greatest = 86520  
least no. = 20568

$$\frac{65952}{12}$$

$$230. (a) \frac{\text{remainder of no.}}{12} = \frac{19}{12}$$

$\Rightarrow$  remainder = 7

231. (b)  $2^{31} \div 5$

$$\begin{array}{l} \text{power} \quad \text{Remainder} \\ 2^1 \rightarrow 2/5 \rightarrow 2 \\ 2^2 \rightarrow 4/5 \rightarrow 4 \\ 2^3 \rightarrow 8/5 \rightarrow 3 \\ 2^4 \rightarrow 16/5 \rightarrow 1 \\ 2^5 \rightarrow 32 \rightarrow 2 \end{array} \begin{array}{l} \text{Cycle1} \\ \text{Cycle2} \end{array}$$

$$\text{Divide} \Rightarrow \frac{2^{31}}{5} = \frac{2^{4 \times 7 + 3}}{5}$$

$\Rightarrow$  remainder = 3

So  $2^3$  has 3 remainder

$2^{31}$  has 3 remainder

232. (b) Let the number be x

According to question

$$\frac{x+12}{6} = 112$$

$$x + 12 = 672$$

$$x = 660$$

Correct answer

$$= \frac{660}{6} + 12$$

$$= 110 + 12 = 122$$

233. (d)

$$\begin{array}{ccc} \text{Quotient} & : & \text{Divisor} & : & \text{Remainder} \\ 1 & : & 10 & : & 1 \\ & & 5 & : & 1 \\ 1 & : & 10 & : & 2 \\ \downarrow \times 23 & & \downarrow \times 23 & & \downarrow \times 23 \\ 23 & : & 230 & : & 46 \end{array}$$

Dividend = (Divisor  $\times$  Quotient) + Remainder

$$= (230 \times 23) + 46 = 5336$$

234. (d) Let no are x, x + 5, x + 10

$$\text{So, } x + x + 5 + x + 10 = 225$$

$$3x + 15 = 225$$

$$3x = 210$$

$$x = 70$$

$$\text{Largest Number} = 70 + 10 = 80$$

235. (d)  $8^n - 4^n$

n = 1, 2, 3, ..... (n is a natural number)

Put, n = 2, expression

$$= 8^2 - 4^2 = 64 - 16 = 48$$

$\therefore 8^n - 4^n$  is divisible by 48

236. (a)  $(4^{61} + 4^{62} + 4^{63})$

$$= 4^{61}(4^0 + 4^1 + 4^2)$$

$$= 4^{61}(1 + 4 + 16)$$

$$= 4^{61} \times 21$$

Now check the options

Only 3 divides it. So '3' is answer



237. (d) Let unknown no = a  
According to question

$$\frac{(71 \times a) + 47}{7} = 98$$

$$71a + 47 = 686$$

$$71a = 639$$

$$a = 9$$

Check options

It is multiple of '3'

238. (c) Always do these types of question by options to save time  
Pick up the option and follow the question instruction  
take option (c)

64  $\Rightarrow$  Divide 3 it gives remainder 1

Now add 1 to 64

$$\frac{65}{5} \Rightarrow \text{remainder '0' it satisfies}$$

So, k = 64 this is answer

239. (b)  $\frac{\text{Remainder of no.}}{13} = \frac{17}{13}$

remainder = 4

240. (c) Let the two numbers be x and y  
According to question

$$x + y = 120 \quad \dots(i)$$

$$\frac{x}{y} = 5$$

$$x = 5y \text{ put in} \quad \dots(ii)$$

$$5y + y = 120$$

$$6y = 120$$

$$y = 20$$

$$x = 100$$

$$\text{Difference} = 100 - 20 = 80$$

241. (b) Six digit largest no. 99 99 99

999	999
9	9999 99
	81
189	1899
	1701
1989	19899
	17901
	1998

Six digit largest square no.  
= 999999 - 1998 = 998001

242. (b)  $\frac{\text{Remainder of no.}}{25} = \frac{132}{25}$

= remainder = 7

243. (c)  $2^{16} - 1^{16}$   
=  $(2^8 - 1^8)(2^8 + 1^8)$   
=  $(2^4 - 1)(2^4 + 1)(2^8 + 1)$   
=  $(16 - 1)(16 + 1)(2^8 + 1)$   
=  $15 \times 17(2^8 + 1)$   
 $\therefore 2^{16} - 1$  is divisible by 17

244. (c)  $5^{71} + 5^{72} + 5^{73}$   
=  $5^{71} (5^0 + 5^1 + 5^2)$   
=  $5^{71} (1 + 5 + 25)$   
=  $5^{71} \times 31 = 5^{70} \times 155$

Check with option, so 155 is answer

245. (b) The greatest four digit no. = 9999

According to question

$$\begin{array}{r} 345 \overline{) 9999} \quad 28 \\ \underline{690} \\ 3099 \\ \underline{2760} \\ 339 \end{array}$$

$\therefore 345 - 339 = 6$  is added to the greatest 4 digit no. So, number is divisible by 345

246. (b)  $x : 2x : 3x$   
 $x^3 + 8x^3 + 27x^3 = 4500$   
 $36x^3 = 4500$

$$x^3 = \frac{4500}{36}$$

Smallest No. = 5

247. (c) Let the numerator and denominator be x and  $11 - x$

According to question

$$\text{fraction} = \frac{x}{11 - x}$$

$$\frac{x+2}{11-x+2} = \frac{x}{11-x} + \frac{1}{24}$$

$$\frac{x+2}{13-x} - \frac{x}{11-x} = \frac{1}{24}$$

$$\frac{11x+22-x^2-2x-13x+x^2}{(13-x)(11-x)} = \frac{1}{24}$$

$$\frac{22-4x}{143-24x+x^2} = \frac{1}{24}$$

$$528 - 96x = 143 - 24x + x^2$$

$$x^2 + 72x - 385 = 0$$

$$(x+77)(x-5) = 0$$

$$x = 5$$

$$\text{Numerator (x)} = 5$$

$$\text{Denominator} = 11 - 5 = 6$$

$$\text{Difference} = 6 - 5 = 1$$

248. (b) Let the numerator be n and the denominator be n + 3  
According to question

$$\frac{n+7}{(n+3)-2} = \frac{2}{1}$$

$$\frac{n+7}{n+1} = \frac{2}{1}$$

$$2n + 2 = n + 7$$

$$n = 5$$

$$\text{Fraction} = \frac{5}{5+3} = \frac{5}{8}$$

$$\text{Sum} = 5 + 8 = 13$$

249. (a) Let fraction be  $\frac{x}{y}$

According to question

$$\frac{x-1}{y-1} = \frac{1}{3}$$

$$3x - 3 = y - 1$$

$$3x - y = 2 \quad \dots(i)$$

$$\Rightarrow \frac{x+1}{y+1} = \frac{1}{2}$$

$$2x + 2 = y + 1$$

$$2x - y = -1 \quad \dots(ii)$$

Subtract equation (i) from (ii)

$$\begin{array}{r} 3x - y = 2 \\ 2x - y = -1 \\ \hline x = 3 \end{array}$$

So y = 7

$$\frac{x}{y} = \frac{3}{7} \Rightarrow x + y = 3 + 7 = 10$$

250. (d) Let the number be x  
According to question

$$\frac{x}{7/8} - \frac{7}{8}x = 15$$

$$\frac{8}{7}x - \frac{7}{8}x = 15$$

$$\frac{64x - 49x}{56} = 15$$

$$15x = 15 \times 56$$

$$x = 56$$

Sum of digits

$$= 5 + 6 = 11$$

251. (b) 451\*603 to divide by 9  
must be (4 + 5 + 1 \* + 6 + 0 + 3)  
exactly divide by 9  
to (19 + \*) divide by 9  
\*must be equal to = 8, 17, ....

For min. value = 8

252. (a) Let the numerator and denominator x and y

According to question

$$\frac{x+1}{y+1} = \frac{1}{4}$$

$$4x + 4 = y + 1$$

$$4x - y = -3 \quad \dots(i)$$

$$\frac{x+2}{y+2} = \frac{1}{3}$$



$$3x + 6 = y + 2$$

$$3x - y = -4$$

.....(ii)

Solve (i) and (ii)

$$x = 1 \text{ and } y = 7$$

Sum of numerator and denominator of fraction =  $x + y$

$$= 1 + 7 = 8$$

253. (b) Let number =  $x$

According to question

$$\frac{1}{5}x + 4 = \frac{1}{4}x - 10$$

$$\frac{1}{4}x - \frac{1}{5}x = 4 + 10$$

$$\frac{5x - 4x}{20} = 14$$

$$x = 280$$

254. (a)  $(122)^{173}$

Unit digit	
$2^1 \rightarrow 2 \rightarrow 2$	Cycle
$2^2 \rightarrow 4 \rightarrow 4$	
$2^3 \rightarrow 8 \rightarrow 8$	
$2^4 \rightarrow 16 \rightarrow 6$	
$2^5 \rightarrow 32 \rightarrow 2$	

$$2^{173} = 2^{4 \times 43 + 1} = 2^{4 \times 43} \times 2 = 16^{43} \times 2$$

$$= 6^{43} \times 2 = 6 \times 2$$

$$\text{unit digit} = 6 \times 2 = 12 = 2$$

255. (d)  $(124)^{372}$   $(124)^{373}$

$\downarrow$	$\downarrow$
$4^{372}$	$4^{373}$

When 4 has odd power then unit digit is 4, when 4 has even power then unit digit is 6

$4^1 \rightarrow 4 \rightarrow 4$	
$4^2 \rightarrow 16 \rightarrow 6$	
$4^3 \rightarrow 64 \rightarrow 4$	
$4^4 \rightarrow 256 \rightarrow 6$	
$4^{372}$	$4^{373}$
$\downarrow$	$\downarrow$
6	4

$$6 + 4 = 10 = 0$$

last (unit) digit = 0

256. (b)  $(1001)^{2008} + 1002$

$$\downarrow$$

$$\text{Unit digit} \rightarrow 1^{2008} + 1002$$

Unit digit will be 1 in case of 1 respective of power

$$\Rightarrow 1 + 1002 = 1003$$

$$= 3 \text{ unit digit (last digit)}$$

257. (d) unit place

unit place	
$7^1 \rightarrow 7 \rightarrow 7$	Cycle
$7^2 \rightarrow 49 \rightarrow 9$	
$7^3 \rightarrow 343 \rightarrow 3$	
$7^4 \rightarrow 2401 \rightarrow 1$	

$$(4387)^{245} \times (621)^{72}$$

$$\downarrow$$

$$(7)^{245} \times (1)^{72}$$

$$\downarrow$$

$$(7)^{4 \times 61 + 1} \times 1$$

$$\downarrow$$

$$(7)^{4 \times 61} \times 7 \times 1$$

$$\downarrow$$

$$(1)^{61} \times 7 \times 1$$

$$\text{unit digit} = 7$$

258. (d) 5 always gives unit digit 5 and 6 always gives unit digit 6

unit digit	
$3^1 \rightarrow 3 \rightarrow 3$	Cycle
$3^2 \rightarrow 9 \rightarrow 9$	
$3^3 \rightarrow 27 \rightarrow 7$	
$3^4 \rightarrow 81 \rightarrow 1$	

$25^{6251} + 36^{528} + 73^{54}$
$\downarrow \quad \downarrow \quad \downarrow$
$5^{6251} + 6^{528} + 3^{54}$
$\downarrow \quad \downarrow \quad \downarrow$
unit digit $\rightarrow 5 + 6 + 3^2$

$$= 5 + 6 + 9 = 20 = 0$$

259. (d)  $7^{71} \times 6^{63} \times 3^{65}$

$\downarrow$	$\downarrow$	$\downarrow$	
unit place	$7^3$	$6^3$	$3^1$
$\downarrow$	$\downarrow$	$\downarrow$	

$$\text{unit digit} \Rightarrow 3 \times 6 \times 3 = 54$$

$$\Rightarrow 4 \text{ is answer}$$

260. (d) Let the no. is  $x$

According to question,

$$x + x + 1 + x + 2 + x + 3 + x + 4 = S$$

$$5x + 10 = S$$

$$x = \frac{S-10}{5}$$

Largest integer

$$(x+4) = \frac{S-10}{5} + 4$$

$$= \frac{S-10+20}{5} = \frac{S+10}{5}$$

261. (b) Let the three consecutive number is

$$x, x+1, x+2$$

According to question

$$x^2 + (x+1)^2 + (x+2)^2 = 365$$

$$x^2 + x^2 + 1 + 2x + x^2 + 4 + 4x = 365$$

$$3x^2 + 6x = 360$$

$$x^2 + 2x - 120 = 0$$

$$(x-10)(x+12) = 0$$

$$x = 10$$

sum of numbers

$$= 10 + 11 + 12 = 33$$

262. (a) Let the natural no. be  $x$  and  $y$

sum of the number

$$= 18x + 21y = 3(6x + 7y)$$

sum is divisible by 3

$\therefore$  By option (a) is only divisible by 3

263. (a) Let the numbers  $x$  and  $y$

$$x(x+y) = 247$$

$$x^2 + xy = 247 \quad \dots(i)$$

$$y(x+y) = 114$$

$$xy + y^2 = 114 \quad \dots(ii)$$

Adding (i) and (ii)

$$x^2 + y^2 + 2xy = 361$$

$$(x+y)^2 = (19)^2$$

$$x+y = 19$$

Sum of the no. is  $x+y = 19$

264. (d)  $a+b+2ab$  is even

Explanation: sum of two odd no. is even number and multiplication of two odd no. with 2 always gives an even number

**Alternate:-**

Put  $a = 3$ ,  $b = 5$ , option (d) will satisfy

265. (b) let he attempt 'x' correct question

According to question

$$4x - (75 - x)1 = 125$$

$$4x - 75 + x = 125$$

$$5x = 200$$

$$x = 40$$

266. (c) let the three no. be  $x, y$  and  $z$

According to question

$$x + y = 55 \rightarrow y = 55 - x$$

$$y + z = 65 \rightarrow 55 - x + z = 65$$

$$z - x = 10 \quad \dots(i)$$

$$z + 3x = 110 \quad \dots(ii)$$

Solve (i) and (ii)

$$z = 35, x = 25, y = 30$$

267. (c) Let the unit's digits be  $x$

then ten's digit be

$$x + 5$$

$$\text{Number} = 10(x+5) + x$$

$$= 10x + 50 + x = 11x + 50$$

Digits are reversed =  $10x + x + 5$

According to question

$$11x + 50 - 5(2x + 5) = 10x + x + 5$$

$$x + 25 = 11x + 5$$

$$10x = 20$$

$$x = 2$$

Sum of digits

$$= 2x + 5 = 2 \times 2 + 5 = 9$$

268. (b) Let the number be  $100(2x) + 10y + x = 201x + 10y$

sum of digits =  $2x + y + x = 18$

$$= 3x + y = 18 \quad \dots(i)$$



Digits are Reversed

$$= 100(x) + 10y + 2x = 102x + 10y$$

According to question,

$$201x + 10y - 102x - 10y = 396$$

$$99x = 396$$

$$x = 4$$

Put,  $x = 4$  in (i)

$$3 \times 4 + y = 18$$

$$y = 6$$

Required Difference

$$= 2x - y = 2 \times 4 - 6 = 2$$

269. (a) Let the two digit no. be

$10y + x$  where  $y > x$

$$10x + y - 10y - x = 63$$

$$9x - 9y = 63$$

$$x - y = 7$$

$$x = 7, 8, 9 \text{ and } y = 0, 1, 2$$

270. (d) Let the no. be  $10x + y$

Reverse the no.  $10y + x$

$$\text{Sum} = 10x + y + 10y + x$$

$$= 11(x + y)$$

If sum of number is square  $x + y = 11$

$$y = 11$$

Possible Pair is

$$(2, 9), (3, 8), (4, 7), (5, 6), (6, 5),$$

$$(7, 4), (8, 3), (9, 2) = 8$$

271. (b) Number =  $xyxyxy$

$$= xy \times 10000 + xy \times 100 + xy$$

$$= xy(10000 + 100 + 1)$$

$$= xy(10101)$$

Hence, option (B) will divide answer.

**Alternate:-**

You can assume (121212, 343434.....) any number divisible by option, So that number is divisible by exactly that's the answer

272. (b)

$$\begin{array}{r} 123 \overline{)10000} \quad (81 \\ \underline{-984} \phantom{00} \\ 160 \phantom{00} \\ \underline{-123} \phantom{00} \\ 37 \end{array}$$

Diff. = 86

$$\text{Number} \Rightarrow 10000 - 37 + 123 = 10086$$

273. (c)

$$(0.1)^2, \sqrt{0.0121}, 0.12, \sqrt{0.0004}$$

$$\begin{array}{ccccccc} \downarrow & & \downarrow & & \downarrow & & \downarrow \\ .01, & & 0.11, & & \boxed{0.12} & & 0.02 \\ & & & & \downarrow & & \\ & & & & \text{Largest} & & \end{array}$$

274. (c) Take L.C.M. of 4 and 6 = 12 and numbers should be divisible by 12.

First number (after 100) = 108

Last no. (less than 600) = 588

No. of Integers

$$= \frac{\text{Last term} - \text{first term}}{\text{difference}} + 1$$

$$= \frac{588 - 108}{12} + 1 = \frac{480}{12} + 1$$

$$= 40 + 1 = 41$$

275. (b)  $x = 2, x^3 + x^2 - 5x + \lambda = 0$

$$2^3 + 2^2 - 5 \times 2 + \lambda = 0$$

$$8 + 4 - 10 + \lambda = 0$$

$$\lambda = -2$$

276. (a) **Note:** In such type of questions assume any values which satisfy the question condition

(i) Let  $m = 3, n = 1$

$$m - n = 3 - 1 = 2 \text{ (Even)}$$

$$m^2 - n^2 = (3)^2 - (1)^2 = 8$$

(ii) Let  $m = 4, n = 2$

$$m - n = 4 - 2 = 2 \text{ (even)}$$

$$m^2 - n^2 = 16 - 4 = 12$$

(iii) Let  $m = 5, n = 3$

$$m - n = 5 - 3 = 2 \text{ (even)}$$

$$m^2 - n^2 = 25 - 9 = 16$$

$$\text{H.C.F. of } 8, 12, 16 = 4$$

So, the no. is divisible by 4

277. (d) A number is divisible by 11

If the difference of the sum of digits at odd and even places be either zero or multiple of 11. If the middle digit be 4, then 244 ....442 are divisible by 11.

$$\begin{aligned} 278. (a) & \frac{1}{15} + \frac{1}{35} + \frac{1}{63} + \frac{1}{99} + \frac{1}{143} \\ &= \frac{1}{3 \times 5} + \frac{1}{5 \times 7} + \frac{1}{7 \times 9} + \frac{1}{9 \times 11} + \frac{1}{11 \times 13} \\ &= \frac{1}{2} \left[ \frac{1}{3} - \frac{1}{5} + \frac{1}{5} - \frac{1}{7} + \frac{1}{7} - \frac{1}{9} + \frac{1}{9} - \frac{1}{11} + \frac{1}{11} - \frac{1}{13} \right] \\ &= \frac{1}{2} \left[ \frac{1}{3} - \frac{1}{13} \right] = \frac{1}{2} \times \frac{10}{39} = \frac{5}{39} \end{aligned}$$

279. (d) If tree increases  $\frac{1}{8}$ th of its height annually, then after 2

$$\text{years} \Rightarrow 64 \times \frac{9}{8} \times \frac{9}{8} \Rightarrow 81 \text{ cm}$$

280. (b) Let the property is 'P' units

According to question given part

$$\begin{aligned} &= \frac{1}{4}P + \frac{1}{2}P + \frac{1}{5}P \\ &= \frac{5P + 10P + 4P}{20} = \frac{19}{20}P \end{aligned}$$

Part of property given away  $\frac{19}{20}$

$$281. (b) 0.\overline{123} = \frac{123}{999} = \frac{41}{333}$$

$$282. (b) 2.\overline{349} = \frac{2349 - 23}{990} = \frac{2326}{990}$$

283. (a)  $3^{40}$ :

$$\text{Divide} = \frac{40}{4} \Rightarrow \text{remainder} = 0$$

			Unit digit
$\begin{array}{l} 3^1 \rightarrow 3 \\ 3^2 \rightarrow 9 \\ 3^3 \rightarrow 27 \\ 3^4 \rightarrow 81 \end{array}$	$\rightarrow 3$	$\rightarrow 3$	Cycle
	$\rightarrow 9$	$\rightarrow 9$	
	$\rightarrow 7$	$\rightarrow 7$	
	$\rightarrow 1$	$\rightarrow 1$	

Means all cycle complete

$$3^4 = 1$$

284. (a)

$$\begin{array}{ccccccc} (1570)^2 & + & (1571)^2 & + & (1572)^2 & + & (1573)^2 \\ \downarrow & & \downarrow & & \downarrow & & \downarrow \\ \text{unit digit} \rightarrow & 0^2 & + & 1^2 & + & 2^2 & + & 3^2 \\ \downarrow & & \downarrow & & \downarrow & & \downarrow \\ 0 & + & 1 & + & 4 & + & 9 = 14 \end{array}$$

$$\text{unit digit} = 4$$

285. (b)  $2 + 3 + 5 + 7 + 11 + 13 + 17 = 58$

$$286. (b) (0.\overline{63} + 0.\overline{37}) = \frac{63}{99} + \frac{37}{99}$$

$$= \frac{63 + 37}{99} = \frac{100}{99}$$

$$287. (b) \text{ Given : } \frac{51.84}{4.32} = \frac{5184}{432} = 12$$

$$\Rightarrow \frac{.005184}{0.432} = \frac{5.184}{432} = \frac{5184}{432} \times \frac{1}{1000}$$

$$= 12 \times \frac{1}{1000} = 0.012$$

288. (c) Let the number be 'n'  
According to question

$$n + n^2 = 2 \times 3 \times 5$$

$$n^2 + n = 30$$

$$n^2 + n - 30 = 0$$

$$n^2 + 6n - 5n - 30 = 0$$

$$n(n + 6) - 5(n + 6) = 0$$

$$(n - 5)(n + 6) = 0$$

$$n = 5, n = -6$$

289. (b) Let there are 'n' hens and '48 - n' cows.



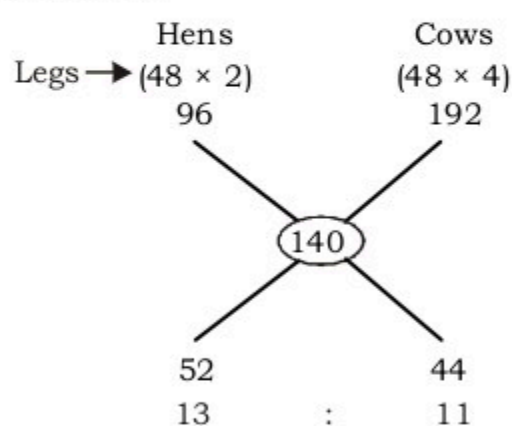
According to question

	Total Head	:	Total Legs
	12	:	35
	$\times 4$		$\times 4$
Given	<b>48</b>		140

Leg of hens	Leg of cows	Total leg
$2n$	$+ 4(48 - n)$	$= 140$
$2n + 192 - 4n = 140$		
$-2n = -52$		
$n = 26$		

**Alternative**



Total hens  $\Rightarrow \frac{13}{24} \times 48 = 26$

290. (a) Length of road = 1 km = 1000 mtr

No. of trees can be plant on one side

$$\frac{1000}{20} + 1 = 51$$

(1 is tree that was planted in begining)

Total trees (on both sides)  
 $= 51 \times 2 = 102$

291. (d) LCM of powers (3, 2, 1 & 6) = 6

$$(3)^{1/3} \Rightarrow (3^2)^{1/6} = 9^{1/6}$$

$$(2)^{1/2} \Rightarrow (2^3)^{1/6} = 8^{1/6}$$

$$(1) \Rightarrow (1^6)^{1/6} = 1^{1/6}$$

$$(6)^{1/6} \Rightarrow (6^1)^{1/6} = 6^{1/6}$$

292. (d) 
$$\begin{array}{r} 335 \\ +5A7 \\ \hline 8B2 \end{array}$$

assume B max. value is 8

$$\rightarrow 8 + 8 + 2 = 18$$

18 is divisible by 3.

$$\text{So, } 1 + 3 + A = 8$$

$$A = 8 - 4 = 4$$

293. (d) 
$$\begin{array}{r} 75 \\ 31 \\ \hline \end{array}$$
  
difference = 44  
Number will be  $31 + \frac{44}{2} = 53$

294. (c) let the no  
 $= 100x + 10y + z$   
 $10y + z = 6m$   
Number =  $100x + 6m$   
 $\therefore x$  is a positive integer  
 $= 2(50x + 3m)$

295. (d) Let the first no. be  $x$   
then the other no. be  $37 - x$   
According to question  
 $5x + 11(37 - x) = 227$   
 $5x + 407 - 11x = 227$   
 $6x = 180$   
 $x = 30$   
 $y = 7$

296. (a)  $1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{7} + \frac{1}{14} + \frac{1}{28}$   
 $= \frac{28+14+7+4+2+1}{28} = \frac{56}{28} = 2$

297. (a) L.C.M of 4,5,6 = 60  
Number between 400 and 800  
is divisible by 60  
420, 480, 540, 600, 660, 720, 780  
7 nos. are divisible by 4, 5 and  
6 b/w 400 and 800

298. (c)  $\frac{\text{Remainder of no.}}{17} = \frac{45}{17}$   
 $\Rightarrow \text{remainder} = 11$

299. (d)  $\frac{\text{Remainder of no.}}{17} = \frac{18}{17}$   
 $\Rightarrow \text{remainder} = 1$

300. (a)  $\frac{n}{6} = \text{remainder } 4$   
If  $n = 10 \Rightarrow \frac{10}{6}$   
 $\Rightarrow \text{remainder} = 4$  (matched)  $n = 10$

$$2n = 2 \times 10 \Rightarrow \frac{20}{6}$$
  
 $\Rightarrow \text{remainder} = 2$

**Note:-** Always put value in these type of questions.

301. (d) Let the remainder in each case be  $x$   
then  $(11284 - x)$  and  $(7655 - x)$   
are exactly  
divisible by that three digit  
number  
Difference =  $(11284 - x) - (7655 - x) = 3629$   
factor of 3629  
 $= 19 \times 191$   
Three digit no. = 191

$$\text{Sum of digits} = 1 + 9 + 1 = 11$$

302. (a) Remainder : Divisor : Quotient

	3	:	1
1	:	6	
1	:	6	:
$\downarrow \times 2$	$\downarrow \times 2$	$\downarrow \times 2$	
Actual $\rightarrow 2$	12		4

$$\begin{aligned} \text{Dividend} &= (\text{Divisor} \times \text{Quotient} \\ &+ \text{remainder}) \\ &= (12 \times 4) + 2 = 50 \end{aligned}$$

303. (b)

**Shortcut method**

If this condition satisfies, then,  
number of digits of 9 will be in  
answer same as multiple

$999 \frac{692}{693}$  and the same no. of zero as  
the number of digits of number

before fraction i.e  $\frac{692}{693}$

304. (c) let the number  
 $= 100x + 10y + z$   
sum of digits  
 $= x + y + z$   
difference  
 $= 100x + 10y + z - x - y - z$   
 $= 99x + 9y = 9(11x + y)$   
Number is always divisible by 9

**Alternate:-**

Assume a no. is 118  
sum of digits  
 $= 1 + 1 + 8 = 10$   
Difference =  $118 - 10 = 108$   
Factor of 108  
 $= 9 \times 12$   
Assume another no = 160  
difference =  $160 - (1 + 6 + 0)$   
 $= 153$

$$\text{Factor} = 9 \times 17$$

No. is divisible by 9

305. (b) Let the number  
 $= 10x + y$   
Interchange number =  $10y + x$   
Difference  
 $= 10x + y - 10y - x = 9(x - y)$   
The difference is always divis-  
ible by 9

306. (a) The greatest 4 digit num-  
ber = 9999

$$\begin{array}{r} 307 \overline{) 9999} \quad 32 \\ \underline{921} \\ 789 \\ \underline{614} \\ 175 \end{array}$$

$$\therefore \text{Number to be added} = 307 - 175 = 132.$$



307. (b) Broken chair

$$= 132 \times \frac{1}{4} = 33$$

Broken table

$$= 108 \times \frac{1}{6} = 18$$

Table left  $\Rightarrow 108 - 18 = 90$

Chair left

$$\Rightarrow 132 - 33 = 99$$

A person require 1 chair and 1 table

so only 90 persons can work in office.

308. (a)  $A : (B + C + D) = (A + B + C + D)$

$$\frac{1}{20} : \frac{2}{40} = \frac{3}{60}$$

$$B : (A + C + D) = (A + B + C + D)$$

$$\frac{1}{15} : \frac{3}{45} = \frac{4}{60}$$

$$C : (A + B + D) = (A + B + C + D)$$

$$\frac{1}{12} : \frac{4}{48} = \frac{5}{60}$$

Amount paid by D =  $60 - 20 - 15 - 12 = 13$

309. (b) let there are B boys and G girls

$$(i) \frac{1}{10} B = \frac{1}{4} G$$

$$(ii) \frac{5}{8} G = \frac{1}{4} B$$

$$\frac{G}{B} = \frac{8}{4 \times 5} = \frac{8}{20} \Rightarrow \frac{2}{5}$$

$$B : G = 5 : 2$$

310. (c)  $\frac{3}{4} = 0.75$   $\frac{3}{8} = 0.375$

$$(a) \frac{7}{9} \rightarrow 0.77 \quad (b) \frac{7}{3} \rightarrow 2.3$$

$$(c) \frac{5}{9} \rightarrow 0.55$$

$$(d) 1\frac{9}{16} = \frac{25}{16} \rightarrow 1.5$$

$$\frac{5}{9} = 0.55$$

311. (b) Let 'd' be denominator so numerator be (d - 4)

According to question

$$\Rightarrow \frac{(d-4)-2}{d+1} = \frac{1}{8}$$

$$\Rightarrow \frac{d-6}{d+1} = \frac{1}{8}$$

$$\Rightarrow 8d - 48 = d + 1$$

$$7d = 49$$

$$d = 7$$

$$\text{numerator} \Rightarrow d - 4 = 7 - 4 = 3$$

$$\text{denominator}(d) \Rightarrow 7$$

$$\text{fraction} = \frac{3}{7}$$

312. (c) Total students = z

$$\text{Total boys} = x$$

$$\text{Total girls} = z - x$$

$$\Rightarrow \frac{\text{No. of girls}}{\text{Total Students}} = \frac{z-x}{z} = 1 - \frac{x}{z}$$

313. (b) **Shortcut Method**

Always do these type of question by option

let take two no. 20 and 30

According to question

$$\frac{1}{20} + \frac{1}{30} = \frac{1}{12}$$

$$\Rightarrow \frac{3+2}{60} = \frac{1}{12} \text{ (Matched)}$$

**Alternate:-**

$$x + y = 50 \quad \dots(i)$$

$$\frac{1}{x} + \frac{1}{y} = \frac{1}{12} \Rightarrow \frac{x+y}{xy} = \frac{1}{12}$$

$$\Rightarrow xy = 600 \quad \dots(ii)$$

From Equation (i) and (ii)

$$x = 30, y = 20$$

$$314. (d) \begin{array}{ccccccc} 3 & \times & 38 & \times & 537 & \times & 1256 \\ & \times & 24 & \times & 28 & \times & 48 \end{array}$$

**Note:** Always multiply only unit digit of first no. to second and product's unit digit no. with 3rd no. Again product of last's unit digit to fourth and so on.

315. (d) let the ten's digit be x

$$\text{unit digit be } 2x - 1$$

$$\text{original no.}$$

$$= 10x + 2x - 1$$

$$= 12x - 1$$

$$\text{New no.} = 10(2x - 1) + x$$

$$= 20x - 10 + x = 21x - 10$$

According to question

$$(21x - 10) - (12x - 1) = (12x - 1) - 20$$

$$9x - 9 = 12x - 21$$

$$3x = 12$$

$$x = 4$$

$$\text{original no.} = 12x - 1$$

$$= 12 \times 4 - 1 = 47$$

316. (c) Let the first no. be 'a'

According to question

$$2a + 3(a + 1) + 4(a + 2) = 191$$

$$2a + 3a + 3 + 4a + 8 = 191$$

$$9a = 191 - 11$$

$$a = \frac{180}{9} = 20$$

No. are (20, 21, 22)

317. (d) Marbles in the 50th box will be kept by 1st, 2nd, 5th, 10th, 25th and 50th person is a factor of 50.

Number of marbles

$$= 1 + 2 + 5 + 10 + 25 + 50 = 93$$

318. (b) no. of pants can be made

$$= \frac{252}{5} = 100$$

no. of shirts can be made

$$= \frac{141}{7} = 80$$

no. of pants and shirts = 100, 80

319. (c)

$$\begin{array}{c} 323 \\ \swarrow \quad \searrow \\ 17 \quad 19 \end{array}$$

2 prime factor  
(19 × 17) = 323

320. (b) Mohan does 'x' correct sums

According to question

$$\frac{\text{Correct marks}}{3x} - \frac{\text{Incorrect marks}}{2(30-x)} = \frac{\text{Total marks}}{40}$$

$$\Rightarrow 3x - 60 + 2x = 40$$

$$5x = 100$$

$$x = 20$$

$$321. (d) 12 * 4 = 12 + 4 + \frac{12}{4}$$

$$= 12 + 4 + 3 = 19$$

322. (b) No. of trees planted on one side of Road

$$= \frac{\text{Length of road}}{\text{Distance b/w trees}} + 1 \leftarrow \text{first tree}$$

$$= \frac{1760}{20} + 1 = 88 + 1 = 89$$

Total trees (both sides)

$$= 89 \times 2 = 178$$

323. (b)  $A + B = 3(B + C)$

$$A + B = 3B + 3C$$

$$A = 2B + 3C$$

.... (i)

$$A + B + C = A + 30$$

$$B + C = 30$$

.....(ii)



$$B = 5C \text{ (given)}$$

$$5C + C = 30$$

$$C = ₹5$$

$$B = 30 - 5 = ₹25$$

$$A + 25 = 3(25 + 5)$$

$$A = 90 - 25$$

$$A = ₹65$$

324. (c) Let the two numbers are p and Q

$$P + Q = a$$

$$PQ = b$$

$$\frac{1}{P} + \frac{1}{Q} \Rightarrow \frac{Q+P}{PQ} = \frac{a}{b}$$

325. (b) According to question

$$\text{female} : \text{Total}$$

$$1 : 9$$

$$\downarrow \times 125$$

$$125$$

$$\downarrow \times 125$$

$$1125$$

326. (a) No. = 228

$$\Rightarrow 228 - 18 = 210$$

$\Rightarrow$  Now check with option that 70

divides 210 completely

So, 70 is biggest 2 digits value which divides this no.

(228) and leaves remainder 18.

327. (b) Let No. are =  $3x, 4x$

$$(3x)^3 + (4x)^3 = 5824$$

$$27x^3 + 64x^3 = 5824$$

$$91x^3 = 5824$$

$$x^3 = \frac{5824}{91}$$

$$x^3 = 64$$

$$x = 4$$

$$\text{So, No. are} = 3 \times 4, 4 \times 4 = 12, 16$$

$$\text{Sum} = 12 + 16 = 28$$

328. (a)

$$\begin{array}{cccc} \frac{2}{8} & \frac{3}{5} & \frac{8}{11} & \frac{11}{17} \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 0.25 & 0.60 & 0.72 & 0.64 \end{array}$$

Largest  $\rightarrow \frac{8}{11}$

329. (a)  $a = 4011$

$$b = 3989$$

$$a \times b = 4011 \times 3989 = 15999879$$

Shortcut Method:

$$a = 4011 \Rightarrow (4000 + 11)$$

$$b = 3989 \Rightarrow (4000 - 11)$$

$$[(a - b)(a + b) = a^2 - b^2]$$

According to question

$$a \times b = (4000 + 11)(4000 - 11) = 4000^2 - 11^2 = 16000000 - 121 = 15999879$$

330. (b)  $3^{2n} + 9n + 5$

$$\text{Put } n = 1$$

$$\Rightarrow 3^{2 \times 1} + 9 \times 1 + 5$$

$$\Rightarrow 9 + 9 + 5$$

$$\Rightarrow 23$$

$$\Rightarrow \frac{23}{3} \Rightarrow \text{remainder} = 2$$

**Note:** value of n can be 1, 2, 3, 4, .....

331. (a)  $12x - 66 \leq 6$

$$12x \leq 72$$

$$x \leq 6$$

332. (c)  $5349 + 3957 - 7062 = 2244$

this is not divisible by 7

333. (c) Prime no. b/w 80 and 90

$$83 \times 89 = 7387$$

334. (c) First multiple = 3

last multiple

(less than 50) = 48

$$\text{No. of multiples of 3} = \frac{48 - 3}{3} + 1 = 16$$

$$\text{Sum} = \frac{16}{2} [2 \times 3 + (16 - 1)3]$$

$$= 8 \times 51$$

$$= 408$$

335. (c)  $5 * 7 = 5 + 7 - 5 \times 7 = 12 - 35 = -23$

336. (c) Let the cost of turban be ₹ x

According to question

$$\frac{90 + x}{12} = \frac{65 + x}{9} \text{ (per month pay)}$$

$$270 + 3x = 260 + 4x$$

$$4x - 3x = 10$$

$$x = ₹ 10$$

337. (d) Let the number be x

$\Rightarrow$  According to the question,

$$\Rightarrow \frac{3x}{4} - \frac{x}{6} = 7$$

$$\Rightarrow \frac{9x - 2x}{12} = 7$$

$$\Rightarrow 7x = 7 \times 12$$

$$\Rightarrow x = 12$$

$$\Rightarrow \text{Then } \frac{5}{3} \text{ of the number will be}$$

$$= \frac{x \times 5}{3} \Rightarrow \frac{12 \times 5}{3} = 20$$

338. (c) Given

$$x = \frac{1}{\sqrt{2} + 1}$$

$$\Rightarrow x = \frac{1(\sqrt{2} - 1)}{(\sqrt{2} + 1)(\sqrt{2} - 1)} = \sqrt{2} - 1$$

$$\therefore x + 1 = \sqrt{2} - 1 + 1 = \sqrt{2}$$

339. (b) Square root

$$\Rightarrow \sqrt{\frac{(0.064 - 0.008)(0.16 - 0.04)}{(0.016 + 0.08 + 0.04)(0.4 + 0.2)^3}}$$

$$\Rightarrow \sqrt{\frac{[(0.4)^3 - (0.2)^3][(0.4)^2 - (0.2)^2]}{[(0.4)^2 + (0.2)^2 + (0.2 \times 0.4)][(0.4 + 0.2)^3]}}$$

$$\text{Let } 0.4 = a, 0.2 = b$$

$$\Rightarrow \sqrt{\frac{(a^3 - b^3)(a^2 - b^2)}{(a^2 + b^2 + ab)(a + b)^3}}$$

$$\Rightarrow \sqrt{\frac{(a - b)(a^2 + b^2 + ab)(a + b)(a - b)}{(a + b)^3(a^2 + b^2 + ab)}}$$

$$\Rightarrow \sqrt{\frac{(a - b)^2}{(a + b)^2}} \Rightarrow \frac{a - b}{a + b}$$

$$\Rightarrow \frac{0.4 - 0.2}{0.4 + 0.2} \Rightarrow \frac{0.2}{0.6}$$

$$\Rightarrow \frac{1}{3}$$

340. (a) Given

$$\sqrt[3]{79507} = 43$$

$$\Rightarrow \sqrt[3]{79.507} + \sqrt[3]{0.079507} + \sqrt[3]{0.000079507} \Rightarrow 4.3 + 0.43 + 0.043 \Rightarrow 4.773$$

341. (a) Let the number = x

$\Rightarrow$  According to question

$$\Rightarrow x - \frac{2}{5}x = 75$$

$$\Rightarrow \frac{5x - 2x}{5} = 75$$

$$\Rightarrow \frac{3x}{5} = 75$$

$$\Rightarrow x = 125$$

342. (c)

$$\frac{(0.0519) \times 0.4 + 0.56 \times 0.07}{0.04 \times 0.25}$$

$$\frac{0.02076 + 0.0392}{0.04 \times 0.25} \Rightarrow \frac{0.05996}{0.01} \Rightarrow 5.996$$

343. (a)  $59535 = 3 \times 5 \times \boxed{3 \times 3} \times \boxed{3 \times 3} \times \boxed{7 \times 7}$

$\Rightarrow$  To make a perfect square we should multiply by

$$= 3 \times 5 = 15 \quad [x = \text{given}]$$

$$x = 15$$



$\Rightarrow$  Sum of digits of number  
 $= 1 + 5 = 6$

344. (a) According to the question,

$$\Rightarrow \left(2 - \frac{1}{3}\right) \left(2 - \frac{3}{5}\right) \left(2 - \frac{5}{7}\right) \dots \left(2 - \frac{997}{999}\right)$$

$$\Rightarrow \frac{5}{3} \times \frac{7}{5} \times \frac{9}{7} \times \dots \times \frac{1001}{999}$$

$$\Rightarrow \frac{1}{3} \times 1001$$

$$\Rightarrow \frac{1001}{3}$$

345. (b) According to the question,

$$\Rightarrow [(0.87)^2 + (0.13)^2 + (0.87) \times 0.26]^{2013}$$

$$\Rightarrow [(0.87)^2 + (0.13)^2 + 2 \times 0.13 \times 0.87]^{2013}$$

$$\Rightarrow [(0.87 + 0.13)^2]^{2013}$$

$$\Rightarrow [(1)^2]^{2013}$$

$$\Rightarrow 1$$

346. (c) According to the question,

$$\Rightarrow \frac{4}{15} \text{ of } \frac{5}{8} \times 6 + 15 = 10$$

$$\Rightarrow \frac{4}{15} \text{ of } \frac{5}{8} \times 6 + 15 = 10$$

$$\Rightarrow 1 + 15 = 10$$

$$\Rightarrow 6$$

347. (c) According to the question,

$$\begin{array}{r} 5 \quad E \quad 9 \\ 2 \quad F \quad 8 \\ 3 \quad G \quad 7 \\ \hline 11 \quad 1 \quad 4 \end{array}$$

$\Rightarrow$  Sum of 2, E, F and G must be 11. For maximum F we will have to take E and G zero.

$$\therefore F = 9$$

348. (c)  $(2467)^{153} \times (341)^{72}$

$$\downarrow$$

$$(7)^{153} \times (1)^{72}$$

$$\downarrow$$

$$[153/4 = \text{remainder} = 1]$$

$$7^1 \times 1$$

	Result	Unit digit
$7^1$	= 7	7
$7^2$	= 49	9
$7^3$	= 343	3
$7^4$	= 2401	1
$\Rightarrow 7$		

349. (a)  $3^{50} \rightarrow (3^5)^{10} \rightarrow (243)^{10}$

$$4^{40} \rightarrow (4^4)^{10} \rightarrow (256)^{10} \leftarrow \text{Largest}$$

$$5^{30} \rightarrow (5^3)^{10} \rightarrow (125)^{10}$$

$$6^{20} \rightarrow (6^2)^{10} \rightarrow (36)^{10}$$

350. (c) Let the given number be  $x$

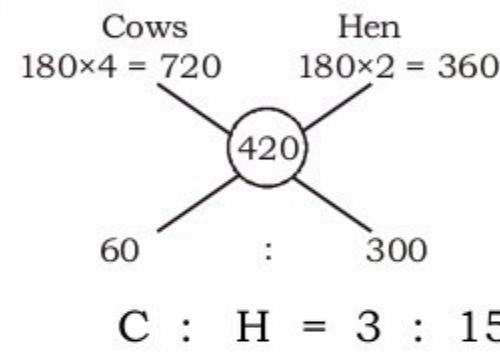
According to the question,

$$x^2 - 25 = (x - 25)^2$$

$$x^2 - 25 = x^2 + (25)^2 - 50x$$

$$x = 13$$

351. (d)



Numbers of cows

$$= \frac{3}{3+15} \times 180$$

$$= \frac{3}{18} \times 180 = 30$$

352. (d) Let the natural number (n) be 1

$$\therefore n(n+1)(n+2)$$

$$= 1(1+1)(1+2) = 6$$

353. (d) Assume total capacity of all three buses be 15.

so, capacity of one bus

$$= \frac{15}{3} = 5$$

$$\frac{4}{5} \text{ seats are full, hence}$$

$$= 15 \times \frac{4}{5} = 12$$

Now  $\frac{1}{4}$  th passengers leave the

$$\text{bus} = 12 \times \frac{1}{4} = 3$$

and no. of remaining passengers =  $12 - 3 = 9$

Now, the passengers in the fraction

$$= \frac{\text{Rest passengers}}{\text{capacity of two buses}} = \frac{9}{10}$$

354. (a) Let the numbers are  $7x$  &  $9x$

According to the question,

$$7x \times 9x = 1575$$

$$63x^2 = 1575$$

$$x^2 = 25$$

$$x = 5$$

Then greater number =  $9x = 9 \times 5 = 45$

355. (b) According to the question,

$$\frac{3a+4b}{2} > 50$$

$$3a + 4b > 100$$

$$a = 2b \text{ (Given)}$$

$$6b + 4b > 100$$

$$10b > 100$$

$$b > 10$$

$$\therefore \text{If } b = 10.1$$

$$\therefore a = 2 \times 10.1$$

$$a = 20.2$$

$$\therefore a = 21 \text{ (approx)}$$

356. (b) Assume weight of water =  $x$   
weight of container =  $y$

so,

Total weight of container when it is filled with water

$$x + y = 2.25 \text{ kg} \quad \dots (i)$$

When it is filled  $2/10$  th of water then

$$x \times \frac{2}{10} + y = 0.77 \text{ kg} \quad \dots (ii)$$

After solving both eq<sup>n</sup>

$$x = \frac{37}{20} \text{ kg}$$

$$y = 0.40 \text{ kg}$$

Now, The weight (in kg) of the container when 0.4 part if its is filled with water is

$$\frac{37}{20} \times \frac{4}{10} + 0.40$$

$$= 1.14 \text{ kg}$$

357. (d) According to question,

$\Rightarrow$  The least no

$$= 3005$$

$\Rightarrow$  The greatest no

$$= 3995$$

$\Rightarrow$  Difference will be

$$= 3995 - 3005 = 990$$

358. (a) L.C.M of 12, 18, 21, 28 = 252

$$\begin{array}{r} 252 \overline{) 9999} \phantom{00} 39 \\ \underline{-756} \phantom{00} \\ 2439 \\ \underline{-2268} \\ 171 \end{array}$$

$$= 9999 - 171$$

The number will be = 9828

359. (b) Let the numbers be  $a, b$

According to the question,

$$\Rightarrow a + b = 37 \quad \dots (i)$$

$$\Rightarrow a^2 - b^2 = 185 \quad \dots (ii)$$

$$\Rightarrow (a - b)(a + b) = 185$$

$$\Rightarrow (a - b) \times 37 = 185 \text{ From eq.}$$

$$(i) \Rightarrow (a - b) = 5$$

$\Rightarrow$  Therefore, the difference of the numbers = 5



360. (b) Let the numbers are a, b  
 $\Rightarrow a + b = 75$  .....(i)  
 $\Rightarrow a - b = 25$  .....(ii)  
 $\Rightarrow$  After solving (i) & (ii)  
 $\Rightarrow a = 50, b = 25$   
 $a \times b = 50 \times 25 \Rightarrow 1250$   
 $\Rightarrow$  Their product is 1250

361. (b)

362. (c) L. C. M of = 8, 12, 16

$\Rightarrow 48 \text{ No.} = 48k + 3$

No. should be divisible by 7

$\therefore \frac{48k+3}{7}$  for  $k=3$  divisible by 7

Hence Number = 147

363. (c)

$$10^{100} \div \frac{2^{100} \times 5^{100}}{5^{75}} = 2^{100} \times 5^{25} = 2^{75} \times 5^{25}$$

364. (a) We know,

Smallest five digit number is = 10,000

LCM of 12, 18, 21 = 252

$$\begin{array}{r} 252 \overline{) 10,000} \phantom{00} \\ \underline{-756} \phantom{00} \\ 2440 \phantom{00} \\ \underline{-2268} \phantom{00} \\ 172 \phantom{00} \end{array}$$

Difference =  $252 - 172 = 80$

Then no. is =  $10,000 + 80$

= 10080

365. (d) In such type of question always go through option to save your valuable time.

By option (d) 4, 2

$$4 + 2 \times 2 = 8$$

$$4 - 2 = 2 \text{ (Satisfied)}$$

366. (c)  $\therefore 1^3 + 2^3 + 3^3 + \dots + 10^3 = 3025$

To find  $= 2^3 + 4^3 + 6^3 + \dots + 20^3 = ?$

$$\Rightarrow 2^3 (1^3 + 2^3 + 3^3 + \dots + 10^3)$$

$$\Rightarrow 8 \times 3025$$

$$\Rightarrow 24200$$

367. (b) Given

$$\Rightarrow A + B = 120 \quad \dots(i)$$

$$\Rightarrow B + C = 130 \quad \dots(ii)$$

$$\Rightarrow C + A = 140 \quad \dots(iii)$$

Adding (i)+(ii)+(iii)

$$\Rightarrow 2(A+B+C) = 390$$

$$\Rightarrow A + B + C = 195 \quad \dots(iv)$$

From (iv) - (i) subtracting

$$\Rightarrow C = 195 - 120$$

$$\Rightarrow C = 75$$

$\Rightarrow$  Therefore C's mark = **75**

368. (a)  $\therefore p = -0.12$

$$q = -0.01$$

$$r = -0.015$$

If all values would be positive

$$0.12 > 0.015 > 0.01$$

$$p > r > q$$

But these are negative so their order will be

$$q > r > p$$

369. (b)  $\frac{4}{3}, \frac{-2}{9}, \frac{-7}{8}, \frac{5}{12}$

$$\frac{4}{3} = 1.33$$

$$\frac{-2}{9} = -0.22$$

$$\frac{-7}{8} = -0.875$$

$$\frac{5}{12} = 0.416$$

$$\text{So, } \frac{-7}{8}, \frac{-2}{9}, \frac{5}{12}, \frac{4}{3}$$

370. (a) Greatest prime no. = 97

Least prime no. = 2

So, their difference

$$= 97 - 2 = 95$$

371. (b) Assume no.

$$= 5x, 8x$$

According to the question,

$$8x - 5x = 48$$

$$3x = 48$$

$$x = 16$$

Smallest no.

$$= 5x = 5 \times 16 = 80$$

372. (d)  $142^2 - 1$

$$= (142 - 1)(142 + 1)$$

$$[a^2 - b^2 = (a - b)(a + b)]$$

$$= 141 \times 143$$

$$= 141 \times 11 \times 13$$

373. (d) Sum of digit must be divisible by '9'

$$= \frac{9 + 3 + 8 + 5 + 6 + x + 2 + 9 + 4}{9}$$

$$= \frac{46 + x}{9} = \frac{45 + (1 + x)}{9}$$

Then  $(1+x)$  must be divisibility 9

Hence value of  $x = 8$

374. (c) By checking last 3 digit then last '3' digit of 1046529

529 is a square of 23

Hence this is correct option

$$375. (a) \frac{1}{25.25} = 0.0396$$

$$\text{then } \frac{1}{0.0002525} = \frac{100000}{25.25}$$

$$= 0.0396 \times 100000 = 3960$$

376. (c) Let Nos are  $3x, 6x, 2x$

$$\text{Avg.} = \frac{11x}{3} = 44$$

$$x = 12 = \text{difference}$$

377. (c)  $x(\text{let})$

$$236953 \dots 876$$

to be divisible by 11, the difference of sum of odd places digits to even places digits should be 0(zero) or multiple of 11.

$$\text{Sum of odd places digits} = 2 + 6 + 5 + x + 7 = 20 + x$$

$$\text{Sum of even places digits} = 3 + 9 + 3 + 8 + 6 = 29$$

$$\text{Sum of even places digits} - \text{sum of odd places digits} = 0$$

$$\text{Sum of even places digits} = \text{sum of odd places digits}$$

$$29 = 20 + x$$

$$x = 9$$

378. (d)  $a = (0.4)^2 = 0.16$

$$b = 0.04$$

$$c = 0.4$$

$$c > a > b$$

379. (a)  $\sqrt[3]{7}, \sqrt[4]{13}, \sqrt{5}$

Taking L.C.M of 3, 4 and 2.

$$\begin{array}{ccc} 7^{\frac{1}{3} \times 12} & 13^{\frac{1}{4} \times 12} & 5^{\frac{1}{2} \times 12} \\ 7^4 & 13^3 & 5^6 \\ \downarrow & \downarrow & \downarrow \\ 2401 & 2197 & 15625 \end{array}$$

$$380. (c) \begin{array}{ccc} +13 & -18 & -2 & 29 \\ \swarrow & \searrow & \swarrow & \searrow \\ & 44 & & \times 432 \\ & & & 31 \end{array}$$

$$= \frac{13(-2)}{31} = \frac{-26}{31} = 31 - 26 = 5$$

$$= 5$$

381. (a)  $\frac{334 \times 545 \times 7P}{3340}$

$$\Rightarrow \frac{334 \times 545 \times 7P}{334 \times 10} \Rightarrow \frac{109 \times 7P}{2}$$



Go through by options take 2

$$\Rightarrow \frac{109 \times 72}{2} \text{ So Answer is 2}$$

382. (b) we know that after 5! we get one zero at the end of the number

and after 10! → two Zeros

and after 15! → three Zeros

We can say that in 17! we get minimum three zeros

The Hundred's place value of 17! = 0

383. (b) In this type of questions go through option. we take option (b)

$$\frac{34}{13} \text{ Remainder is 8}$$

$$\frac{34}{7} \text{ Remainder is 6}$$

It satisfy the condition so ans is (b)

$$384. (a) \frac{1}{24 \times 7} = 0.0059$$

385. (a) Let us assume any such number which when divided by 5 leaves remainder as 3. Let it be 8  
So now

$$\frac{(8)^2 + (8)^3}{5} = \frac{64 + 512}{5}$$

$$= \frac{576}{5} = 1 \text{ (remainder)}$$

$$386. (c) \frac{A-3}{B+3} = \frac{1}{3} \text{ and } \frac{A+2}{B-2} = \frac{1}{2}$$

$$3A - 9 = B + 3 \quad 2A + 4 = B - 2$$

$$\Rightarrow 3A - B = 12$$

$$\Rightarrow 2A - B = -6$$

$$\text{On solving } A = 18, B = 42$$

387. (c) Sum = 5 + 10 + 15 + 20 + ... 95  
it is an arithmetic progression

Number of terms (n)

$$= \frac{\text{Last Term} - \text{First Term}}{\text{Difference}} + 1$$

$$\Rightarrow n = \frac{95 - 5}{5} + 1 = 19$$

$$\text{So sum} = \frac{n}{2} [2a + (n-1)d]$$

$$\text{Here, } a = 5, n = 19, d = 5$$

$$\text{Sum} = \frac{19}{2} [10 + (19-1)5]$$

$$= 950$$

388. (d) Three digit number

$$= 100x + 10y + z$$

To make number after changing last two digit = 100x + 10z + y

Now,

$$100x + 10y + z = 100x + 10z + y - 45$$

$$9z - 9y = 45$$

$$z - y = 5$$

389. (b) If first number (729) is completely divide by second number (27) then we divide remainder from second number then remaining remainder will be answer.

$$\frac{729}{27} = 27 \text{ Times}$$

$$\text{Now, } \frac{56}{27} = 2 \times 27 + 2 \rightarrow$$

Reminder

390. (c) by division method

$$\begin{array}{r} 135 \\ 1 \overline{) 18265} \\ \underline{1 \phantom{00}} \phantom{00} \\ 23 \phantom{00} 082 \\ \underline{23 \phantom{00} 00} \phantom{00} \\ 69 \phantom{00} \\ \underline{69 \phantom{00}} \phantom{00} \\ 0 \phantom{00} 1365 \\ \underline{0 \phantom{00} 1325} \phantom{00} \\ 40 \end{array}$$

So we will to subtract 40 to make perfect square.

391. (b) Let no. = a, b

According to the question,  
a + b = 3 (a-b)

$$\frac{a+b}{a-b} = \frac{3}{1}$$

By componendo and dividendo

$$\frac{2a}{2b} = \frac{4}{2}$$

$$\frac{a}{b} = \frac{2}{1}$$

392. (a) **Composite numbers**

Composite numbers are the numbers greater than 1 which are not prime.

e.g. 4, 6, 9, 14, 15, etc.

total no. are 27

$$393. (a) 1\frac{1}{2} = \frac{3}{2}, 1\frac{1}{3} = \frac{4}{3}$$

$$\text{Square} = \frac{9}{4}, \frac{16}{9}$$

reciprocal ratio

$$\frac{4}{9} : \frac{9}{16}$$

$$64 : 81$$

394. (d) Let no. are a, b = 3x, 5x

$$\text{So, } 3x + 5x = 8x = 80$$

$$x = 10$$

$$\text{So, no.} = 3 \times 10, 5 \times 10 = 30, 50$$

395. (c)  $\sqrt[3]{9}, \sqrt[4]{20}, \sqrt[5]{25}$

Taking L.C.M. of 3, 4 and 6.

$$\sqrt[12]{9^4}, \sqrt[12]{20^3}, \sqrt[12]{25^2}$$

$$\sqrt[12]{6561}, \sqrt[12]{8000}, \sqrt[12]{625}$$

So, ascending order

$$= \sqrt[5]{25}, < \sqrt[3]{9}, < \sqrt[4]{20},$$

396. (d) Let numbers are a, a+1, a+2

$$\text{then } a + a + 1 + a + 2 = 51$$

$$3a + 3 = 51$$

$$3a = 48$$

$$a = 16$$

$$\text{middle no. } a + 1 = 16 + 1 = 17$$

397. (c) Remaining Number LCM (9, 11, 13) + 6 = 1287 + 6 = 1293

$$\text{Least Number} = 1294 - 1293 = 1$$

398. (d) By hit and trial method

$$= 13851 + 69 = 13920$$

Which is divisible by 87

399. (d) Let no. are a, b,

$$ab = 24 = 2 \times 2 \times 2 \times 3$$

Possible (a, b) pair of	Sum (a+b)
(2, 12)	14
(4, 6)	10
(8, 3)	11
(24, 1)	25

Then minimum value of the sum = 10

400. (a) Let number be x and y

$$\frac{x}{y} = \frac{3}{4}$$

$$x = \frac{3}{4}y \quad \dots (i)$$

$$x^2 + y^2 = 400$$

$$\frac{9}{16}y^2 + y^2 = 400 \dots \text{from equ. (i)}$$

$$9y^2 + 16y^2 = 400 \times 16$$

$$25y^2 = 400 \times 16$$

$$y^2 = \frac{400}{25} \times 16$$

$$y^2 = 16 \times 16$$

$$y = 16$$



$$x = \frac{3}{4} \times 16$$

$$x = 12$$

$$\text{sum of no. } 16 + 12 = 28$$

401. (c) For divisibility by 8, last 3 no should be divisible by 8.

Now, put the value 0, 1, ....2... and check.

$$\begin{aligned} \text{when use } * &= \frac{632}{8} \\ &= 79. \end{aligned}$$

So, Hence it is divisible by 8 answer is 3.

$$402. (a) \text{ sum of A.P} = \frac{n}{2} [2a + (n-1)d]$$

$$n^{\text{th}} \text{ term} = a + (n-1)d$$

$$\begin{aligned} 3^{\text{rd}} \text{ term} &= a + (3-1)d \\ &= 19 \end{aligned}$$

$$a + 2d = 19 \quad \dots(i)$$

$$\text{sum of 10 term}$$

$$= \frac{10}{2} [2a + 9d] = 390$$

$$2a + 9d = 78 \quad \dots(ii)$$

$$a + 2d = 19 \quad \dots(i)$$

from equation (i) and (ii)

$$\boxed{a = 3} \quad \boxed{d = 8}.$$

403. (d) Let the total member be x. x members contribution is ₹ x and each member also contributes x paise.

So total Rupees is

$$x \text{ member } ₹ x = ₹ x^2$$

$$x \text{ member } ₹ x \text{ paise} = \frac{x \cdot x}{100}$$

Total Rupees is

$$x^2 + \frac{x^2}{100} = 2525$$

$$101 x^2 = 2525 \times 100$$

$$101 x^2 = 101 \times 25 \times 100$$

$$\boxed{x = 50}$$

404. (d) According to the given condition

$$\text{Denominator} = 7 + C \quad [C > -7]$$

$$\begin{array}{cc} \text{Numerator} = \text{Greater} & \text{Smaller} \\ \text{no.} & \text{no.} \\ (7+C-4) & \times (7+C-4-2) \end{array}$$

$$= \text{Equation} = \frac{(3+C)(1+C)}{7+C}$$

By putting value according to

option

$$C = -2 \text{ for minimum value}$$

$$= -1/5$$

405. (a) Let Number is N.

N is divided by the sum of 555 and 445, the quotient is 2 times difference

$$\text{quotient} = 2(550 - 445) = 220$$

$$\begin{array}{r} 1000 \overline{) N (220} \\ \underline{30} \end{array}$$

$$N = 1000 \times 200 + 30 = 220030$$

406. (b) Let Numbers is N

Let quotient is x

$$\begin{array}{r} 342 \overline{) \text{Number}(x} \\ \underline{47} \leftarrow \text{Remainder} \end{array}$$

$$N = 342 \times x + 47$$

When N is divided by 18

$$N = (18 \times 19x) + 18 \times 2 + 11$$

$$\frac{N}{18} = \frac{18 \times 19 \times x}{18} + \frac{18 \times 2}{18} + \frac{11}{18}$$

So remainder is 11.

**Alternate:-**

If certain number gives some remainder than we just divide by that remainder for the same number.

Like:- for 342 Remainder 47 =  $\frac{47}{18}$  = 11 remainder.

407. (c) Let the number is a, b, c

$$a = 3b \quad \frac{a}{b} = \frac{3}{1}$$

$$c = \frac{2}{3}a, \quad \frac{c}{a} = \frac{2}{3}$$

$$\begin{array}{ccc} c & a & b \end{array}$$

$$23$$

$$31$$

$$c : a : b = 2 : 3 : 1$$

So (2 + 3 + 1) unit 252.

6 unit → 252

$$1 \text{ — } 42$$

$$3 \text{ — } 42 \times 3$$

So 2nd Number is = 42

that is b.

408. (a) Let the integers in

a, b, c

$$a^2 + b^2 + c^2 = 323 \quad \dots(i)$$

$$a^2 + b^2 = 2c \quad \dots(ii)$$

Break the 323 in to their

squares

$$a = 5$$

$$b = 3$$

$$c = 17$$

$$\text{So, } a^2 + b^2 + c^2 = 323$$

and

$$a^2 + b^2 = 2c$$

$$25^2 + 3^2 = 2 \times 17$$

$$\boxed{34 = 34}$$

So Satisfied

$$a : b : c = 17 \times 5 \times 3 = 255$$

409. (b) Let the number is a, b, c

$$a + b + c = 2$$

$$a = \frac{1}{2}b \quad \dots(ii)$$

$$c = \frac{1}{4}b \quad \dots(ii)$$

$$\frac{a}{b} = \frac{1}{2}$$

$$\frac{b}{c} = \frac{4}{1}$$

$$a : b : c$$

$$\begin{array}{ccc} 1 & 2 & \\ \swarrow & \searrow & \\ 4 & : & 1 \\ \hline 4 & : & 8 : 2 \end{array}$$

$$a : b : c = 2 : 4 : 1$$

$$(2 + 4 + 1) = 7 \text{ unit} \rightarrow 2$$

$$1 \rightarrow \frac{2}{7}$$

$$4 \rightarrow \frac{2}{7} \times 4 = \frac{8}{7}$$

$$\text{So 2nd number is} = \frac{8}{7}$$

410. (c) Let the three numbers are

$$a - b, \quad a, \quad a + d$$

a is first term, d is common difference

$$a + d + a + a - d = 30 \text{ Given}$$

$$3a = 30$$

$$a = 10$$

$$(a + d) (a) (a - d) = 910$$

$$(10 + d) (10) (10 - d) = 91 \times 10$$

$$(10 + d) (10 - d) = 91$$

put d = 3

$$\boxed{(10+3)(10-3)=91}$$

So, d = 3



So greater number is  $= a + d = 10 + 3 = 13$

411. (a) Let the number be  $= x$   
 then according to question  
 $= 21 \times x + 100 = x^2$   
 $x^2 - 21x - 100 = 0$   
 $x^2 - 25x + 4x - 100 = 0$   
 $x(x - 25) + 4(x - 25) = 0$   
 $(x + 4)(x - 25)$

$x = -4$  is not possible  
 $x = 25$

412. (c) For divisibility of 11.  
 $= 756896$   
 $= (9 + 6 + 7) - (6 + 8 + 5) = 3$   
 So 3 should be added to No to make it divisible by 11.

413. (c) Let number are  $x$  and  $y$ .  
 A.T.Q  $x \times y = 48$

total fingers  
 in one hand  
 $\uparrow$   
 and  $x = \frac{2 + 5 \times 2}{3}$

$$= \frac{12}{3} = 4$$

$$y = \frac{48}{4} = 12$$



StudyLab