# 1. NUMBER SYSTEM

In Indian system, numbers are expressed by means of symbols 0,1,2,3, 4, 5, 6, 7, 8, 9, called digits. Here, 0 is called insignificant digit whereas 1 ,2 ,3 ,4 ,5 ,6,7 , 8,9 are called significant digits. We can express a number in two ways.

**Notation:** Representing a number in figures is known as notation as 350.

**Numeration:** Representing a number in words is known as numeration as 'Five hundred and forty five.

**Face Value and Place Value of a Digit:**

**Face Value:** It is the value of the digit itself.

e.g. in 3452, face value of 4 is 'four', face value of 2 is 'two'.

**Place Value**: It is the face value of the digit multiplied by the place value at which it is situated

e.g. in 2586, place value of 5 is $5\times10^2 = 500$.

**Number Categories -**

**Natural Numbers (N):** If N is the set of natural numbers, then we write $N$ = {1 ,2 ,3 ,4 , 5 6,...}

The smallest natural number is 1.

**Whole Numbers (W):** If W is the set of whole numbers, then we write $W$ = {0, 1,2,3,4, 5,...}

The smallest whole number is 0.

**Integers (I):** If I is the set of integers, then we write I = {- 3, -2, - 1, 0 , 1, 2, 3,...}

**Rational Numbers**: Any number which can be expressed in the form of $p/q$, where $p$ and $q$ are both integers and $q \neq 0$ are called rational numbers.

*E.g.* : $\frac{3}{2}, \frac{-7}{9}, \mathbf{5}, \mathbf{-2}$

There exists infinite number of rational numbers between any two rational numbers.

**Irrational Numbers** Non-recurring and non-terminating decimals are called irrational numbers. These numbers cannot be expressed in the form of $\frac{p}{q}$.

***E.g.*** $\sqrt{3}, \sqrt{5}, \sqrt{29}\ldots$

**Real Numbers:** Real numbers include both rational and irrational numbers.

**Basic Rules on Natural Numbers**

1. One digit numbers are from 1 to 9. There are 9 one digit numbers. i.e. $\mathbf{9 \times 10^{\circ}}$
2. Two digit numbers are from 10 to 99. There, are 90 two digit numbers, i.e. $\mathbf{9 \times 10^{1}}$
3. Three digit numbers are from 100 to 999. There are 900 three digit numbers i.e. $\mathbf{9 \times 10^{2}}$

**In general the number of n digit numbers are $\mathbf{9 \times 10^{(n-1)}}$**

4. Sum of the first $n$ natural numbers i.e. $1+ 2 + 3+ 4 + \ldots+n = \frac{n(n+1)}{2}$
5. Sum of the squares of the first $n$ natural numbers i.e. $1^2+ 2^2+ 3^2 + 4^2 + \ldots+ n^2 = \frac{n(n+1)(2n+1)}{6}$
6. Sum of the cubes of the first $n$ natural number *i.e.* $1^3 + 2^3 + 3^3+ \ldots+n^3 = [\frac{n(n+1)}{2}]^2$

**Example:** What is the value of 51 + 52 + 53 + ...+ 100 ?

*Solution:* 51 + 52 + 33 + ... + 100 = (1 + 3 + ...+ 100) — (1 + 2 + 3 + ... + 50)

$$= \frac{100\times101}{2} - \frac{50\times51}{2} = 5050 - 1275 = 3775$$

**Different Types of Numbers:**

**Even Numbers**: Numbers which are exactly divisible by 2 are called even numbers,

e.g., - 4 , - 2 , 0,2, 4...

Sum of first $n$ even numbers = $n$ (n + 1)

**Odd Numbers**: Numbers which are not exactly divisible by 2 are called odd numbers.

*e.g.*, -5 ,-3 ,-1 ,0 , 1,3,5...

Sum of first *n* odd numbers = $n^2$

**Prime Numbers**: Numbers which are divisible by one and itself only are called prime numbers.

*E.g.* 2,3,5,7,11...

• 2 is the only even prime number.

• 1 is not a prime number because it has two equal factors.

• Every prime number greater than 3 can be written in the form of (6K+ l) or (6K -1) where K is an intE.g.er. There are 15 prime numbers between 1 and 50 and 10 prime numbers between 50 and 100.

**Relative Prime Numbers**: Two numbers are said to be relatively prime if they do not have any common factor other than 1.

e.g. (3,5),(4,7),(11,15),(15,4)...

**Twin Primes:** Two prime numbers which differ by 2 are called twin primes.

e.g., (3,5),(5,7),(11,13),...

**Composite Numbers**: Numbers which are not prime are called composite numbers.

e.g., 4,6,9,15,...

1 is neither prime nor composite.

**Perfect Number**: A number is said to be a perfect number, if the sum of all its factors excluding itself is equal to the number itself, e.g. Factors of 6 are 1, 2,3 and 6.

Sum of factors excluding 6 = 1 + 2 + 3= 6.

6 is a perfect number.

Other examples of perfect numbers are 28,496, 8128 etc.

**Rules for Divisibility:**

**Divisibility by 2:** A number is divisible by 2 when the digit at ones place is 0,2 ,4 ,6 or 8.

e.g., 3582,460,28,352,.....

**Divisibility by 3**: A number is divisible by 3 when sum of all digits of a number is divisible by 3.

e.g., 453 = 4 + 5 + 3= 12.

12 is divisible by 3 so, 453 is also divisible by 3.

**Divisibility by 4**: A number is divisible by 4, if the number formed with its last two digits is divisible by 4. e.g., if we take the number 45024, the last two digits form 24. Since, the number 24 is divisible by 4, the number 45024 is also divisible by 4.

**Divisibility by 5**: A number is divisible by 5 if its last digit is 0 or 5.

e.g., 10,25,60

**Divisibility by 6**: A number is divisible by 6, if it is divisible by both 2 and 3.

e.g., 48,24,108

**Divisibility by 7**: A number is divisible by 7 when the difference between twice the digit at ones place and the number formed by other digits is either zero or divisible by 7.

e.g. 658

6 5 - 2 × 8 = 65 -16 = 49

As 49 is divisible by 7 the number 658 is also divisible by 7.

**Divisibility by 8**: A number is divisible by 8, if the number formed by the last 3 digits of the number is divisible by 8.

e.g. if we take the number 57832, the last three digits form 832. Since, the number 832 is divisible by 8, the number 57832 is also divisible by 8.

**Divisibility by 9**: A number is divisible by 9, if the sum of all the digits of a number is divisible by 9.

*e.g.* 684 = 6 + 8 + 4=18.

18 is divisible by 9 so, 684 is also divisible by 9.

**Divisibility by 10**: A number is divisible by 10, if its last digit is 0. e.g. 20,, 180,350,....

**Divisibility by 11**: A number is divisible by 11 When the difference between the sum of its digits in odd places and in even places is either 0 or divisible by 11.

*e.g.*

$$\mathbf{30426}$$
$$\mathbf{3 + 4 + 6 = 13}$$
$$\mathbf{0 + 2 = 2}$$
$$\mathbf{13 - 2 = 11}$$

As the difference is divisible by 11 the number 30426 is also divisible by 11.

**Division on Numbers**

In a sum of division, we have four quantities.

- They are (i) Dividend, (ii) Divisor, (iii) Quotient and (iv) Remainder. These quantities are connected by a relation.

(a) Dividend = Divisor × Quotient + Remainder.

(b) Divisor = (Dividend-Remainder) ÷Quotient.

(c) Quotient = (Dividend-Remainder)÷Divisor.

**Example 2**: In a sum of division, the quotient is 110, the remainder is 250, the divisor is equal to the sum of the quotient and remainder. What is the dividend ?

*Solution:* Divisor =(110+ 250) = 360

Dividend =(360 ×110)+250 = 39850

Hence, the dividend is 39850.

**Example 3**: Find the number of numbers up to 600 which are divisible by 13.

*Solution:* Divide 600 by 13, the quotient obtained is 46. Thus, there are 46 numbers less than 600 which are divisible by 13.

**Factors and Multiples**

**Factor:** A number which divides a given number exactly is called a factor of the given number.

e.g. $\mathbf{24 = 1 \times 24, 2 \times 12, 3 \times 8, 4 \times 6}$

Thus, 1,2,3,4, 6, 8,12 and 24 are factors of 24.

• 1 is a factor of every number

• A number is a factor of itself

• The smallest factor of a given number is 1 and the greatest factor is the number itself.

• If a number is divided by any of its factors, the remainder is always zero.

• Number of factors of a number are finite.

**Number of Factors of a Number**: If *N* is a composite number such that $\boldsymbol{N = a^m \times b^n \times c^o \times \ldots}$ where *a, b, c* ... are prime factors of *N* and *m, n, o* ... are positive integers, then the number of factors of *N* is given by the expression *(m* + 1) (n + 1)(o+ 1)

**Example 4**: Find the number of factors that 224 has.

*Solution:* $224 = 2^5 \times 7^1$

Hence, 224 has (5 + 1) (1 + I) = 6 x 2 = 12 factors.

**Multiple:** A multiple of a number is a number obtained by multiplying it by a natural number e.g. Multiples of 5 are 5,10,15,20.

Multiples of 12 are 12,24,36,48

• Every number is a multiple of 1.

• The smallest multiple of a number is the number itself.

• We cannot find the greatest multiple of a number.
• Number of multiples of a number are infinite.

## EXERCISE

**1.** Evaluate: $\frac{9|3-5|-5|4|\div 10}{-3(5)-2\times 4\div 2}$
(a) 9/10 (b) -8/17
(c) -16/19 (d) 4/7

**2.** Find the product of place value and face value of 5 in 65231.
(a) 28000 (b) 25000
(c) 27000 (d) 26000

**3.** The sum of three consecutive natural numbers each divisible by 3 is 72. What is the largest among them?
(a) 25 (b) 26
(c) 27 (d) 30

**4.** 55% of a number is more than one-third of that number by 52. What is two-fifth of that number?
(a) 96 (b) 240
(c) 144 (d) 142

**5.** A number gets reduced to its one-third when 48 subtracted from it. What is two – third of that number ?
(a) 22 (b) 76
(c) 36 (d) 48

**6.** The digits of a two-digit number are in the ratio of 2 : 3 and the number obtained by interchanging the digits is bigger than the original number by 27. What is the original number?
(a) 63 (b) 48
(c) 96 (d) 69

**7.** What least number would be subtracted from 427398 so that the remaining number is divisible by 15?
(a) 13 (b) 3
(c) 16 (d) 11

**8.** Find the number which when multiplied by 13 is increased by 180:
(a) 20 (b) 15
(c) 124 (d) 5

**9.** Find unit digit in $(515)^{31} + (515)^{90}$:
(a) 0 (b) 5
(c) 1 (d) 4

**10.** What is the unit digit in (476 × 198 x 359 ×242)?
(a) 8 (b) 6
(c) 4 (d) 2

**11.** Find the least value of k so that 39 k20 is divisible by 3.
(a) 1 (b) 3
(c) 5 (d) 2

**12.** Find the least value of *K* so that 36 *K36* is divisible by 6 .
(a) 1 (b) 6
(c) 2 (d) 0

**13.** Find the number of divisors of 10800.
(a) 57 (b) 60
(c) 72 (d) 62

**14.** *N* = n! where *n* is natural number. The unit's digit of *N* can't be
(a) 2 (b) 6
(c) 5 (d) 0

**15.** Find the number of prime factors of $2^{11} \times 7^5 \times 11^6$
(a) 22 (b)21
(c) 6 (d) 18

**16.** Which is smallest prime number?
(a) 0 (b) 1
(c) 2 (d) 3

**17.** Which of the following is a prime number?
(a) 149 (b) 437
(c) 319 (d) 567

**18.** The rational number. Which equals the number $2.\overline{357}$ with recurring decimal is:
(a) $\frac{2335}{1001}$ (b) $\frac{2379}{997}$
(c) $\frac{2355}{999}$ (d) none of these

**19.** Find the sum of the first 50 natural numbers.
(a) 1275 (b)1025
(c) 1235 (d) 1205

**20.** Find the sum of all natural numbers from 100 to 175.
(a) 10456 (b )10452
(c) 10450 (d) 10455

**21.** Find the sum of all natural-numbers between 100 and 175.
(a) 10450 (b)10175
(c) 10170 (d) 10435

**22.** What least number must be subtracted from 3475 to make it divisible by 50 ?
(a) 75 (b )100
(c) 25 (d) 50

**23.** How many numbers up to 800 are divisible by 24?
(a) 30 (b)29
(c) 33 (d) 26

**24.** How many numbers up to 700 are divisible by both 3 and 5?
(a) 42 (b) 46
(c) 39 (d) 52

**25.** Find the number nearest to 2559 which is exactly divisible by 35.
(a) 2535 (b) 2555
(c) 2540 (d) 2560

**26.** The prime numbers dividing 109 and leaving a remainder of 4 in each case are:
(a) 5 and 7 (b) 2 and 11
(c) 3 and 8 (d) 11 and 12

**27.** Sum of two numbers is 60 and their difference is 12. Find their product.
(a) 864 (b) 852
(c) 824 (d) 836

**28.** Out of four consecutive prime numbers, the product of first three is 385 and the product of the last three is 1001. Find the last number?
(a) 7 (b) 11
(c) 13 (d) 17

**29.** If a piece of road is 3000 m and we have to supply some lamp posts. One post is at each end and distance between two consecutive lamp posts is
75 m. Find the number of posts required.
(a) 41 (b) 39
(c) 40 (d) 36

**30.** For any natural number *n*, what is the value of
$\frac{1}{1.2}+\frac{1}{2.3}+\frac{1}{3.4}+\cdots+\frac{1}{n(n+1)}$?
(a) 1 (b) >1 (c) <1
(d) Can't be determined

**31.** Arrangement of $-\frac{3}{7},\frac{2}{3}$ *and* $-\frac{1}{3}$ *in* the ascending order is:
(a) $-\frac{3}{7},-\frac{1}{3},\frac{2}{3}$ (b) $\frac{2}{3},-\frac{1}{3},-\frac{3}{7}$
(c) $-\frac{1}{3},-\frac{3}{7},\frac{2}{3}$ (d) $-\frac{3}{7},\frac{2}{3},-\frac{1}{3}$

**32.** Which one of the following numbers will completely divide
$(5^{51}+5^{52}+5^{53}+5^{54}+5^{55})$?
(a) 7 (b) 11 (c) 9 (d) 13

**33.** The sum of the numerator and denominator of a fraction is equal to 5. Five times the numerator is 4 more than twice the denominator. The fraction is:
(a) $\frac{3}{4}$ (b) $\frac{2}{3}$ (c) $\frac{3}{2}$ (d) $\frac{3}{5}$

**34.** How many integers from 1 to 100 exist such that each is divisible by 5 and also has 5 as a digit ?
(a) 10 (b) 11
(c) 12 (d) 20

**35.** In the array 48392874362754869364, the number of instances where an even number is followed by two odd numbers is
(a) 1 (b) 2
(c) 3 (d) 4

**36.** Ashok had to do a multiplication. Instead of taking 35 as one of the multipliers, he took 53. As a result, the product went up by 540. What is the new product?
(a) 1050 (b) 1590
(c) 1440 (d) None of these

**37.** The number zero (0) is surrounded by the same two digit number on both (left and right) sides: for example 25025, 67067 etc. The largest number that always divides such a number is
(a) 7 (b) 11
(c) 13 (d) 1001

**38.** A number when divided by 119 leaves the remainder 19. If the same number is divided by 17, the remainder will be
(a) 19 (b) 10
(c) 7 (d) 2

**39.** A worker was engaged for a certain number of days and was promised to be paid Rs. 1755. He remained absent for some days and was paid 1365 only. What were his daily wages?
(a) Rs. 182 (b) Rs. 195
(c) Rs. 185 (d) Rs. 192

**40.** $(999^2 - 998^2)$ is equal to
(a) 1 (b) 999
(c) 1997 (d) 998

**41.** The rational numbers lying between $\frac{1}{3}$ *and* $\frac{3}{4}$ *are*:
(a) $\frac{97}{300}, \frac{299}{500}$ (b) $\frac{99}{300}, \frac{301}{400}$
(c) $\frac{95}{300}, \frac{301}{400}$ (d) $\frac{117}{300}, \frac{287}{400}$

**42.** $N = (a \times b \times c \times d)$, where *a, b, c, d* are distinct integers lying between -7 and 12, both inclusive. The minimum value of *N* is
(a)-9240 (b)-840
(c) -2520 (d) None of these

**43.** Find the number of digits that are to be used in numbering a book of 500 pages.
(a) 1392 (b) 1346
(c) 1325 (d) 1352

| ANSWER KEY | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | c | 11 | a | 21 | b | 31 | a | 42 | a |
| 2 | b | 12 | d | 22 | c | 32 | b | 43 | a |
| 3 | c | 13 | b | 23 | c | 33 | b | | |
| 4 | a | 14 | c | 24 | b | 34 | b | | |
| 5 | d | 15 | a | 25 | b | 35 | c | | |
| 7 | b | 16 | c | 26 | a | 36 | b | | |
| 6 | d | 17 | a | 27 | a | 37 | d | | |
| 8 | b | 18 | c | 28 | c | 38 | d | | |
| 9 | a | 19 | a | 29 | a | 39 | b | | |
| 10 | c | 20 | c | 30 | c | 40 | c | | |

## SOLUTIONS

**1.** $\frac{9|3-5|-5|4|\div 10}{-3(5)-2\times 4\div 2}$
$= \frac{9(2)-5(4)\div 10}{-3(5)-2\times 2}$
$= \frac{18-2}{-15-2(2)} = -\frac{16}{19}$

**2.** Place value = 5× 1000 = 5000
Face value = 5
Product = 5000× 5 = 25000

**3.** $3x + (3x + 3) + (3x + 6) = 72$
$9x + 9 = 72 \Rightarrow 9x = 72 - 9$
Or $x = \frac{63}{9} = 7$
∴The largest of them is 27.

**4.** Let the number be *x*.

$$\frac{55}{100}x = \frac{1}{3}x + 52$$

$$\frac{13}{60}x = 52 \Rightarrow x = 240$$

$$\therefore \frac{2}{5}x = \frac{2}{5} \times 240 = 96$$

**5.** Let the number be *x*. Then

$$x - 48 \Rightarrow \frac{1}{3}x \Rightarrow x - \frac{1}{3}x = 48$$

$$\Rightarrow \frac{2}{3}x = 48$$

**6.** Let the number be 10x+ *y*

$$x : y = 2 : 3 \ldots\ldots (i)$$

$$(10y + x) - (10x + y) = 27 \ldots (ii)$$

$$\Rightarrow 9y - 9x = 27 \Rightarrow y - x = 3 \Rightarrow y = x + 3$$

Putting this value of y, in (i)

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

$\therefore$ y = 9

Hence the number is 69.

**7.** Apply the divisibility rules of 3 and 5.

**8.** **M-I:** $13x = 180 + x$

$13x - x = 180$ or $12x = 180$

$$x = 15$$

**M-II:** OTP

**9.** Since the unit digit of any number which is ending in 5 to the power of any number will be 5 only. Thus Units place of $(515)^{31}$ as well as $(515)^{90}$ is 5. Since the sum of Units place of total expression is 5 + 5 = 10, thus Zero is the units place of the given expression.

**10.** Unit digit in 476 × 198×359 × 242

= unit digit in 6 × 8 × 9× 2 = 4

**11.** 3 + 9 + K + 2 + 0 = 14 + K

Least value of *K* is 1.

**12.** Given number is divisible by 6, if it is divisible by both 2 and 3.

$\therefore$The least value of *K* is 0.

**13.** $10800 = 2^4 \times 5^2 \times 3^3$

Number of divisors

= (4+1) (2+1) (3 + 1) = 60.

**14.** Since, *n* ! is always even for *n* > 1. Therefore, 5 cannot be the unit digit.

**15.** Number of prime factors

$$= 11 + 5 + 6 = 22$$

**16.** 2 is the smallest prime number.

**17.** We know that $13^2 > 149$

Prime numbers less than14 are 2, 3, 5, 7, 11

Clearly none of the numbers divide 149.

Therefore, 149 is a prime number.

**18.** $2.\overline{357} = 2 + 0.\overline{357}$

$= 2 + \frac{357}{999} = \frac{2\times999+357}{999} = \frac{2355}{999}$

**19.** Sum of the first 50 natural numbers

$$= \frac{50(50 + 1)}{2}$$

$$= \frac{50 \times 51}{2} = 1275$$

**20.** From 100 to 175 mean including both 100 and 175.

Sum of natural numbers up to 99

$$= \frac{99 \times 100}{2} = 4950$$

Sum of natural numbers up to 175

$$= \frac{175 \times 176}{2} = 15400$$

∴ Sum of all natural numbers from 100 to $175 = 15400 - 4950 = 10450$

**21.** Between 100 and 175 means excluding 100 and 175.

Sum of natural numbers up to 100

$$\frac{100 \times 101}{2} = 5050$$

Sum of natural numbers upto 174

$$= \frac{174 \times 175}{2} = 15225$$

∴ Required sum

$$= 15225 - 5050 = 10175$$

**22.** Remainder when 3475 is divided by 50 is 25.

∴ Least number that should be subtracted

$$= 25$$

**23.** Quotient when 800 is divided by 24 is 33.There are 33 numbers up to 800 divisible by 24.

**24.** Quotient when 700 is divided by the LCM of 3 and 5 i.e., 15 is 46.

∴There are 46 numbers upto 700.

**25.** **M-I**: 35)2559(73

245

109

105

4

The two numbers nearest to 2559 divisible by 35 are

(a) $2559 - 4 = 2555$

(b) $2559 + (35 - 4) = 2590$

∴The required number is 2555.

**M-II**: OTP

**26.** Remainder left in each case is 4.

So 109-4 =105

105 is the number which is exactly divisible by prime numbers.

The two prime numbers which divide 105 are 5 and 7

**27.** Let the two numbers be *x* and *y*.

Then $\boldsymbol{x + y = 60}$, and $\boldsymbol{x - y = 12}$

Solving, $\boldsymbol{x = 24}$, $\boldsymbol{y = 36}$

Product = $\boldsymbol{24 \times 36 = 864}$

**28.** . Let the four numbers be p, *q*, *r* and *s*.

$$\boldsymbol{pqr = 385, qrs = 1001}$$

$$\boldsymbol{\frac{qrs}{pqr} = \frac{1001}{385} = \frac{13}{5}}$$

$$\boldsymbol{\frac{s}{p} = \frac{13}{5}}$$

So, $p = 5$ and $s = 13$.

Required number is 13.

**29.** Number of lamp posts required

$$\boldsymbol{\frac{3000}{75} + 1 = 40 + 1 = 41}$$

**30.** Given expression

$$\boldsymbol{\frac{1}{1.2} + \frac{1}{2.3} + \frac{1}{3.4} + \cdots \frac{1}{n(n+1)}}$$

$= \left(1 - \frac{1}{2}\right) + \left(\frac{1}{2} - \frac{1}{3}\right) + \left(\frac{1}{3} - \frac{1}{4}\right) + \cdots + \left(\frac{1}{n} - \frac{1}{n+1}\right)$ =1 - $\frac{1}{n+1} = \frac{n}{n+1} < 1$

(∴ Denominator is greater than numerator.)

**31.** $\boldsymbol{-\frac{3}{7} = -0.4285}$

$\boldsymbol{\frac{2}{3} = 0.6667}$

$\boldsymbol{-\frac{1}{3} = -0.334}$

So, the ascending order is given by

-0.4285 < -0.3334 < 0.6667

**32.** $\boldsymbol{\left(5^{51} + 5^{52} + 5^{53} + 5^{54} + 5^{55}\right)}$

$\boldsymbol{= 5^{51}}$(1+5+25+125+625)

$\boldsymbol{= 5^{51}}$(781)

Since 781 is divisible by 11, $\boldsymbol{5^{51}}$×781 is also divisible by 11.

**33. M-I:** Let the fraction be $\frac{x}{y}$.

$\boldsymbol{x + y = 5}$ and $\boldsymbol{5x - 2y = 4}$

Solving, $\boldsymbol{x = 2\ and\ y = 3}$

∴ The fraction is $\frac{2}{3}$

**M-II**: OTP

**34.** These numbers are following 5,15,25, 35, 45, 50, 55, 65, 75, 85, 95

So, total 11 such type of numbers.

**35.** .In the array 392874362754869364; 8, 2 and 6 i.e., three number of required instances.

**36.** Suppose, one of the multiplier is $x$, then

$$53x - 35x = 540$$
$$18x = 540$$
$$x = 30$$

New multiplication$= 30 \times 53 = 1590$

**37.** The largest such number is 1001.

**38.** **M-I:** The number is = 119n+ 19 = 138,257

When these numbers are divided by 17, then remainder is 2.

**M-II**: The remainder when 19 is divided by 17 is 2

**39.** The daily wages of the worker is the HCF of 1755 and 1365. HCF of 1755 and 1365 is 195.

The daily wages of the worker is '195'.

**40.** $999^2 - 998^2$

= (999 + 998) (999 -998) = (1997)(1)= 1997

**41.** $\frac{1}{3} = 0.33334$ **and** $\frac{3}{4} = 0.75000$

$\frac{117}{300} = 0.3900$ **and** $\frac{287}{400} 0.717$

$\therefore \frac{117}{300}, \frac{287}{400}$ lies between $\frac{1}{3}$ and $\frac{3}{4}$

**42.** Take,—7,12,11 and 10 because these will give minimum value.

$$-7 \times 12 \times 11 \times 10 = -9240$$

**43.** One digit numbers from 1 to 9 = 9

Two digit numbers from 10 to 99 = 90

Three digit numbers from 100 to 500= 401

$\therefore$ Total number of digits that are to be used $= (9 \times 1) + (90 \times 2) + (401 \times 3)$

$$= 9 + 180 + 1203$$
$$= 1392$$