



PINNACLE

2nd
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90 DAYS

Self--Preparation Module

RAILWAY MATHS

6200+ TCS - MCQ

All Latest TCS Questions asked in Railway Exams till March 2023

Chapter- Wise Coverage

With detailed explanation & short Tricks

English Medium

ALP Technician tier 1, tier 2, NTPC CBT 1, NTPC CBT 2, Group D,
RPF SI, RPF Constable, RRB JE and other railway exams

each book has
multipurpose
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PINNACLE Publications

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Number System

Basics of Number System

(1). **Face Value:** It is nothing but the number itself about which it has been asked.

Eg: In the number 23576, face value of 5 is 5 and face value of 7 is 7.

(2). **Place Value:** The place value of a number depends on its position in the number. Each position has a value 10^n , the places to its right.

Eg: In the number 23576, place value of 5 is 500 and place value of 3 is 3000.

Types of Numbers

(1). **Natural Numbers (N) :**

All positive counting numbers. (0 is not included in it.)

Examples: 1, 2, 3, 4 ... etc.

(2). **Whole Numbers (W):** All non-negative numbers are all whole numbers.

Examples: 0, 1, 2, 3, 4... etc.

(3). **Integer Numbers (I):** All positive numbers and negative numbers including zero. Positive numbers are called positive integers and negative numbers are called negative integers.

I = , -4, -3, -2, -1, 0, 1, 2, 3, 4

(4). **Even Numbers**

2, 4, 6, 8, 10..... [Divisible by 2 completely]

(5). **Odd Numbers:** 1, 3, 5, 7, 9, 11..... [Not divisible by 2 completely]

(6). **Rational Numbers :** Numbers whose exact value can be determined.

Examples : $\frac{3}{4} = 0.75$, $\frac{4}{5} = 0.8$

(7). **Irrational Numbers :** Numbers whose exact value cannot be determined.

Example : $\pi = \frac{22}{7} = 3.142857142857 \dots$

(8). **Prime number :** A number which is divisible by 1 and itself. 2 is only an even prime number.

Example : 2, 3, 5, 7, 11, etc.

Note:-

Total prime no. between 1 - 50 \Rightarrow 15

Total prime no. between 1 - 100 \Rightarrow 25

Total prime no. between 1 - 500 \Rightarrow 95

Total prime no. between 1 - 1000 \Rightarrow 168

(9). **Composite number :** If we remove all prime numbers from natural numbers then whatever is left is called Composite numbers.

Example : 4, 6, 8, 9, 10, 12 etc.

Note :- 1 is neither prime nor composite.

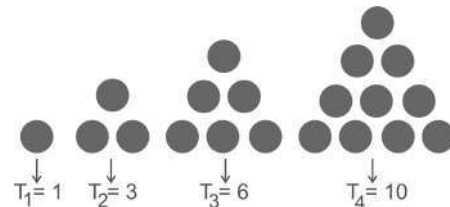
(10). **Co - prime number :** Two numbers are called Co-prime numbers if their HCF is 1.

Example : (2 and 3), (6 and 11).

Note : Two prime numbers are always co-prime numbers to each other. Any two consecutive integers are always co-prime number to each other.

(11). **Triangular number :** The triangular number sequence is the representation of the numbers in the form of an equilateral triangle arranged in a series or sequence.

These numbers are in a sequence of 1, 3, 6, 10, 15, 21, 28, 36, 45, and so on.



Formula : $\frac{n(n+1)}{2}$

Where n is the sequence of the number i.e. n = 1, 2, 3.....so on

Example : for finding seventh triangular number put n = 7

So seventh triangular number

$$= \frac{7(7+1)}{2} = \frac{7(8)}{2} = 28$$

Factors

The factors of a number are the numbers that divide it completely without leaving any remainder.

Example : 24 can be completely divided by 1, 2, 3, 4, 6, 8, 12 and 24, so these numbers are factors of 24.

Prime factorisation of a number : When a number is written in the form of multiplication of its prime factors, it's called prime factorisation.

Prime factorisation of 24.

$$\begin{array}{r|l} 2 & 24 \\ \hline 2 & 12 \\ \hline 2 & 6 \\ \hline & 3 \end{array}$$

$$24 \rightarrow 2 \times 2 \times 2 \times 3 \text{ or } 2^3 \times 3^1$$

Number of factors : To find the number of factors we write the number in the form of prime factors and then add +1 to the exponent of prime factors and multiply them.

For example: $24 = 2^3 \times 3^1$

Number of factors of 24 $\rightarrow (3+1)(1+1) = 4 \times 2 = 8$.

With the help of an example, we try to find the sum of all factors of a number.

$$24 = 2^3 \times 3^1,$$

$$\text{Sum of all factors} = (2^0 + 2^1 + 2^2 + 2^3) \times (3^0 + 3^1) = 15 \times 4 = 60.$$

Number of even factors of a number : To find the number of even factors of a number, we add +1 to the exponents of prime numbers except 2.

(Note : If a number doesn't have 2 as its factor it will have 0 even factors)

Que. Find the number of even factors of 120.

$$\text{Ans. } 120 = 2^3 \times 3^1 \times 5^1$$

$$\text{Number of even factors} = 3 \times (1+1) \times (1+1) = 3 \times 2 \times 2 = 12$$

Note :- To find the sum of even factors, we shall ignore 2^0 ,

Que. Find the sum of even factors of 120.

$$\text{Sol:-Sum of even factors} = (2^1 + 2^2 + 2^3) (3^0 + 3^1)(5^0 + 5^1) = 14 \times 4 \times 6 = 336.$$

Number and Sum of odd factors of a number : to find the number and sum of odd factors of a number, we have to ignore the exponents of 2.

Que. Find the number of odd factors 120.

$$\text{Sol:- } 120 = 2^3 \times 3^1 \times 5^1$$

$$\text{Required number} = (1+1)(1+1) = 4$$

The exponent Number system of 2 is completely ignored.

$$\text{Sum of odd factors of 120} = (3^0 + 3^1)$$

$$(5^0 + 5^1) = 4 \times 6 = 24$$

Some Important Results of Factors:

$$1001 = 7 \times 11 \times 13$$

$$1001 \times abc = abcabc$$

$$1001 \times 234 = 234234$$

Que: Which of the following is a factor of 531531?

(a) 15 (b) 13 (c) 11 (d) both b and c

Sol:- $531531 = 1001 \times 531$

$= 7 \times 11 \times 13 \times 531$ So, both 11 and 13 are factors of 531531.

$$111 = 37 \times 3, 1001 \times 111 = 111111,$$

When a single digit is written 6 times, 3, 7, 11, 13, and 37 are factors of it.

Que. Which of the following is a factor of 222222 ?

(a) 17 (b) 57 (c) 68 (d) 74

Sol:- $222222 = 2 \times 111111$

$$= 2 \times 3 \times 7 \times 11 \times 13 \times 37$$

Clearly, $2 \times 37 = 74$ is one of the factors.

Recurring Decimal

Recurring decimals are referred to as

numbers that are uniformly repeated after the decimal. Some rational numbers produce recurring decimals after converting them into decimal numbers, but all irrational numbers produce recurring decimals after converting them into decimal form.

Examples :

$$(1) \frac{1}{3} = 0.3333333 \dots = 0.\bar{3}$$

$$(2) \frac{22}{7} = 3.142857142857 \dots$$

$$= 3.\overline{142857}$$

$$(3) 0.\bar{9} = \frac{9}{9} = 1$$

$$(4) 0.\overline{5327} = \frac{5327 - 53}{9900} = \frac{5274}{9900}$$

Divisibility Test

By 2:- When last digit is 0 or an even number eg: 520, 588

By 3:- Sum of digits is divisible by 3 eg: 1971, 1974

By 4:- When last two digits are divisible by 4 or, they are zeros eg: 1528, 1700

By 5 :- When last digit is 0 or 5 eg: 1725, 1790

By 6 :- When the number is divisible by 2 and 3 both. eg: 36, 72

By 7 :- Subtract twice the last digit from the number formed by the remaining digits. Like 651 divisible by 7
 $65 - (1 \times 2) = 63$. Since 63 is divisible by 7, so is 651.

By 8 :- When the last three digits are divisible by 8. eg: 2256

By 9 :- When sum of digit is divisible by 9 eg: 9216

By 10 :- When the last digit is 0. eg: 452600

By 11:- When the difference between the sum of odd and even place digits is equal to 0 or multiple of 11 eg: 217382
 Sum of odd place digits = $2 + 7 + 8 = 17$
 Sum of even place digits = $1 + 3 + 2 = 6$
 $17 - 6 = 11$, hence 217382 is divisible by 11.

By 13 :- - If adding four times the last digit to the number formed by the remaining digits is divisible by 13, then the number is divisible by 13. Like 1326 is divisible by 13

$132 + (6 \times 4) = 156$. Repeat the same process for 156 .

$15 + (6 \times 4) = 39$.so 39 is divisible by 13

BY 17 :-The divisibility rule of 17 states, "If the difference between 5 times the last digit and the rest is either 0 or multiple of 17, then the number is divisible by 17".

Like 221: $22 - 1 \times 5 = 17$.

Prime Number Test

For finding whether any number is a prime number or not, we need to find the nearest square root of given number, then we need to find out whether the given number is divisible by any prime number less than the obtained number or not. If it is divisible then it is not a prime number and if not divisible then it is a prime number.

Example : Find whether 177 is a prime number or not.

Soln : Nearest square root of 177 is 13. Now we need to check whether 177 is divisible by prime numbers less than 13. On checking we find that 177 is divisible by 3. Hence, 177 is not a prime number.

Important Formulas

1. Sum of first n natural number

$$s = \frac{n(n+1)}{2}$$

2. Sum of first n odd numbers = n^2

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

4. Sum of square of first n natural numbers = $\frac{n(n+1)(2n+1)}{6}$

5. Sum of cubes of first n natural number = $(\frac{n(n+1)}{2})^2$

6. $(x^m - a^m)$ is divisible by $(x - a)$ for every natural number m.

7. $(x^m - a^m)$ is divisible by $(x + a)$ for even values of m.

8. $(x^m + a^m)$ is divisible by $(x + a)$ for odd values of m.

9. Number of prime factors of a^p, b^q, c^r, d^s is $p + q + r + s$ when a, b, c, d are all prime numbers.

Number of Zeros in an expression

We shall understand this concept with the help of an example.

Let's find the number of zeros in the following expression: $24 \times 32 \times 17 \times 23 \times 19 = (2^3 \times 3^1) \times 2^5 \times 17 \times 23 \times 19$

Notice that a zero is made only when there is a combination of 2 and 5. Since there is no '5' here there will be no zero in

the above expression.

Example:

$8 \times 15 \times 23 \times 17 \times 25 \times 22 = 2^3 \times (3^1 \times 5^1) \times 23 \times 17 \times 5^2 \times 2^1 \times 11$
 In this expression there are 4 twos and 3 fives. From this 3 pairs of 5×2 can be formed. Therefore, there will be 3 zeros in the final product.

Que. Find the number of zeros in the value of:

$$2^2 \times 5^4 \times 4^6 \times 10^8 \times 6^{10} \times 15^{12} \times 8^{14} \times 20^{16} \times 10^{18} \times 25^{20}$$

Sol:-

$$2^2 \times 5^4 \times 4^6 \times 10^8 \times 6^{10} \times 15^{12} \times 8^{14} \times 20^{16} \times 10^{18} \times 25^{20} = 2^2 \times 5^4 \times 2^{12} \times 2^8 \times 5^8 \times 2^{10} \times 3^{10} \times 3^{12} \times 5^{12} \times 2^{42} \times 2^{32} \times 5^{16} \times 2^{18} \times 5^{18} \times 5^{40}$$

Zeros are possible with a combination of 2×5

Here the number of 5's are less so the number of zeros will be limited to the number of 5's.

In this expression number of fives are:

$$5^4 \times 5^8 \times 5^{12} \times 5^{16} \times 5^{18} \times 5^{40};$$

i.e. $4 + 8 + 12 + 16 + 18 + 40 = 98$

The number of Zeros in n!

To find the number of zeros in $n!$, we divide "n" by 5 until we get a number less than 5, and then we add all the quotients so obtained.

Que. Find the number of zeros in $36!$.

5	36
5	7 (1)
	1 (2)

The number of zeros = $7 + 1 = 8$.

Remainder Theorem

Que. What will be the remainder when 17×23 is divided by 12?

Ans :- We can write:

$17 \times 23 = 12 + 5 \times 12 + 11$
 $= 12 \times 12 + 12 \times 11 + 5 \times 12 + 5 \times 11$
 In the above expression we will find that remainder will depend on the last term i.e. 5×11

Now, $rem.(\frac{5 \times 11}{12}) = 7$.

So, $\frac{12 \times 12 + 12 \times 11 + 5 \times 12 + 5 \times 11}{12}$

and $\frac{5 \times 11}{12}$ remainder is same in both cases which is 7.

Example:- Remainder when $1421 \times 1423 \times 1425$ is divided by 12?

$$\begin{aligned} & \text{rem}\left(\frac{1421 \times 1423 \times 1425}{12}\right) \\ &= \text{rem}\left(\frac{5 \times 7 \times 9}{12}\right) = \text{rem}\left(\frac{35 \times 9}{12}\right) \\ &= \text{rem}\left(\frac{11 \times 9}{12}\right) = 3 \end{aligned}$$

Negative Remainder

Taking a negative remainder will make our calculation easier.

Examples

$$\begin{aligned} \text{(i)} \quad \text{rem}\left(\frac{7 \times 8}{9}\right) &= \text{rem}\left(\frac{-2 \times -1}{9}\right) \\ &= -2 \times -1 = 2 \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad \text{rem}\left(\frac{55 \times 56}{57}\right) &= \text{rem}\left(\frac{-2 \times -1}{57}\right) \\ &= -2 \times -1 = 2 \end{aligned}$$

$$\begin{aligned} \text{(iii)} \quad \text{rem}\left(\frac{7 \times 10}{9}\right) &= \text{rem}\left(\frac{-2 \times 1}{9}\right) \\ &= -2 \times 1 = -2 \text{ or, } 7 \end{aligned}$$

Large Power Concepts

Look at the following examples:

$$\begin{aligned} \text{(i)} \quad \text{rem}\left(\frac{28^{12345}}{9}\right) &= \text{rem}\left(\frac{(27+1)^{12345}}{9}\right) \\ &= \text{rem}\left(\frac{1^{12345}}{9}\right) = 1^{12345} = 1 \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad \text{rem}\left(\frac{26^{12345}}{9}\right) \\ &= \text{rem}\left(\frac{(27-1)^{12345}}{9}\right) \\ &= \text{rem}\left(\frac{-1^{12345}}{9}\right) = -1^{12345} = -1 \text{ or } 8 \end{aligned}$$

Application of Remainder Theorem

Que. Find the last two digits of the expression

$$22 \times 31 \times 44 \times 27 \times 37 \times 43 ?$$

Sol:- If we divide the above expression by 100, we will get the last two digits as remainder.

$$\Rightarrow \text{rem}\left(\frac{22 \times 31 \times 44 \times 27 \times 37 \times 43}{100}\right),$$

dividing by 4 to make it simple

$$= \text{rem}\left(\frac{22 \times 31 \times 11 \times 27 \times 37 \times 43}{25}\right)$$

$$= \text{rem}\left(\frac{132 \times 22 \times 216}{25}\right)$$

$$= \text{rem}\left(\frac{7 \times 22 \times 16}{25}\right) \Rightarrow \text{rem}\left(\frac{4 \times 16}{25}\right)$$

$$= \text{rem}\left(\frac{14}{25}\right) = 14$$

Since we had divided by 4 initially now to get the correct answer, we need to multiply the remainder by 4.

So remainder will be $14 \times 4 = 56$, which will also be the last two digits of the expression.

Variety Questions

Q.1. A number, when divided by the sum of 335 and 265, gives three times the difference between 335 and 265 as the quotient and 35 as the remainder. What is that number ?

Group D 22/08/2022 (Morning)

- (a) 126035 (b) 128235
(c) 124535 (d) 127535

Q.2. If the 8 - digit number $3x5479y4$ is divisible by 88 and the 8-digit number $425139z2$ is divisible by 9, then what is the greatest possible value of $(3x + 2y - z)$?

Group D 09/09/2022 (Evening)

- (a) 25 (b) 33 (c) 35 (d) 37

Q.3. By adding 2 to the numerator and 5 to the denominator of a fraction, the fraction obtained is equal to $\frac{1}{2}$. Also, the fraction obtained by subtracting 2 from both the numerator and the denominator is equal to $\frac{1}{3}$. Find the Fraction .

Group D 24/08/2022 (Afternoon)

- (a) $\frac{4}{17}$ (b) $\frac{8}{15}$ (c) $\frac{1}{7}$ (d) $\frac{3}{5}$

Q.4. Four prime numbers are taken in ascending order. The product of the first three prime numbers is 1771 and the sum of the last two prime numbers is 82. What is the product of the last two prime numbers ?

Group D 25/08/2022 (Afternoon)

- (a) 1387 (b) 1127 (c) 1537 (d) 1357

Q.5. Find the sum of the prime factors of $9^6 \times 12^4 \times 7^7$?

Group D 26/08/2022 (Evening)

- (a) 13 (b) 12 (c) 14 (d) 11

Q.6. If the 5-digit number $688xy$ is divisible by 11 and 21, then what is the value of $(8x - 3y + xy)$?

Group D 12/09/2022 (Morning)

- (a) 6 (b) 24 (c) 15 (d) 13

Q.7. From the numbers 367, 489, 514, 632 and 728, if 2 is added to the first digit of each of the numbers, how many new numbers will be thus formed whose sum of all digits will be divisible by three? (Example-697 - First digit-6, second digit-9 and third digit-7)

Group D 17/09/2022 (Morning)

- (a) One (b) Three (c) Four (d) Two

Q.8. The product of two consecutive positive integers is 552. If the smaller of these two integers is represented by x , which of the options below will correspond to the equation for finding out the value of x ?

Group D 20/09/2022 (Afternoon)

$$\text{(a)} \quad x^2 + x + 552 = 0$$

$$\text{(b)} \quad x^2 - x + 552 = 0$$

$$\text{(c)} \quad x^2 + x - 552 = 0$$

$$\text{(d)} \quad x^2 - x - 552 = 0$$

Q.9. If $12600 = p^3 \times q^2 \times r^2 \times s^1$, where p , q , r and s are consecutive prime numbers in ascending order, then what is the value of $(3p + 2q - r + s)$?

Group D 11/10/2022 (Afternoon)

- (a) 12 (b) 13 (c) 14 (d) 17

Q.10. Arushi was to multiply a number by 2.4, but instead multiplied by 4.2. If the product she obtained was 65.1, then what is the correct product that she should have got ?

NTPC CBT II Level 5 (12/06/2022) Shift 1

- (a) 36.50 (b) 46.88 (c) 37.20 (d) 113.93

Q.11. In what way can the terms of the given set be rearranged into three sets such that the sum of the two terms in each set is equal ?

(947, 861, 1304, 1218, 1378, 787)

NTPC CBT II Level 5 (15/06/2022) Shift 2

(a) (787, 1378), (947, 1304), (861, 1218)

(b) (947, 1218), (861, 1304), (787, 1378)

(c) (861, 1218), (947, 1378), (787, 1304)

(d) (947, 1304), (861, 1378), (787, 1218)

Q.12. 6889 students are sitting in an auditorium in such a manner that there are as many students in a row as there are rows in the auditorium. How many rows are there in the auditorium ?

NTPC CBT - I 29/12/2020 (Afternoon)

- (a) 73 (b) 87 (c) 83 (d) 77

Q.13. If $1^2 + 2^2 + 3^2 + \dots + 14^2 = 1015$, then $3^2 + 6^2 + 9^2 + \dots + 42^2$ is equal to

NTPC CBT - I 29/12/2020 (Morning)

- (a) 9135 (b) 9325 (c) 9235 (d) 9315

Q.14. Which of the following is NOT a rational number ?

$$\sqrt{3^2 + 4^2}, \sqrt{12.96}, \sqrt{125} \text{ and } \sqrt{900}$$

NTPC CBT - I 05/01/2021 (Morning)

$$\text{(a)} \quad \sqrt{900} \quad \text{(b)} \quad \sqrt{125}$$

$$\text{(c)} \quad \sqrt{3^2 + 4^2} \quad \text{(d)} \quad \sqrt{12.96}$$

Q.15. The least multiple of 23 when divided by 18, 21 and 24 leaves the remainder 7, 10 and 13 respectively. The number is;

NTPC CBT - I 07/01/2021 (Morning)

- (a) 3131 (b) 3013 (c) 3103 (d) 3113

Q.16. How many times is digit 3 passed in counting from 301 to 399?

NTPC CBT - I 10/01/2021 (Evening)

- (a) 121 (b) 119 (c) 11 (d) 21

Q.17. $(1 - \frac{1}{n}) + (1 - \frac{2}{n}) + (1 - \frac{3}{n}) + \dots$ up to n terms will result as:

NTPC CBT - I 10/01/2021 (Evening)

(a) $\frac{1}{2n-1}$ (b) $\frac{1}{2n}$ (c) $\frac{1}{n^2}$ (d) $\frac{n-1}{2}$

Q.18. In competitive examination, 1 mark is awarded for correct answer, 0 mark for unanswered and $\frac{1}{2}$ Mark is deducted for every wrong answer. Ambika answered 120 questions and got 90 marks. How many answers were correct ?

NTPC CBT - I 10/01/2021 (Evening)

- (a) 60 (b) 110 (c) 100 (d) 98

Q.19. If a,b,c,d and e are the digits of a number beginning from the left, then the number is:

NTPC CBT - I 04/02/2021 (Morning)

- (a) $100a + 10b + 10c + d + e$
 (b) $1000a + 100b + 10c + 1d + e$
 (c) edcba
 (d) $10^4a + 10^3b + 10^2c + 10d + e$

Q.20. There are 40 persons in the palace. If every person shakes hands with every other person, what will be the total number of handshakes ?

NTPC CBT - I 21/01/2021 (Morning)

- (a) 780 (b) 750 (c) 790 (d) 800

Q.21. When you reverse the digits of the number 14, the number increases by 27. How many other two-digit numbers increase by 27, when their digits are reversed ?

NTPC CBT - I 22/01/2021 (Evening)

- (a) 4 (b) 6 (c) 7 (d) 5

Q.22. A boy was set to multiply 495 by 36, but reading one of the digits in the questions erroneously, he obtained 16740 as his answer. Which digit did he read erroneously ?

NTPC CBT - I 27/01/2021 (Evening)

- (a) 9 (b) 8 (c) 2 (d) 7

Q.23. Assuming $A = 1$, $B = 2$ and so on $Z = 26$, find the value of the following equation.

$$(I^2 - C^2 \times \frac{P}{R}) + 8$$

NTPC CBT - I 12/02/2021 (Morning)

- (a) 90 (b) 73 (c) 81 (d) 78

Q.24. Find the value of $\frac{1}{1 \times 4} + \frac{1}{4 \times 7}$

$$+ \frac{1}{7 \times 10} + \dots + \frac{1}{47 \times 50}$$

NTPC CBT - I 16/02/2021 (Evening)

- (a) $\frac{47}{150}$ (b) $\frac{49}{50}$ (c) $\frac{49}{150}$ (d) $\frac{47}{50}$

Q.25. If the sum of two numbers is r and their quotient is $\frac{s}{t}$ then the numbers are.

NTPC CBT - I 17/02/2021 (Morning)

- (a) $\frac{r}{s}$ and $\frac{r}{t}$ (b) $\frac{sr}{s+t}$ and $\frac{tr}{s+t}$
 (c) $\frac{rs}{t}$ and $\frac{ts}{r}$ (d) $\frac{r-s}{t}$ and $\frac{r-t}{s}$

Q.26. If the arithmetic mean and geometric mean of two observations are 10 and 5, respectively, then find the sum of the squares of the observations.

NTPC CBT - I 11/03/2021 (Evening)

- (a) 295 (b) 275 (c) 225 (d) 350

Q.27. Determine the integer n such that $\frac{n}{160}$ is less than $\frac{1}{16}$ but more than $\frac{1}{20}$.

NTPC CBT - I 11/03/2021 (Evening)

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

Q.28. What would be the highest value of X and Z in the given equation?

$$9X7 + 8YZ + 7Z1 = 2526$$

NTPC CBT - I 02/03/2021 (Evening)

- (a) $X = 7, Z = 8$ (b) $X = 9, Z = 2$
 (c) $X = 9, Z = 1$ (d) $X = 3, Z = 8$

Q.29. If P is a prime number and P divides Q^2 , then P will NOT necessarily divide:

NTPC CBT - I 27/03/2021 (Morning)

- (a) $3Q$ (b) $Q + 1$ (c) $2Q^2$ (d) Q

Q.30. When 43 is divided by x , the remainder is $x-5$. If x is a natural number, how many solutions will x have ?

NTPC CBT - I 23/07/2021 (Evening)

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

Q.31. X attempts 94 questions and gets 141 marks. If for every correct answer 4 marks is given, and for every wrong answer 1 mark is deducted, then the number of questions wrongly answered by X is _____.

RRB ALP Tier - I 17/08/2018 (Morning)

- (a) 45 (b) 57 (c) 47 (d) 40

Practice Questions

RRC Group D

(17/08/2022 to 11/10/2022)

Q.32. Which of the following is divisible by both 4 and 8 ?

Group D 17/08/2022 (Afternoon)

- (a) 4382 (b) 8342 (c) 3824 (d) 3842

Q.33. Find the number of 2-digit numbers divisible by both 2 and 4.

Group D 17/08/2022 (Evening)

- (a) 12 (b) 42 (c) 22 (d) 32

Q.34. If x and y are the two digits of the number 115 xy such that this number is divisible by 90, then the value of $x + y$ is:

Group D 18/08/2022 (Morning)

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

Q.35. The smallest natural number that must be added to 1212 to make it a perfect square is:

Group D 18/08/2022 (Afternoon)

- (a) 13 (b) 27 (c) 18 (d) 24

Q.36. Which of the following pairs of numbers are co - primes ?

Group D 18/08/2022 (Afternoon)

- (a) 34 and 35 (b) 17 and 170
 (c) 12 and 18 (d) 7 and 14

Q.37. Find the smallest number by which 6300 must be multiplied to make it a perfect square.

Group D 18/08/2022 (Afternoon)

- (a) 6 (b) 12 (c) 15 (d) 7

Q.38. The sum of two numbers is 32 and one of them exceeds the other by 18. Find the greater number.

Group D 18/08/2022 (Evening)

- (a) 27 (b) 25 (c) 28 (d) 24

Q.39. Which of the following pairs is NOT coprime ?

Group D 18/08/2022 (Evening)

- (a) (11, 13) (b) (15, 17)
 (c) (17, 23) (d) (17, 34)

Q.40. Mohit's salary is ₹15,000 per month. He spends ₹5,000 on house rent. ₹2000 on bills and rest of the amount is his monthly savings. Find his savings in a year, if in the month of his birthday he spent his complete monthly saving for birthday celebration.

Group D 18/08/2022 (Evening)

- (a) ₹88,000 (b) ₹8,000
 (c) ₹17,000 (d) ₹ 96,000

Q.41. The sum of the double of the largest two-digit prime number and triple of the largest three-digit prime number is equal to _____.

Group D 22/08/2022 (Afternoon)

- (a) 3185 (b) 3029 (c) 2195 (d) 6523

Q.42. From the numbers 51, 52, 53,..... 100. find the sum of the smallest and the greatest prime numbers as given.

Group D 22/08/2022 (Afternoon)

- (a) 123 (b) 150 (c) 139 (d) 154

Q.43. 3 pencils and 5 pens together cost ₹81, whereas 5 pencils and 3 pens together cost ₹71. The cost of 1 pencil and 2 pens together is :

Group D 22/08/2022 (Afternoon)

(a) ₹29 (b) ₹35 (c) ₹26 (d) ₹31

Q.44. The sum of the digits in a two-digit number is 9. If the value of the number is 6 more than 5 times the digit in the ones' place, then the number is:

Group D 22/08/2022 (Evening)

(a) 45 (b) 18 (c) 27 (d) 36

Q.45. The sum of the first 8 prime numbers divided by 7 equal to _____

Group D 22/08/2022 (Evening)

(a) 14 (b) 11 (c) 13 (d) 10

Q.46. The sum of three consecutive multiples of 9 is 2457, find the largest one.

Group D 23/08/2022 (Morning)

(a) 828 (b) 990 (c) 819 (d) 999

Q.47. The total number of three-digit numbers divisible by 2 or 5 is ?

Group D 23/08/2022 (Afternoon)

(a) 540 (b) 400 (c) 245 (d) 270

Q.48. There are two consecutive natural numbers such that the sum of their squares is 313. Find the smaller of these two numbers.

Group D 24/08/2022 (Morning)

(a) 12 (b) 13 (c) 14 (d) 15

Q.49. The value of $1 + 3 + 5 + 7 + \dots + 21 =$

Group D 25/08/2022 (Morning)

(a) 121 (b) 211 (c) 108 (d) 144

Q.50. How many numbers between 1 to 150 are divisible by 3 and 4 both ?

Group D 26/08/2022 (Morning)

(a) 10 (b) 11 (c) 12 (d) 9

Q.51. If $4 + 4^{n+5} = 260$, then find the value of 5^{n+3} .

Group D 26/08/2022 (Afternoon)

(a) 25 (b) 36 (c) 49 (d) 16

Q.52. The prime factorisation of the number 266805 is:

Group D 29/08/2022 (Morning)

(a) $3^3 \times 5^2 \times 7 \times 11^2$

(b) $3^2 \times 5 \times 7^2 \times 11^2$

(c) $3^4 \times 5^2 \times 7^2 \times 11^2$

(d) $3 \times 5 \times 7^3 \times 11^2$

Q.53. When a number is divided by a divisor, the remainder is 16. When twice the original number is divided by the same divisor, the remainder is 3. Find the value of that divisor.

Group D 30/08/2022 (Afternoon)

(a) 29 (b) 51 (c) 23 (d) 53

Q.54. The sum of two numbers is 27. Five times one number is equal to 4

times the other. The smaller of the two numbers is:

Group D 30/08/2022 (Afternoon)

(a) 15 (b) 12 (c) 11 (d) 13

Q.55. The sum of a two-digit number and the number obtained by reversing the digits is 99. If the digits of the number differ by 5, then the two-digit number can be:

Group D 01/09/2022 (Morning)

(a) 27 (b) 16 (c) 83 (d) 18

Q.56. The sum of a number, its half, its $\frac{1}{3}$ and 27, is 71. Find the number.

Group D 01/09/2022 (Afternoon)

(a) 25 (b) 24 (c) 22 (d) 23

Q.57. Three numbers $x \leq y \leq z$ which are co-prime to each other are such that the product of the first two numbers is 143 and that of the last two numbers is 195. The sum of the three numbers is _____.

Group D 01/09/2022 (Afternoon)

(a) 29 (b) 39 (c) 62 (d) 45

Q.58. Find the smallest number that can be added to 467851 to make the sum a perfect square.

Group D 01/09/2022 (Afternoon)

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

Q.59. The sum of two positive numbers is 45 and their difference is 19. What are the numbers ?

Group D 01/09/2022 (Evening)

(a) 32, 13 (b) 30, 15 (c) 25, 20 (d) 31, 15

Q.60. Find the greatest number by which when the numbers 158 and 215 are divided, it leaves remainders 4 and 5, respectively.

Group D 02/09/2022 (Morning)

(a) 7 (b) 21 (c) 18 (d) 14

Q.61. The sum of two consecutive multiples of 6 is 66. Find the smaller of these two multiples.

Group D 02/09/2022 (Morning)

(a) 42 (b) 30 (c) 36 (d) 24

Q.62. If the number 6484y6 is divisible by 8, then find the least value of y ?

Group D 02/09/2022 (Afternoon)

(a) 7 (b) 3 (c) 1 (d) 4

Q.63. Five times a number is 65. Find the number.

Group D 02/09/2022 (Evening)

(a) 15 (b) 11 (c) 13 (d) 10

Q.64. How many prime numbers are there between 20 and 80 ?

Group D 02/09/2022 (Evening)

(a) 15 (b) 14 (c) 13 (d) 16

Q.65. When a number is divided by 15, the remainder is 9. What will be the remainder when the same number is divided by 5 ?

Group D 05/09/2022 (Morning)

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

Q.66. Which of the following is the smallest composite number ?

Group D 05/09/2022 (Evening)

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

Q.67. Find the number whose one-third exceeds its one-fifth by 6.

Group D 06/09/2022 (Afternoon)

(a) 50 (b) 45 (c) 40 (d) 35

Q.68. A two digit number is equal to 7 times the sum of its digits. The number obtained by interchanging the places of the digits is 18 less than the original number. Find the product of the digits of the number.

Group D 06/09/2022 (Evening)

(a) 10 (b) 12 (c) 18 (d) 8

Q.69. Find the total number of prime numbers less than 50.

Group D 06/09/2022 (Evening)

(a) 13 (b) 15 (c) 17 (d) 14

Q.70. If $(\frac{3}{7})^8 \times (\frac{3}{7})^{-14} = (\frac{3}{7})^{3p-3}$ then find the value of p.

Group D 06/09/2022 (Evening)

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

Q.71. The sum of three consecutive natural numbers is 141. The middle number is :

Group D 09/09/2022 (Evening)

(a) 46 (b) 47 (c) 56 (d) 57

Q.72. If $x + y = 18$, Product of x and y is 77, then which of the following pairs of numbers can be the values of x and y. Respectively ?

Group D 12/09/2022 (Afternoon)

(a) 12 and 6 (b) 11 and 7

(c) 9 and 9 (d) 8 and 10

Q.73. The sum of five consecutive numbers is 240. The sum of the first and last numbers is :

Group D 12/09/2022 (Afternoon)

(a) 96 (b) 126 (c) 106 (d) 116

Q.74. The value of $(11^0 + 21^0 - 7^0 + 3^0) \times 5^0$ is:

Group D 12/09/2022 (Evening)

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

Q.75. Which of the following is divisible by 2, 3, and 5 ?

Group D 13/09/2022 (Morning)
(a) 3150 (b) 14175 (c) 54332 (d) 2240

Q.76. The sum of twice a number and three times of 52 is 342. What is the sum of four times the number and two times 52 ?

Group D 13/09/2022 (Morning)
(a) 676 (b) 776 (c) 476 (d) 576

Q.77. The sum of two numbers is 9 and the sum of their squares are 41. The numbers are :

Group D 13/09/2022 (Afternoon)
(a) 5, 4 (b) 1, 8 (c) 6, 3 (d) 7, 2

Q.78. The sum of five consecutive even numbers is 2720. The sum of the third and fifth numbers is:

Group D 13/09/2022 (Afternoon)
(a) 1392 (b) 1292 (c) 1192 (d) 1092

Q.79. If 1 is added to the first digits and 1 is subtracted from the last digits of each of the following numbers, then in how many numbers will the first digit be exactly divisible by the last digit ?

242, 657, 864, 264, 674, 218, 845

Group D 14/09/2022 (Morning)
(a) 2 (b) 1 (c) 3 (d) 0

Q.80. If each digit of the number 72514368 is subtracted from 9, how many even digits will be there in the newly formed number ?

Group D 14/09/2022 (Morning)
(a) 3 (b) 5 (c) 6 (d) 4

Q.81. If each of the digits in the number 354698329 is arranged in ascending order from left to right, then the position of how many digits will change as compared to that in the original number ?

Group D 14/09/2022 (Morning)
(a) 5 (b) 6 (c) 4 (d) 8

Q.82. (6, y) is a pair of co-prime numbers where y is a natural number not exceeding 20. How many possible values of y are there ?

Group D 15/09/2022 (Afternoon)
(a) 6 (b) 7 (c) 8 (d) 5

Q.83. The smallest prime number is:

Group D 15/09/2022 (Evening)
(a) 1 (b) 4 (c) 3 (d) 2

Q.84. If 11 is subtracted from each of the following numbers and the digits of each number are written in reverse order and then the numbers are arranged in ascending order, the position of how many numbers will not change ?

167, 876, 567, 187, 873

Group D 15/09/2022 (Evening)

(a) Two (b) Four (c) One (d) Three

Q.85. What is the positive difference between the sum of all prime numbers between 11 and 20 (both included) and the sum of all prime numbers between 30 and 50 (both included) ?

Group D 15/09/2022 (Evening)
(a) 141 (b) 135 (c) 137 (d) 139

Q.86. The number of non-square numbers between 87^2 and 88^2 is:

Group D 16/09/2022 (Morning)
(a) 174 (b) 164 (c) 184 (d) 154

Q.87. the smallest natural number which is divisible by 8, 12, 28 and 36 is :

Group D 16/09/2022 (Afternoon)
(a) 504 (b) 168 (c) 252 (d) 336

Q.88. The sum of the digits of a two-digit number is 12. The number obtained by interchanging its digits exceeds the given number by 18. The number is:

Group D 16/09/2022 (Afternoon)
(a) 76 (b) 57 (c) 27 (d) 67

Q.89. The sum of the squares of two consecutive odd natural numbers is 74. The sum of the numbers is:

Group D 16/09/2022 (Evening)
(a) 12 (b) 18 (c) 24 (d) 28

Q.90. A two - digit number z is exactly six times the sum of its digits and the difference of the number formed by reversing the digits of z from the original number z is 9. Then z is:

Group D 16/09/2022 (Evening)
(a) 54 (b) 45 (c) 42 (d) 36

Q.91. If the sum of the immediate successors of two given numbers is 40 and the difference of the two given numbers is 6, then the two given numbers are _____

Group D 18/09/2022 (Afternoon)
(a) 24 and 14 (b) 22 and 16
(c) 25 and 13 (d) 22 and 18

Q.92. Two consecutive numbers are such that one-fourth of the smaller number exceeds one-fifth of the larger number by 3. The larger number is _____.

Group D 19/09/2022 (Morning)
(a) 25 (b) 65 (c) 45 (d) 75

Q.93. Which of the following statements is NOT correct ?

1. There are only four single-digit prime numbers.
2. There are infinitely many prime numbers.
3. A prime number has only two factors.

4. All prime numbers are odd.

Group D 20/09/2022 (Morning)
(a) 1 (b) 4 (c) 2 (d) 3

Q.94. Which of the numbers below is divisible by all the natural numbers from 1 to 10 (both inclusive) ?

Group D 20/09/2022 (Afternoon)
(a) 608 (b) 10 (c) 2520 (d) 100

Q.95. If $4^{2n+1} = 2^{3n+9}$, then $n =$ _____

Group D 20/09/2022 (Evening)
(a) $\frac{9}{2}$ (b) 7 (c) - 8 (d) 8

Q.96. If the sum of three consecutive odd numbers is 309, then the largest number among them is

Group D 20/09/2022 (Evening)
(a) 105 (b) 101 (c) 103 (d) 109

Q.97. Which of the options below gives a pair of co - prime numbers ?

Group D 26/09/2022 (Evening)
(a) (196, 343) (b) (228, 247)
(c) (161, 192) (d) (156, 234)

Q.98. The 6 - digit number 473xy5 is divisible by 125. How many such 6-digit numbers are there ?

Group D 27/09/2022 (Morning)
(a) 3 (b) 4 (c) 1 (d) 2

Q.99. Which of the following are exactly divisible by 44 ?

Group D 27/09/2022 (Afternoon)
(1) 155232 (2) 155248
(3) 156944 (4) 156992
(a) Only (2) and (3) (b) Only (1) and (4)
(c) Only (1) and (3) (d) Only (2) and (4)

Q.100. Let $x = 55^{100} + 55^{101} + 55^{102}$. Which of the following prime numbers is NOT a factor of x ?

Group D 27/09/2022 (Evening)
(a) 71 (b) 3 (c) 79 (d) 11

Q.101. When a number is divided by 15, it leaves a remainder of 3. If the same number is divided by 17, the remainder is 11. Which of the options below gives such a number ?

Group D 28/09/2022 (Morning)
(a) 198 (b) 185 (c) 190 (d) 183

Q.102. Mr. Rao walks 45 minutes in a day. What fraction of a day does he walk per day, expressed as a fraction?

Group D 28/09/2022 (Afternoon)
(a) $\frac{3}{4}$ (b) $\frac{1}{80}$ (c) $\frac{1}{24}$ (d) $\frac{1}{32}$

Q.103. Which of the following is divisible by 17 ?

Group D 28/09/2022 (Evening)

(a) 1887 (b) 2989 (c) 991 (d) 2022

Q.104. The difference between two numbers is 18. If the difference between their squares is 360, find the larger number.

Group D 29/09/2022 (Morning)

(a) 19 (b) 18 (c) 15 (d) 16

Q.105. The average of the first 7 multiples of 3 is:

Group D 29/09/2022 (Morning)

(a) 11.3 (b) 12 (c) 10.5 (d) 12.5

Q.106. This question is based on the seven, three - digit numbers given below. 365, 125, 486, 548, 654, 552, 354

If 3 is added to the first digit of every number, in how many numbers will the first digit be exactly divisible by the second digit? (example - 697 - First digit = 6, second digit = 9 and third digit = 7)

Group D 29/09/2022 (Evening)

(a) One (b) Three (c) Four (d) Two

Q.107. What is the difference between the biggest and the smallest fractions among $\frac{1}{2}$, $\frac{3}{4}$, $\frac{4}{5}$ and $\frac{5}{6}$?

Group D 29/09/2022 (Evening)

(a) $\frac{1}{12}$ (b) $\frac{1}{3}$ (c) $\frac{1}{9}$ (d) $\frac{1}{6}$

Q.108. Arrange the numbers given below in ascending order.

705.0, 7.005, 7.500, 70.50, 7050, 7.050, 75

Group D 30/09/2022 (Morning)

(a) 7050, 705.0, 75, 70.50, 7.500, 7.050, 7.005

(b) 7.005, 7.500, 7.050, 70.50, 75, 705.0, 7050

(c) 7.005, 7.500, 7.050, 75, 70.50, 705.0, 7050

(d) 7.005, 7.050, 7.500, 70.50, 75, 705.0, 7050

Q.109. In the set {61, 62...100}, find the sum of the second largest and the second smallest primes.

Group D 30/09/2022 (Afternoon)

(a) 156 (b) 164 (c) 150 (d) 158

Q.110. Find the least number which, when divided by 12, 16 and 18, leaves a remainder of 5 in each case.

Group D 30/09/2022 (Evening)

(a) 145 (b) 144 (c) 147 (d) 149

Q.111. The sum of three distinct prime numbers is 40. What is the product of these prime numbers?

Group D 06/10/2022 (Evening)

(a) 310 (b) 682 (c) 722 (d) 434

Q.112. If a number is divisible by 4, then which of the following statements is true?

Group D 06/10/2022 (Evening)

(a) The unit place in the number is 0.

(b) The sum of the digits in the number is divisible by 4.

(c) The number will be divisible by 2 and 6.

(d) The number formed by its last two digit is divisible by 4.

Q.113. Which of the following statements is true?

Group D 07/10/2022 (Afternoon)

(a) 1 is a prime number.

(b) All prime numbers except the number 2 are odd numbers.

(c) There are seven prime numbers between 1 and 20.

(d) If number x is prime, then number x + 1 is always prime.

Q.114. The least value of x so that the number $478265475x + 25481459x$ is divisible by 8, is given by:

Group D 07/10/2022 (Afternoon)

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

Q.115. How many integers lie between 891^2 and 892^2 ?

Group D 07/10/2022 (Evening)

(a) 1782 (b) 892 (c) 900 (d) 1784

Q.116. The sum of two consecutive multiples of 8 is 56. The greater of these two multiples is:

Group D 11/10/2022 (Afternoon)

(a) 24 (b) 42 (c) 23 (d) 32

RRB NTPC CBT - 2 (09/05/2022 to 17/06/2022)

Q.117. One - seventh of a 2 - digit number is 15 less than half of the number. What is the sum of the digits of the 2-digit number?

Level 6 (09/05/2022) Shift 1

(a) 8 (b) 5 (c) 7 (d) 6

Q.118. If the square of a positive number is 6 more than five times the number, what is the number?

Level 6 (09/05/2022) Shift 2

(a) 6 (b) 8 (c) 5 (d) 9

Q.119. The sum of two numbers is 17 while the sum of their squares is 157. Find the sum of the cubes of those two numbers.

Level 5 (12/06/2022) Shift 1

(a) 3791 (b) 3094 (c) 1491 (d) 1547

Q.120. From $\frac{3}{4}$ of a number P,

Ramakrishna subtracts $\frac{2}{3}$ of another

number Q and obtain $\frac{5}{8}$ as the difference. What is the answer Ramakrishna should obtain if he subtracts eight times of Q from nine times of P?

Level 5 (12/06/2022) Shift 2

(a) $\frac{25}{4}$ (b) $\frac{25}{3}$ (c) $\frac{20}{3}$ (d) $\frac{15}{2}$

Q.121. Which of the following numbers is divisible by 7, 11 and 13?

Level 3 (14/06/2022) Shift 1

(a) 1002001 (b) 1003001

(c) 1005001 (d) 1004001

Q.122. In a division involving decimal fractions, the divisor is 22.8 and the quotient is 8.5, while the remainder is 0. What is the dividend?

Level 3 (14/06/2022) Shift 2

(a) 193.2 (b) 193.8 (c) 193.6 (d) 193.4

Q.123. In a bag full of pencils, $\frac{3}{4}$ of the

pencils were coloured pencils, and $\frac{8}{15}$

of the coloured pencils were red. If there were 40 red pencils in the bag. What was the total numbers of pencils in the bag?

Level 5 (15/06/2022) Shift 1

(a) 100 (b) 120 (c) 150 (d) 180

Q.124. If each packet contains the same number of pencils and there are 96 pencils in all in 12 packets, how many packets will one have to purchase if one requires 304 pencils?

Level 2 (16/06/2022) Shift 2

(a) 39 (b) 38 (c) 36 (d) 33

Q.125. If 13.5 kg of grapes cost Rs 681.75, Find the cost of 12 kg of grapes.

Level 2 (16/06/2022) Shift 2

(a) 606.00 (b) 612.00

(c) 603.00 (d) 610.00

Q.126. If a positive integer n is divided by 7, then the remainder is 3. Which of the following numbers yields a remainder of 0 when it is divided by 7?

Level 2 (16/06/2022) Shift 3

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

Q.127. x and y are in direct proportion and y = 92.5 when x = 37, what will be the value of y when x = 16?

Level 2 (16/06/2022) Shift 3

(a) 48 (b) 32 (c) 40 (d) 24

Q.128. The product of 16 and another number y is 460.8. What will the quotient be when y is divided by 16?

Level 3 (17/06/2022) Shift 1

(a) 2.2 (b) 1.7 (c) 1.8 (d) 2.3

Q.129. If a product of 0.225, 0.36 and a number N is 243, then what is the value of number N ?

Level 3 (17/06/2022) Shift 2

(a) 2400 (b) 3300 (c) 3000 (d) 3600

Q.130. Which of the following numbers is divisible completely by both 9 and 11?

Level 3 (17/06/2022) Shift 2

(a) 12345 (b) 277218
(c) 181998 (d) 10098

RRB NTPC CBT - 1 (28/12/2020 to 31/07/2021)

Q.131. What is the unit digit in the following expression $4 \times 38 \times 764 \times 1256$

RRB NTPC 28/12/2020 (Morning)

(a) 5 (b) 6 (c) 8 (d) 4

Q.132. For any natural number n, $6^n - 5^n$ always ends with :-

RRB NTPC 28/12/2020 (Evening)

(a) 5 (b) 3 (c) 7 (d) 1

Q.133. The difference between the mean of the first eight composite natural numbers and the mean of the first eight prime numbers, is

RRB NTPC 28/12/2020 (Evening)

(a) $\frac{3}{20}$ (b) $\frac{1}{5}$ (c) $\frac{1}{8}$ (d) $\frac{1}{4}$

Q.134. Find the sum of all the numbers between 100 and 200 which are divisible by 12.

RRB NTPC 29/12/2020 (Morning)

(a) 1600 (b) 1400 (c) 1240 (d) 1200

Q.135. Number 0.232323 can be written in rational form as.

RRB NTPC 30/12/2020 (Morning)

(a) $\frac{23}{99}$ (b) $\frac{23}{990}$ (c) $\frac{23}{999}$ (d) $\frac{23}{9}$

Q.136. In the following expression which number should be added so that it becomes a complete square ?

$1 + 3 + 7 + 9 + 11 + 13$

RRB NTPC 30/12/2020 (Morning)

(a) 3 (b) 5 (c) 1 (d) 7

Q.137. When a smaller number divides a larger number, we get a quotient of 6 and a remainder of 5. Find the smaller number if the difference between the two numbers is 1540.

RRB NTPC 04/01/2021 (Morning)

(a) 620 (b) 307 (c) 580 (d) 735

Q.138. Find the greatest number of five digits, which is exactly divisible by 468.

RRB NTPC 04/01/2021 (Evening)

(a) 99486 (b) 99468 (c) 99684 (d) 99864

Q.139. If the denominator of a rational number is of the form $2^n 5^m$, where n and m are non - negative integers, then what will be the decimal expansion of the number ?

RRB NTPC 05/01/2021 (Morning)

(a) Non-terminating and non-recurring
(b) Non-terminating but recurring
(c) Terminating
(d) Can't be determined

Q.140. How many factors of the number 21600 are perfect squares ?

RRB NTPC 05/01/2021 (Morning)

(a) 12 (b) 6 (c) 15 (d) 10

Q.141. Which of the following statements is true ?

RRB NTPC 05/01/2021 (Morning)

(a) Every complex number can be expressed in the form of a real number.
(b) Every integer is a natural number.
(c) Every real number can be written in the complex form.
(d) Every real number is an integer.

Q.142. What fraction of the numbers from 2 to 12 are composite numbers ?

RRB NTPC 05/01/2021 (Evening)

(a) $\frac{6}{11}$ (b) $\frac{5}{11}$ (c) $\frac{10}{11}$ (d) $\frac{1}{11}$

Q.143. $A + 0 = 0 + A = A$, where A is a real number is true, because of

(a) The commutative property of addition
(b) The additive property of zero
(c) The associative property of addition
(d) The inverse property of addition

Q.144. If the difference between squares of two consecutive positive odd integers is 56, then the two consecutive odd integers are.

RRB NTPC 07/01/2021 (Morning)

(a) 13, 15 (b) 11, 13 (c) 15, 17 (d) 17, 19

Q.145. When a number n is divided by 5, the remainder is 2. When n^2 is divided by 5, the remainder will be

RRB NTPC 07/01/2021 (Morning)

(a) 3 (b) 0 (c) 4 (d) 1

Q.146. Decimal expansion of $\frac{109}{100}$ is:

RRB NTPC 07/01/2021 (Evening)

(a) $1 + \frac{9}{10}$ (b) $10 + \frac{9}{100}$
(c) $1 + \frac{0}{10} + \frac{9}{100}$ (d) $100 + 9 + \frac{0}{100}$

Q.147. Which of the following numbers

has a terminating decimal?

$\frac{15}{600}$, $\frac{29}{343}$, $\frac{7}{2^2 \times 7^2}$, $\frac{77}{210}$

RRB NTPC 07/01/2021 (Evening)

(a) $\frac{77}{210}$ (b) $\frac{29}{343}$ (c) $\frac{15}{600}$ (d) $\frac{7}{2^2 \times 7^2}$

Q.148. The product of any two even consecutive numbers is always divisible by.

RRB NTPC 08/01/2021 (Morning)

(a) 8 (b) 6 (c) 12 (d) 16

Q.149. Three consecutive integers when taken in increasing order and multiplied by 2, 3 and 4 respectively adds up to 74. What is the greater number ?

RRB NTPC 08/01/2021 (Morning)

(a) 9 (b) 8 (c) 14 (d) 10

Q.150. The smallest six digit number which is completely divisible by 4, 8, 12 and 16 is.

RRB NTPC 08/01/2021 (Evening)

(a) 100032 (b) 100700
(c) 100800 (d) 100900

Q.151. $3^{71} + 3^{72} + 3^{73} + 3^{74} + 3^{75}$ is divisible by.

RRB NTPC 08/01/2021 (Evening)

(a) 5 (b) 8 (c) 11 (d) 7

Q.152. If the sum of squares of two positive numbers is 2437 and square root of one number is 7. Find the other number.

RRB NTPC 08/01/2021 (Evening)

(a) 6 (b) 16 (c) 12 (d) 8

Q.153. Express $0.03\bar{7}$ in the form of $\frac{p}{q}$, where p is a whole number and q is a natural number.

RRB NTPC 09/01/2021 (Morning)

(a) $\frac{37}{1000}$ (b) $\frac{34}{99}$ (c) $\frac{17}{45}$ (d) $\frac{17}{450}$

Q.154. How many numbers from 3 to 60 are odd numbers that are exactly divisible by 5 ?

RRB NTPC 09/01/2021 (Morning)

(a) 5 (b) 8 (c) 7 (d) 6

Q.155. Sum of the digits of a two-digit number is 6. If the digits are reversed, the new number equals double of the original number decreased by 6. Find the number.

RRB NTPC 09/01/2021 (Morning)

(a) 51 (b) 42 (c) 24 (d) 15

Q.156. How many numbers between 300 and 1000 are divisible by 7 ?

RRB NTPC 09/01/2021 (Morning)

(a) 994 (b) 301 (c) 100 (d) 101

Q.157. The sum of the digits of a two-digit number is 9. If the digits are reversed the new number when increased by 9 equals three times the original number. Find the number.
RRB NTPC 09/01/2021 (Evening)
(a) 27 (b) 72 (c) 54 (d) 45

Q.158. How many numbers greater than 2 and less than 30 are divisible by 1 and themselves?
RRB NTPC 10/01/2021 (Morning)
(a) 27 (b) 11 (c) 9 (d) 29

Q.159. The sum of all even integers from 2 to 281 is:
RRB NTPC 10/01/2021 (Morning)
(a) 19599 (b) 19458 (c) 19527 (d) 19740

Q.160. Select the option that gives the fractions $\frac{2}{5}, \frac{1}{3}, \frac{3}{5}, \frac{1}{4}, \frac{7}{10}, \frac{5}{8}$, in ascending order.
RRB NTPC 10/01/2021 (Morning)

- (a) $\frac{1}{3}, \frac{1}{4}, \frac{2}{5}, \frac{3}{5}, \frac{5}{8}, \frac{7}{10}$
(b) $\frac{1}{4}, \frac{1}{3}, \frac{2}{5}, \frac{3}{5}, \frac{5}{8}, \frac{7}{10}$
(c) $\frac{1}{4}, \frac{1}{3}, \frac{3}{5}, \frac{2}{5}, \frac{5}{8}, \frac{7}{10}$
(d) $\frac{7}{10}, \frac{5}{8}, \frac{3}{5}, \frac{2}{5}, \frac{1}{3}, \frac{1}{4}$

Q.161. The smallest of the four consecutive odd numbers having sum 160 is:
RRB NTPC 10/01/2021 (Morning)
(a) 35 (b) 41 (c) 39 (d) 37

Q.162. The sum of the digits of a two-digit number is 5. If the digits are reversed, the new number when increased by 1 equals three times the original number. Find the number.
RRB NTPC 10/01/2021 (Morning)
(a) 14 (b) 41 (c) 32 (d) 23

Q.163. Rs 9,000 is divided exactly among a certain number of students. Had there been 20 more students each would get Rs 160 less. What was the original number of students?
RRB NTPC 10/01/2021 (Evening)
(a) 35 (b) 20 (c) 25 (d) 30

Q.164. How many numbers are present between 50 and 100 (both excluding) which contains digit 5 and can be exactly divisible by digit 5?
RRB NTPC 10/01/2021 (Evening)
(a) 5 (b) 10 (c) 7 (d) 9

Q.165. A number when divided by 5 leaves a remainder 3. When the square of the same number is divided by 5, then

the remainder is:
RRB NTPC 11/01/2021 (Morning)
(a) 5 (b) 3 (c) 2 (d) 4

Q.166. The digit of hundred's place value of $19!$ is:
RRB NTPC 12/01/2021 (Morning)
(a) 1 (b) 4 (c) 9 (d) 0

Q.167. The number between 6000 and 7000 that is divisible by each of 12, 21, 32 and 18 is:
RRB NTPC 12/01/2021 (Morning)
(a) 6064 (b) 6048 (c) 6480 (d) 6040

Q.168. The least positive number, which must be added to the greatest number of 4 digits in order that the sum may be exactly divisible by 307, is:
RRB NTPC 12/01/2021 (Morning)
(a) 176 (b) 132 (c) 131 (d) 175

Q.169. The value of $1 + 2 + 3 + \dots + 30 + 31 + 30 + 29 + \dots + 3 + 2 + 1 = ?$
RRB NTPC 12/01/2021 (Evening)
(a) 961 (b) 1000 (c) 999 (d) 900

Q.170. Out of four consecutive numbers, the sum of the first two numbers is equal to the fourth number. What is half of the sum of the four numbers?
RRB NTPC 12/01/2021 (Evening)
(a) 2 (b) 9 (c) 14 (d) 7

Q.171. Find the sum of the face values of 6 and 5 in 61827354.
RRB NTPC 12/01/2021 (Evening)
(a) 30 (b) 11 (c) 40 (d) 60000300

Q.172. Which of the following numbers, when added to itself 14 times gives 135 as result?
RRB NTPC 12/01/2021 (Evening)
(a) 9 (b) 12 (c) 11 (d) 8

Q.173. The number 1.112123123412345 Is a/an:
RRB NTPC 13/01/2021 (Morning)
(a) irrational number (b) natural number
(c) rational number (d) integer

Q.174. When a number is divided by 45, it leaves a remainder of 28. The remainder when the same number is divided by 15 is.
RRB NTPC 13/01/2021 (Morning)
(a) 13 (b) 12 (c) 11 (d) 10

Q.175. Let N be the greatest number such that when 1300, 4660 and 6900 are divisible by N, the remainder is the same. The sum of the digits in N is.
RRB NTPC 13/01/2021 (Morning)
(a) 3 (b) 5 (c) 4 (d) 6

Q.176. $\frac{(3\sqrt{5} + \sqrt{125})}{(\sqrt{80} + 6\sqrt{5})}$ is..

RRB NTPC 13/01/2021 (Morning)
(a) an irrational number
(b) a rational number
(c) an integer
(d) a natural number

Q.177. One fourth of a number is equal to three - eighth of another number. If 30 is added to the first number, then it becomes six times that of the second number. The first number is:
RRB NTPC 13/01/2021 (Evening)
(a) 10 (b) 12 (c) 15 (d) 20

Q.178. Find the number of terms in the sequence 4, 8, 16, 32,-512.
RRB NTPC 13/01/2021 (Evening)
(a) 7 (b) 10 (c) 9 (d) 8

Q.179. Calculate the smallest number which should be subtracted from 0.000327 to make it a perfect square.
RRB NTPC 16/01/2021 (Morning)
(a) 0.03 (b) 0.000004
(c) 0.04 (d) 0.000003

Q.180. Which of the following numbers will completely divide $(4^{61} + 4^{62} + 4^{63} + 4^{64})$?
RRB NTPC 16/01/2021 (Morning)
(a) 10 (b) 13 (c) 11 (d) 3

Q.181. A number when divided by 280 leaves 73 as the remainder. When the same number is divided by 35. The remainder will be:
RRB NTPC 16/01/2021 (Morning)
(a) 3 (b) 4 (c) 2 (d) 7

Q.182. If a positive number when decreased by 3, is equal to 28 times the reciprocal of the number, then find the number.
RRB NTPC 16/01/2021 (Morning)
(a) 5 (b) 6 (c) 8 (d) 7

Q.183. The difference of two numbers is 20% of the larger number. If the smaller number is 40, then find the larger number.
RRB NTPC 16/01/2021 (Morning)
(a) 45 (b) 60 (c) 40 (d) 50

Q.184. Find the greatest ratio in the following.
RRB NTPC 16/01/2021 (Morning)
(a) 13 : 21 (b) 5 : 18 (c) 15 : 28 (d) 19 : 27

Q.185. Find the smallest number which must be subtracted from 63535 to make it a perfect square.
RRB NTPC 17/01/2021 (Morning)
(a) 25 (b) 31 (c) 30 (d) 41

Q.186. How many digits will be there to the right of the decimal point on the product of 99.75 and 0.05554 ?

RRB NTPC 17/01/2021 (Morning)

- (a) 8 (b) 6 (c) 7 (d) 5

Q.187. The smallest positive number which must be added to the greatest number of 4 digits in order that the sum may be exactly divisible by 307 is:

RRB NTPC 17/01/2021 (Evening)

- (a) 306 (b) 176 (c) 132 (d) 307

Q.188. Find the smallest perfect square number which must be added to the number 12519 to get a perfect square number.

RRB NTPC 17/01/2021 (Evening)

- (a) 9 (b) 16 (c) 20 (d) 25

Q.189. The number whose only factors are 1 and the number itself is called a/an ___ number.

RRB NTPC 18/01/2021 (Morning)

- (a) composite (b) prime
(c) even (d) odd

Q.190. If $111\dots 1$ (n digits) is divisible by 9, then the least value of n is ___

RRB NTPC 18/01/2021 (Morning)

- (a) 9 (b) 3 (c) 18 (d) 12

Q.191. The sum of the place values of 9 in 96961 is :

RRB NTPC 19/01/2021 (Morning)

- (a) 9090 (b) 18 (c) 9000 (d) 90900

Q.192. Find the greatest number of five digits which is exactly divisible by 6, 8, 12, 15 and 20.

RRB NTPC 19/01/2021 (Morning)

- (a) 99920 (b) 99960 (c) 99980 (d) 99999

Q.193. A terminating decimal is always:

RRB NTPC 19/01/2021 (Evening)

- (a) an integer
(b) a whole number
(c) a rational number
(d) a natural number

Q.194. The decimal expansion of $\frac{31}{2.5}$

will terminate after:

RRB NTPC 19/01/2021 (Evening)

- (a) two decimal places
(b) one decimal place
(c) more than three decimal places
(d) three decimal places

Q.195. The product of $4\sqrt{6}$ and $3\sqrt{24}$ is:

RRB NTPC 19/01/2021 (Evening)

- (a) a negative number
(b) a prime number
(c) a rational number
(d) an irrational number

Q.196. $(\sqrt{2} - \sqrt{3})^2$ is:

RRB NTPC 19/01/2021 (Evening)

- (a) a whole number
(b) a rational number
(c) an irrational number
(d) a natural number

Q.197. The decimal expression of $\frac{3}{8}$

comes to an end after how many digits after the decimal ?

RRB NTPC 20/01/2021 (Morning)

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

Q.198. $0.\overline{23}$ is :

RRB NTPC 20/01/2021 (Morning)

- (a) a prime number
(b) a composite number
(c) a rational number
(d) an irrational number

Q.199. Which of the following is a rational number between $\sqrt{5}$ and $\sqrt{7}$?

RRB NTPC 20/01/2021 (Morning)

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

Q.200. The 5th part of a number when divided by 3 yields three times half of tenth part of half of 80. What is the number ?

RRB NTPC 20/01/2021 (Morning)

- (a) 44 (b) 60 (c) 90 (d) 45

Q.201. Rationalising factor of $\sqrt[3]{40}$ is:

RRB NTPC 20/01/2021 (Evening)

- (a) $10^{\frac{1}{3}}$ (b) $5^{\frac{2}{3}}$ (c) $40^{\frac{1}{3}}$ (d) $2^{\frac{2}{3}}$

Q.202. The greatest prime number less than 200 is:

RRB NTPC 21/01/2021 (Evening)

- (a) 199 (b) 191 (c) 197 (d) 193

Q.203. What will be the value if you multiply $\frac{2}{11}$ by the reciprocal of $-\frac{5}{14}$?

RRB NTPC 21/01/2021 (Evening)

- (a) $\frac{2}{3}$ (b) $\frac{28}{55}$ (c) $-\frac{28}{55}$ (d) $-\frac{10}{153}$

Q.204. An irrational number between 3 and 5 is:

RRB NTPC 22/01/2021 (Morning)

- (a) $\sqrt{17}$ (b) $\sqrt{5}$ (c) $\sqrt{3}$ (d) $\sqrt{27}$

Q.205. Which of the following has terminal decimal representation?

RRB NTPC 22/01/2021 (Morning)

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

Q.206. Which of the following statements is false ?

RRB NTPC 22/01/2021 (Morning)

(a) There is no largest natural number.

(b) 1 is the smallest natural number.

(c) All natural numbers together with zero are called integers.

(d) There is no largest whole number.

Q.207. How many prime numbers are there that are less than 50 ?

RRB NTPC 22/01/2021 (Evening)

- (a) 16 (b) 13 (c) 15 (d) 14

Q.208. Find the place value of 7 in 71,624.

RRB NTPC 23/01/2021 (Morning)

- (a) 70,000 (b) 700 (c) 7,000 (d) 7

Q.209. The sum of the four consecutive even numbers is 484. What would the smallest number be ?

RRB NTPC 23/01/2021 (Morning)

- (a) 118 (b) 128 (c) 114 (d) 242

Q.210. Find the difference of face values of 9 and 3 in 3,15,298.

RRB NTPC 23/01/2021 (Morning)

- (a) 6 (b) 2,99,910 (c) 27 (d) 3,00,090

Q.211. While solving a mathematical problem, Atul squared the initial number and then subtracted 15 from it. Pratul first subtracted 15 from the initial number and then squared the difference. If both obtained the same answer, what was the initial number ?

RRB NTPC 23/01/2021 (Evening)

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

Q.212. The sum of first 'n' natural numbers is.

RRB NTPC 23/01/2021 (Evening)

- (a) $\frac{n(n+1)}{2}$ (b) $\frac{n(n-1)}{2}$

- (c) $\frac{n}{2}$ (d) $\frac{n}{2} + 1$

Q.213. If a positive number N, when divided by 5 leaves a remainder 3, then the unit's place digit of N is:

RRB NTPC 25/01/2021 (Morning)

- (a) 0 or 2 (b) 0 or 5 (c) 3 or 8 (d) 1 or 5

Q.214. Instead of multiplying a number by 2, Rahul divided it by 2 and got the answer as 2. What should be the actual answer ?

RRB NTPC 25/01/2021 (Morning)

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

Q.215. How many numbers are there between 200 to 1000 that are completely divisible by 7 ?

RRB NTPC 25/01/2021 (Morning)

- (a) 113 (b) 116 (c) 114 (d) 115

Q.216. $(41^{43} + 43^{43})$ is divisible by which

of the following?

RRB NTPC 25/01/2021 (Evening)
(a) 84 (b) 86 (c) 12 (d) 74

Q.217. Find the difference between the place value and face value of 6 in 516372 ?

RRB NTPC 25/01/2021 (Evening)
(a) 5994 (b) 5394 (c) 5998 (d) 6698

Q.218. The difference between the greatest and the smallest number of six digit is :

RRB NTPC 27/01/2021 (Morning)
(a) 109999 (b) 899999
(c) 100000 (d) 895592

Q.219. The largest number of four digits which, when divided by 6, 12 and 18 leaves the same remainder 5 in each case is:

RRB NTPC 27/01/2021 (Morning)
(a) 9977 (b) 9976 (c) 9940 (d) 9978

Q.220. How many numbers lie between the largest three digit number and the largest four digit number which are divisible by 5 ?

RRB NTPC 27/01/2021 (Evening)
(a) 1900 (b) 1700 (c) 1800 (d) 2000

Q.221. How many 3 - digit numbers leave remainder 1 when divided by 7 ?

RRB NTPC 28/01/2021 (Morning)
(a) 130 (b) 125 (c) 128 (d) 126

Q.222. The six digit number 87937A is divided by 6 where A is the least natural number. Find the value of A.

RRB NTPC 28/01/2021 (Morning)
(a) 8 (b) 4 (c) 6 (d) 2

Q.223. Find the sum of the face values of 8 and 5 in the number 817354.

RRB NTPC 28/01/2021 (Evening)
(a) 17 (b) 800050 (c) 13 (d) 40

Q.224. A number when divided by 7 leaves a remainder 4. What will be the remainder when the square of the same number is divided by 7 :

RRB NTPC 29/01/2021 (Morning)
(a) 3 (b) 1 (c) 4 (d) 2

Q.225. The 10th term of the Arithmetic Progression 2, 7, 12, is:

RRB NTPC 29/01/2021 (Morning)
(a) 27 (b) 47 (c) 37 (d) 57

Q.226. What is the place value of 5 in the number 56789214?

RRB NTPC 29/01/2021 (Evening)
(a) 5×10^5 (b) 5×10^7
(c) 5×10^6 (d) 5×10^4

Q.227. When 19^{300} is divided by 20, find the remainder.

RRB NTPC 29/01/2021 (Evening)
(a) 3 (b) 1 (c) 4 (d) 2

Q.228. How many numbers between 1 and 700 are completely divisible by 17 ?

RRB NTPC 29/01/2021 (Evening)
(a) 45 (b) 46 (c) 42 (d) 41

Q.229. If the sum of two numbers is 30 and the product of 50, then the sum of their reciprocals is:

RRB NTPC 29/01/2021 (Evening)
(a) $\frac{3}{5}$ (b) $\frac{5}{3}$ (c) $\frac{2}{5}$ (d) $\frac{5}{2}$

Q.230. The numerator of a fraction is 5 less than its denominator. If 2 is subtracted from the numerator and 2 is added to the denominator, the fraction

becomes $\frac{2}{5}$, Find the original fraction.

RRB NTPC 30/01/2021 (Morning)
(a) $\frac{8}{13}$ (b) $\frac{9}{11}$ (c) $\frac{11}{13}$ (d) $\frac{5}{7}$

Q.231. Find the value of D if $1216 - 32D = DDD$ is divisible by 8.

RRB NTPC 30/01/2021 (Morning)
(a) 4 (b) 6 (c) 2 (d) 8

Q.232. A seven digit number 67843A2 is divisible by 11 where A is a single digit whole number. Find the value of A.

RRB NTPC 30/01/2021 (Morning)
(a) 7 (b) 0 (c) 6 (d) 8

Q.233. There are two numbers such that the big number is obtained by adding 5 to the other. If the total of the two numbers is 19, find the product of these numbers.

RRB NTPC 30/01/2021 (Evening)
(a) 84 (b) 24 (c) 65 (d) 95

Q.234. A number is greater than 3 but less than 8, Also, it is greater than 6 but less than 10. The number is:

RRB NTPC 30/01/2021 (Evening)
(a) 6 (b) 7 (c) 8 (d) 5

Q.235. Find the least number by which 6250 should be multiplied, so that it becomes a perfect cube.

RRB NTPC 30/01/2021 (Evening)
(a) 15 (b) 30 (c) 20 (d) 25

Q.236. In four consecutive prime numbers, the product of the last three is 7429 and that of the first three is 4199. The largest of these prime number is:

RRB NTPC 30/01/2021 (Evening)
(a) 37 (b) 29 (c) 23 (d) 13

Q.237. How many factors of $2^7 \times 3^3 \times 5^4 \times 7$ are even ?

RRB NTPC 31/01/2021 (Morning)
(a) 280 (b) 320 (c) 84 (d) 40

Q.238. The square root of 90 will lie between_____.

(a) 9 and 10 (b) 8 and 9
(c) 7 and 8 (d) 10 and 11

Q.239. The lowest value of x which makes $\frac{136}{x-4}$ an integer is:

RRB NTPC 31/01/2021 (Morning)
(a) 72 (b) 140 (c) -132 (d) -268

Q.240. The sum of prime numbers between 50 and 60 is ____.

RRB NTPC 31/01/2021 (Morning)
(a) 110 (b) 112 (c) 114 (d) 118

Q.241. Which of the numbers below is NOT a perfect square ?

RRB NTPC 31/01/2021 (Morning)
(a) 16,384 (b) 97,344
(c) 23,102 (d) 41,616

Q.242. How many numbers between 1 and 100 are exactly divisible by 6 and 8 both?

RRB NTPC 31/01/2021 (Evening)
(a) 5 (b) 6 (c) 7 (d) 4

Q.243. Which of the following rational numbers lies between $\frac{1}{4}$ and $\frac{1}{2}$?

RRB NTPC 31/01/2021 (Evening)
(a) $\frac{1}{8}$ (b) $\frac{3}{5}$ (c) $\frac{3}{8}$ (d) $\frac{1}{6}$

Q.244. A number consists of 3 digits whose sum is 18 and the middle digit is equal to the sum of the other two. If the number increases by 297 when its digits are reversed, then what is the number ?

RRB NTPC 01/02/2021 (Morning)
(a) 486 (b) 495 (c) 585 (d) 396

Q.245. Find the smallest 4 - digit number which when divided by 2, 3 and 5 leaves a remainder of 1 in each case ?

RRB NTPC 01/02/2021 (Morning)
(a) 1001 (b) 1041 (c) 1021 (d) 1091

Q.246. If a positive number is subtracted from its square, we get 812. Find the number.

RRB NTPC 01/02/2021 (Morning)
(a) 25 (b) 23 (c) 27 (d) 29

Q.247. How many factors of $2^2 \times 3^1 \times 5^2 \times 7^1$ are divisible by 50 but not by 100?

RRB NTPC 01/02/2021 (Evening)
(a) 4 (b) 12 (c) 16 (d) 8

Q.248. What is the total number of odd and even divisors of 120, respectively?

RRB NTPC 01/02/2021 (Evening)

(a) 16, 0 (b) 4, 12 (c) 8, 8 (d) 12, 4

Q.249. Arrange the following numbers in their increasing order.1. -0.96 2. 0.83 3. 0.24 4. -0.64 5. 0.58
RRB NTPC 01/02/2021 (Evening)(a) 3, 5, 4, 2, 1 (b) 2, 5, 3, 4, 1
(c) 4, 1, 3, 5, 2 (d) 1, 4, 3, 5, 2**Q.250.** How many numbers less than 10000 are there which are exactly divisible by 21, 35 and 63?

RRB NTPC 02/02/2021 (Morning)

(a) 32 (b) 30 (c) 34 (d) 31

Q.251. How many factors of $2^3 \times 3^3 \times 5^4 \times 7^2$ are divisible by 50 but not by 100?

RRB NTPC 02/02/2021 (Evening)

(a) 42 (b) 40 (c) 36 (d) 38

Q.252. What is the number of divisors of 120?

RRB NTPC 02/02/2021 (Evening)

(a) 16 (b) 19 (c) 15 (d) 17

Q.253. In a division sum, the divisor is 2 times the quotient and 6 times the remainder. If the remainder is 8, find out the value of the dividend.

RRB NTPC 03/02/2021 (Morning)

(a) 1160 (b) 408 (c) 240 (d) 840

Q.254. Find the number whose four-fifth is more than its three fourth by 4.

RRB NTPC 03/02/2021 (Evening)

(a) 70 (b) 80 (c) 100 (d) 90

Q.255. The sum of two numbers is 40 and their product is 60. The sum of their reciprocal is:

RRB NTPC 04/02/2021 (Morning)

(a) $\frac{1}{2}$ (b) $\frac{2}{3}$ (c) $\frac{3}{2}$ (d) $\frac{3}{4}$ **Q.256.** What is the sum of the cubes of the natural numbers from 5 to 14?

RRB NTPC 04/02/2021 (Morning)

(a) 10920 (b) 10925 (c) 10930 (d) 10935

Q.257. What is the smallest five - digit number formed by using the digits 2, 3, 4, 0, 5?

RRB NTPC 04/02/2021 (Morning)

(a) 20345 (b) 23045 (c) 20435 (d) 02345

Q.258. The difference between the greatest and the smallest six - digit number is:

RRB NTPC 04/02/2021 (Morning)

(a) 888888 (b) 899999
(c) 988888 (d) 999999**Q.259.** If $a^2 + b^2 + c^2 + d^2 = 1$, what will be the maximum value of the product $abcd$?

RRB NTPC 04/02/2021 (Evening)

(a) $\frac{1}{16}$ (b) 16 (c) $\frac{1}{64}$ (d) 64**Q.260.** If the largest 4-digit number is subtracted from the smallest 6-digit number, then the remainder will be.

RRB NTPC 04/02/2021 (Evening)

(a) 90001 (b) 90000 (c) 99991 (d) 80001

Q.261. If the numbers from 1 to 26 that are divisible by 2 are arranged in descending order, which number will be at the 9th place from the bottom?

RRB NTPC 04/02/2021 (Evening)

(a) 18 (b) 14 (c) 16 (d) 20

Q.262. What is the sum of the squares of the numbers from 1 to 12?

RRB NTPC 04/02/2021 (Evening)

(a) 665 (b) 655 (c) 660 (d) 650

Q.263. Find the square root of 42.25.

RRB NTPC 05/02/2021 (Morning)

(a) 6.5 (b) 7.5 (c) 4.5 (d) 5.5

Q.264. The decimal representation of $\frac{5}{100} + \frac{2}{5} - \frac{6}{25}$ is:

RRB NTPC 05/02/2021 (Morning)

(a) 0.45 (b) 0.21 (c) 0.51 (d) 0.35

Q.265. How many of the integers between 109 and 121, both inclusive, are prime numbers?

RRB NTPC 08/02/2021 (Morning)

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

Q.266. The sum of the greatest and smallest numbers of six digits is:

RRB NTPC 08/02/2021 (Morning)

(a) 199999 (b) 100000
(c) 1099999 (d) 999999**Q.267.** On dividing 15,971 by a certain number, the quotient is 55 and the remainder is 21. Find the divisor.

RRB NTPC 08/02/2021 (Morning)

(a) 275 (b) 285 (c) 290 (d) 280

Q.268. What is the smallest four digit number formed by using the digits 3, 5, 0, 6?

RRB NTPC 08/02/2021 (Morning)

(a) 3506 (b) 0536 (c) 0356 (d) 3056

Q.269. What is the sum of the cube of the natural numbers from 1 to 10, both inclusive?

RRB NTPC 08/02/2021 (Morning)

(a) 3023 (b) 3025 (c) 3024 (d) 3022

Q.270. If 58 out of 100 students in a school are boys, then express the part of the school that consists of boys in decimal.

RRB NTPC 08/02/2021 (Evening)

(a) 0.58 (b) 0.85 (c) 0.8 (d) 0.5

Q.271. Find the ninth term of an arithmetic progression with the first term as 5 and the common difference as 4.

RRB NTPC 08/02/2021 (Evening)

(a) 35 (b) 39 (c) 37 (d) 41

Q.272. Consider the following statements and decide which of them are correct.

(1) Every prime number is odd.

(2) Product of any two prime numbers is odd

RRB NTPC 09/02/2021 (Morning)

(a) 1 and 2 (b) 2 alone
(c) Neither 1 nor 2 (d) 1 alone**Q.273.** An Army General wishes to arrange his 40125 soldiers in rows and columns in the form of a square. After arranging them, he found that some of them are left out. How many soldiers are left out?

RRB NTPC 09/02/2021 (Morning)

(a) 175 (b) 125 (c) 200 (d) 150

Q.274. Which of the following statement(s) is/are true.

(1) Every whole number is a natural number.

(2) Every integer is a rational number.

(3) Every rational number is an integer.

RRB NTPC 09/02/2021 (Morning)

(a) Both 2 and 3 (b) 2 (c) 3 (d) 1

Q.275. In a five digit number, the digit in the hundred's place is 2 and the digit in the unit's place is twice the digit in the hundred's place. The number has no thousands. The digit in the ten thousand's place is the sum of the digit in the hundred's place and the digit in the unit's place. The digit in the ten's place is the digit in the ten thousand's place minus 1. The number is:

RRB NTPC 09/02/2021 (Morning)

(a) 60254 (b) 60264 (c) 60234 (d) 60224

Q.276. The least number by which 294 must be multiplied to make it a perfect square is:

RRB NTPC 09/02/2021 (Morning)

(a) 1 (b) 3 (c) 4 (d) 6

Q.277. What is the value of the digits A and B?

BA x B3 = 57A

RRB NTPC 09/02/2021 (Morning)

(a) A = 5, B = 2 (b) A = 5, B = 3
(c) A = 3, B = 5 (d) A = 2, B = 4**Q.278.** What is the unit digit in the following product? $91 \times 92 \times 93 \times \dots \times 99$

RRB NTPC 09/02/2021 (Evening)

- (a) 1 (b) 2 (c) 0 (d) 4

Q.279. If the numbers divisible by 3, from 1 to 30, are arranged in descending order, which number will be at the 7th place from the bottom?

RRB NTPC 09/02/2021 (Evening)

- (a) 18 (b) 24 (c) 27 (d) 21

Q.280. What is the sum of the squares of the numbers from 3 to 18?

RRB NTPC 09/02/2021 (Evening)

- (a) 2102 (b) 2104 (c) 2103 (d) 2101

Q.281. Find the sum of the smallest and the largest positive numbers of 6 digits which contain only digits 0, 4, 6 and each of these digits appears at least once.

RRB NTPC 09/02/2021 (Evening)

- (a) 1066646 (b) 604604
(c) 666666 (d) 666444

Q.282. To a number $(\frac{1}{3} - \frac{1}{4})$ is added.

From the sum so obtained $\frac{1}{3}$ of $\frac{1}{4}$ is subtracted and the remainder is $\frac{1}{3} + \frac{1}{4}$

Find the number.

RRB NTPC 10/02/2021 (Morning)

- (a) $\frac{2}{3}$ (b) $\frac{7}{12}$ (c) $\frac{1}{12}$ (d) $\frac{4}{9}$

Q.283. Find the smallest natural number N such that the product $288 \times N$ is a perfect cube.

RRB NTPC 10/02/2021 (Morning)

- (a) 8 (b) 9 (c) 12 (d) 6

Q.284. Find the sum of all even natural numbers less than 85.

RRB NTPC 10/02/2021 (Evening)

- (a) 840 (b) 1806 (c) 1408 (d) 4700

Q.285. Which of the following is equal to 3.14×10^6 ?

RRB NTPC 10/02/2021 (Evening)

- (a) 3140000 (b) 314000
(c) 3140 (d) 31.40000

Q.286. A number, x, when divided by 7 leaves a remainder of 1 and another number, y, when divided by 7 leaves a remainder of 2. What will be the remainder if $x + y$ is divided by 7?

RRB NTPC 10/02/2021 (Evening)

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

Q.287. Find the greatest four-digit number that is a perfect square.

RRB NTPC 10/02/2021 (Evening)

- (a) 9801 (b) 9999 (c) 9000 (d) 9008

Q.288. Out of six consecutive numbers,

the sum of the first three numbers is 27. What is the sum of the next three numbers?

RRB NTPC 11/02/2021 (Morning)

- (a) 12 (b) 63 (c) 36 (d) 10

Q.289. The value of $\frac{1}{4} + \frac{1}{4 \times 5} +$

$\frac{1}{4 \times 5 \times 6}$ correct to four decimal places is.

RRB NTPC 11/02/2021 (Morning)

- (a) 0.3092 (b) 0.3083
(c) 0.3150 (d) 0.3140

Q.290. How many significant digits are there to the right of the decimal point in the product of 95.75 and 0.02554?

RRB NTPC 11/02/2021 (Morning)

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

Q.291. A boy was asked to multiply a given number with $\frac{5}{11}$, instead, he

divided the same number by $\frac{5}{11}$. Thus, his answer exceeded the correct answer by 192. What is the given number?

RRB NTPC 11/02/2021 (Morning)

- (a) 192 (b) $\frac{110}{5}$ (c) 50 (d) 110

Q.292. Find the correct expression for $5.\overline{46}$ in the fractional form.

RRB NTPC 11/02/2021 (Evening)

- (a) $\frac{541}{99}$ (b) $\frac{541}{900}$ (c) $\frac{546}{99}$ (d) $\frac{541}{100}$

Q.293. How many numbers between 500 and 700 are divisible by 11?

RRB NTPC 11/02/2021 (Evening)

- (a) 63 (b) 18 (c) 108 (d) 45

Q.294. The tenth term of the sequence 2, 5, 8, 11,..... Will be:

RRB NTPC 11/02/2021 (Evening)

- (a) 28 (b) 29 (c) 32 (d) 27

Q.295. The sum of squares of the first ten natural numbers is:

RRB NTPC 11/02/2021 (Evening)

- (a) 300 (b) 55 (c) 385 (d) 380

Q.296. Solve the following .

$1 - 1 + 1 - 1 + 1 - 1 + \dots \dots \dots$ (101 times) = ?

RRB NTPC 12/02/2021 (Morning)

- (a) 1 (b) 0 (c) -1 (d) 100

Q.297. The product of first five whole numbers is:

RRB NTPC 12/02/2021 (Morning)

- (a) 10 (b) 0 (c) 120 (d) -120

Q.298. What fraction of 1275 is 816?

RRB NTPC 12/02/2021 (Morning)

- (a) $\frac{48}{72}$ (b) $\frac{16}{24}$ (c) $\frac{16}{25}$ (d) $\frac{48}{75}$

Q.299. $42 \times (4 + 2) = (42 \times 4) + (42 \times 2)$ is an example of :

RRB NTPC 12/02/2021 (Morning)

- (a) closure property
(b) distributive property
(c) identity property
(d) associative property

Q.300. Select the option that expresses $5.\overline{6}$ as a fraction.

RRB NTPC 15/02/2021 (Morning)

- (a) $\frac{61}{90}$ (b) $\frac{51}{90}$ (c) $\frac{57}{90}$ (d) $\frac{50}{90}$

Q.301. The square root of 18769 consists of how many digits?

RRB NTPC 15/02/2021 (Morning)

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

Q.302. The sum of the first 12 multiples of 6 is:

RRB NTPC 15/02/2021 (Morning)

- (a) 648 (b) 844 (c) 468 (d) 546

Q.303. Arrange the given fractions in decreasing order.

$\frac{7}{8}, \frac{8}{9}, \frac{9}{10}$

RRB NTPC 15/02/2021 (Morning)

- (a) $\frac{7}{8}, \frac{8}{9}, \frac{9}{10}$ (b) $\frac{8}{9}, \frac{7}{8}, \frac{9}{10}$

- (c) $\frac{9}{10}, \frac{7}{8}, \frac{8}{9}$ (d) $\frac{9}{10}, \frac{8}{9}, \frac{7}{8}$

Q.304. The remainder in the expression $27\frac{3}{4}$ is:

RRB NTPC 15/02/2021 (Morning)

- (a) 3 (b) 6 (c) 8 (d) 4

Q.305. The sum of two numbers is 20 and the difference between their squares is 80. Select the two numbers from the given options.

RRB NTPC 15/02/2021 (Morning)

- (a) 15,5 (b) 11,9 (c) 13,7 (d) 12,8

Q.306. Find the two-digit number such that the sum of its digits is 8 and the digits of the number get reversed, when 36 is added to it?

RRB NTPC 15/02/2021 (Evening)

- (a) 35 (b) 26 (c) 71 (d) 62

Q.307. If the sum of five consecutive multiples of 2 is 660, then find the larger number.

RRB NTPC 15/02/2021 (Evening)

- (a) 125 (b) 162 (c) 130 (d) 136

Q.308. Calculate the positive number which when added by 15 is equal to 100 times the reciprocal of a number.

RRB NTPC 15/02/2021 (Evening)

(a) 10 (b) 20 (c) 5 (d) 15

Q.309. Find the value of r such that the mean of the first r odd natural numbers is $\frac{r^2}{16}$

RRB NTPC 15/02/2021 (Evening)

(a) 16 (b) 18 (c) 9 (d) 27

Q.310. What is the difference between the biggest and the smallest fraction among

$\frac{2}{3}, \frac{3}{4}, \frac{4}{5},$ and $\frac{5}{6}$?

RRB NTPC 15/02/2021 (Evening)

(a) $\frac{1}{20}$ (b) $\frac{1}{30}$ (c) $\frac{1}{12}$ (d) $\frac{1}{6}$

Q.311. The sum of the first 20 terms of the series $\frac{1}{5 \times 6} + \frac{1}{6 \times 7} + \frac{1}{7 \times 8} + \dots$ is:

RRB NTPC 15/02/2021 (Evening)

(a) 1.6 (b) 16 (c) 0.016 (d) 0.16

Q.312. If the sum of two numbers is 24 and the difference between them is 10. Then what is the value of two times the product of the numbers?

RRB NTPC 16/02/2021 (Morning)

(a) 328 (b) 239 (c) 238 (d) 832

Q.313. What is the sum of the first 12 multiples of 4?

RRB NTPC 16/02/2021 (Morning)

(a) 316 (b) 312 (c) 324 (d) 308

Q.314. The value of the expression

$(1 + \frac{1}{3})(1 + \frac{1}{4})(1 + \frac{1}{5}) \dots (1 + \frac{1}{n-1})$ is:

RRB NTPC 16/02/2021 (Evening)

(a) $\frac{n}{3}$ (b) $\frac{1}{3}$ (c) $(1 + \frac{1}{n})$ (d) $(\frac{n}{n-1})$

Q.315. Which of the following numbers is NOT prime?

RRB NTPC 16/02/2021 (Evening)

(a) 811 (b) 317 (c) 817 (d) 313

Q.316. What would be the highest value of X in the given equation?

$$5X1 + 6Y7 + 3Z3 = 1471$$

RRB NTPC 16/02/2021 (Evening)

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

Q.317. When 25^{25} is divided by 26, then the remainder is.

RRB NTPC 17/02/2021 (Morning)

(a) 25 (b) 24 (c) 2 (d) 1

Q.318. The value of the largest four digit perfect square number divided by the

smallest four digit perfect square number will be.

RRB NTPC 17/02/2021 (Morning)

(a) More than 10 (b) Equal to 9
(c) Equal to 10 (d) Less than 10

Q.319. Find the digit in the unit's place of $124^n + 124^{(n+1)}$, where n is any whole number:

RRB NTPC 17/02/2021 (Evening)

(a) 0 (b) 4 (c) 2 (d) 8

Q.320. What is the sum of the two smallest natural numbers, each of the two having exactly seven factors?

RRB NTPC 17/02/2021 (Evening)

(a) 843 (b) 736 (c) 625 (d) 793

Q.321. A school collected Rs.2,601 as fees from its students. If the fees paid by each student and the number of students in the school were equal, then how many students were there in the school?

RRB NTPC 22/02/2021 (Morning)

(a) 39 (b) 49 (c) 61 (d) 51

Q.322. There are two numbers with the difference of 14 between them and the difference of their squares is 56. What are those numbers?

RRB NTPC 22/02/2021 (Morning)

(a) 9, -5 (b) 3, 17 (c) 2, 16 (d) 23, -9

Q.323. The difference between the squares of two numbers is 39 and the sum of these two numbers is 13. What are those numbers?

RRB NTPC 22/02/2021 (Evening)

(a) 4, 3 (b) 10, 3 (c) 8, 5 (d) 7, 6

Q.324. $4^7 - 4$ is NOT a multiple of:

RRB NTPC 23/02/2021 (Morning)

(a) 4 (b) 8 (c) 7 (d) 2

Q.325. Two numbers are such that the sum of $\frac{1}{3}$ of the first number and $\frac{1}{2}$ of

the second number is 8. The sum of $\frac{1}{5}$ of

the first number and $\frac{1}{6}$ of the second

number is 4. What is the largest of the two numbers?

RRB NTPC 23/02/2021 (Morning)

(a) 11 (b) 6 (c) 21 (d) 15

Q.326. What is the sum of the first 25 odd numbers?

RRB NTPC 23/02/2021 (Morning)

(a) 144 (b) 250 (c) 625 (d) 150

Q.327. What is the sum of the square of all two - digit numbers each of which is completely divisible by 4?

RRB NTPC 27/02/2021 (Morning)

(a) 78300 (b) 78324 (c) 78320 (d) 78220

Q.328. A boy read three-eighth of a book on one day and four-fifth of the remainder of the book on the next day. If 45 pages still remain unread, how many pages does the book contain?

RRB NTPC 27/02/2021 (Morning)

(a) 380 (b) 330 (c) 360 (d) 340

Q.329. The reciprocal of the sum of the reciprocals of $\frac{5}{7}$ and $\frac{9}{5}$ is :

RRB NTPC 27/02/2021 (Morning)

(a) $\frac{88}{35}$ (b) $\frac{88}{45}$ (c) $\frac{45}{88}$ (d) $\frac{35}{88}$

Q.330. Which one of the following numbers is not a prime number?

RRB NTPC 27/02/2021 (Evening)

(a) 231 (b) 313 (c) 211 (d) 241

Q.331. A pillar is divided into three parts.

The first part is $\frac{1}{4}$ of the whole, second

part is $\frac{4}{8}$ of the first, and the third is 10

m. The length of the pillar is:

RRB NTPC 01/03/2021 (Morning)

(a) 20 m (b) 18 m (c) 16 m (d) 22 m

Q.332. The sum of all odd numbers between 0 and 52 is:

RRB NTPC 01/03/2021 (Morning)

(a) 576 (b) 625 (c) 729 (d) 676

Q.333. After adding 7 to a number, the sum is multiplied by 5, and the product obtained is divided by 9. From the quotient so obtained, 3 is subtracted to get 12. The number is:

RRB NTPC 01/03/2021 (Morning)

(a) 40 (b) 20 (c) 60 (d) 30

Q.334. The numerator of a fraction is less than its denominator by 2. If we subtract 2 from the numerator and add 2 to the denominator, then the new fraction is $\frac{1}{3}$. What is the original fraction?

RRB NTPC 01/03/2021 (Morning)

(a) $\frac{1}{3}$ (b) $\frac{3}{7}$ (c) $\frac{5}{9}$ (d) $\frac{5}{7}$

Q.335. What would be the highest value of X in the given equation?

$$4X1 + 5Y3 + 2Z7 = 1181$$

RRB NTPC 01/03/2021 (Evening)

(a) 3 (b) 7 (c) 4 (d) 5

Q.336. Which of the following is a common factor of:

$$(89^{89} + 87^{89}) \text{ and } (89^{97} + 87^{97}).$$

RRB NTPC 01/03/2021 (Evening)

(a) 176 (b) 178 (c) 186 (d) 174

Q.337. Find the third term in a sequence of positive numbers that will leave remainders 1, 2 and 5 when divided by 2, 3, and 6 respectively.

RRB NTPC 01/03/2021 (Evening)
(a) 11 (b) 23 (c) 17 (d) 29

Q.338. The difference between the place values of 2 and 3 in the number 128935 is

RRB NTPC 02/03/2021 (Morning)
(a) 30 (b) 300 (c) 20000 (d) 19970

Q.339. The sum of the three consecutive natural numbers is 120. Find the largest number.

RRB NTPC 02/03/2021 (Morning)
(a) 39 (b) 37 (c) 41 (d) 117

Q.340. Which of the following numbers is prime?

RRB NTPC 02/03/2021 (Evening)
(a) 323 (b) 513 (c) 715 (d) 571

Q.341. Which of the following rational numbers lies between 9.2 and 10.5?

RRB NTPC 03/03/2021 (Morning)
(a) 10.67 (b) 9.08 (c) 9.15 (d) 9.55

Q.342. The cost of 10 pencils and 12 pens is Rs. 150. What is the cost of 30 pencils and 36 pens?

RRB NTPC 03/03/2021 (Morning)
(a) 600 (b) 450 (c) 200 (d) 300

Q.343. One-fourth of one-eighth of a number is 300. What is one-fifth of the same number?

RRB NTPC 03/03/2021 (Morning)
(a) 1900 (b) 1910 (c) 1890 (d) 1920

Q.344. The least multiple of 7 which when divided by 8, 12 and 16 leaves 3 as remainder in each case.

RRB NTPC 03/03/2021 (Evening)
(a) 48 (b) 70 (c) 56 (d) 147

Q.345. How many decimal numbers can be found between 0.225 and 0.227?

RRB NTPC 03/03/2021 (Evening)
(a) Infinitely many (b) 226 (c) 1 (d) 2

Q.346. Three prime numbers are arranged in descending order. If the product of the first two is 323 and that of the last two is 221, then what is the value of the biggest prime number?

RRB NTPC 04/03/2021 (Morning)
(a) 13 (b) 19 (c) 23 (d) 17

Q.347. The product of the first six even numbers is:

RRB NTPC 05/03/2021 (Evening)
(a) 46020 (b) 46080 (c) 46060 (d) 46800

Q.348. If the number 2893#\$ is divisible

by 8 and 5, then the digits that would come in the place of # and \$, respectively, are:

RRB NTPC 07/03/2021 (Evening)
(a) 2,0 (b) 0,0 (c) 2,2 (d) 0,2

Q.349. Find the smallest whole number whose 60% is more than 6.

RRB NTPC 08/03/2021 (Morning)
(a) 7 (b) 6 (c) 10 (d) 11

Q.350. What is the least number which when added to 1000 gives a number exactly divisible by 15?

RRB NTPC 09/03/2021 (Evening)
(a) 7 (b) 8 (c) 6 (d) 5

Q.351. Find the value of the given series of numbers.

$$25 + 26 + \dots + 75 = ?$$

RRB NTPC 11/03/2021 (Evening)
(a) 2525 (b) 2750 (c) 2550 (d) 2755

Q.352. Find the value of the following.

$$\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \dots + \frac{1}{99 \times 100}$$

RRB NTPC 12/03/2021 (Morning)
(a) 0.95 (b) 0.92 (c) 0.99 (d) 0.29

Q.353. The sum of three numbers is 253. If the first number be twice the second and third number be one-third of the first, then the second number is:

RRB NTPC 12/03/2021 (Evening)
(a) 84 (b) 48 (c) 69 (d) 54

Q.354. Find the value of $21^2 + 22^2 + 23^2 + \dots + 30^2$

RRB NTPC 12/03/2021 (Evening)
(a) 6855 (b) 6585 (c) 5865 (d) 8565

Q.355. The sum of two numbers is 10 and the difference in their squares is 60. What are the two numbers?

RRB NTPC 12/03/2021 (Evening)
(a) 5 and 5 (b) 8 and 2
(c) 7 and 3 (d) 6 and 4

Q.356. Find the least positive integer such that its square is greater than 5 times of the integer by -6.

RRB NTPC 12/03/2021 (Evening)
(a) 3 (b) 4 (c) 5 (d) 2

Q.357. If the number 2564\$4 is exactly divisible by 4, then which of the following digit cannot be in the place of \$?

RRB NTPC 13/03/2021 (Morning)
(a) 2 (b) 6 (c) 8 (d) 5

Q.358. What will be the remainder when 17^{200} is divided by 18?

RRB NTPC 14/03/2021 (Evening)
(a) 1 (b) 16 (c) 2 (d) 17

Q.359. What is the difference between the largest and the smallest single-digit prime numbers?

RRB NTPC 19/03/2021 (Morning)
(a) 8 (b) 6 (c) 5 (d) 7

Q.360. The least number that should be subtracted from 0.000845 to make it a perfect square is:

RRB NTPC 19/03/2021 (Morning)
(a) 0.000004 (b) 0.000001
(c) 0.000006 (d) 0.000005

Q.361. Find the units digit in the product of $(127)^{153} \times (341)^{89}$.

RRB NTPC 19/03/2021 (Evening)
(a) 5 (b) 3 (c) 4 (d) 7

Q.362. Find the least multiple of 13, which on dividing by 4, 5, 6, 7, and 8 leaves a remainder 2 in each case.

RRB NTPC 19/03/2021 (Evening)
(a) 2824 (b) 2522 (c) 2142 (d) 2422

Q.363. How many 3-digit numbers are divisible by 7?

RRB NTPC 21/03/2021 (Morning)
(a) 126 (b) 128 (c) 125 (d) 130

Q.364. $6^{61} + 6^{62} + 6^{63} + 6^{64} + 6^{65}$ is completely divisible by:

RRB NTPC 21/03/2021 (Morning)
(a) 17 (b) 13 (c) 11 (d) 15

Q.365. Find the least number that, when divided by 72, 80 and 88, leaves the remainder 52, 60, 68 respectively.

RRB NTPC 21/03/2021 (Morning)
(a) 7940 (b) 7900 (c) 7930 (d) 7920

Q.366. How many numbers between 100 and 300 are divisible by 7?

RRB NTPC 21/03/2021 (Evening)
(a) 30 (b) 28 (c) 27 (d) 29

Q.367. Kunal was asked to find $\frac{5}{6}$ times

of a number. He multiplied it by $\frac{6}{5}$. As a result, he got an answer which was more than the correct answer by 572. The number was:

RRB NTPC 21/03/2021 (Evening)
(a) 2860 (b) 5720 (c) 1560 (d) 2160

Q.368. The greatest number of four digits which is divisible by 5, 35, 39 and 65 is:

RRB NTPC 21/03/2021 (Evening)
(a) 9994 (b) 9505 (c) 9055 (d) 9555

Q.369. Which of the following is a rational number?

RRB NTPC 27/03/2021 (Morning)

(a) $(\sqrt{2} + \sqrt{5})^2$ (b) $2 + \sqrt{5}$

(c) $2 - \sqrt{5}$ (d) $(\sqrt{2} + \frac{1}{\sqrt{8}})^2$

Q.370. Find the greatest number which divides 285 and 1249 leaving remainders 9 and 7 respectively.

RRB NTPC 27/03/2021 (Morning)

- (a) 140 (b) 138 (c) 130 (d) 141

Q.371. When the positive integer K is divided by 18, the remainder is 9. What is the remainder when K is divided by 6?

RRB NTPC 27/03/2021 (Evening)

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

Q.372. Find the least multiple of 7 which when divided by 6, 8 and 12 leaves 1 as the remainder.

RRB NTPC 01/04/2021 (Morning)

- (a) 25 (b) 49 (c) 73 (d) 169

Q.373. If X is a least number with which you multiply 588 so that the product becomes a perfect square, then the value of X is _____.

RRB NTPC 01/04/2021 (Evening)

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

Q.374. The sum of the prime numbers between the integer greater than 8 and less than 59 is _____.

RRB NTPC 03/04/2021 (Morning)

- (a) 364 (b) 365 (c) 359 (d) 361

Q.375. How many prime numbers exist in the factorisation of $6^7 \times 35^3 \times 11^{10}$?

RRB NTPC 03/04/2021 (Evening)

- (a) 20 (b) 30 (c) 25 (d) 15

Q.376. What should be added to $\frac{3}{5}$ to obtain number equal to its reciprocal?

RRB NTPC 03/04/2021 (Evening)

- (a) $\frac{2}{5}$ (b) $\frac{34}{15}$ (c) $\frac{16}{15}$ (d) $\frac{8}{15}$

Q.377. What is the number of single-digit prime numbers?

RRB NTPC 03/04/2021 (Evening)

- (a) 4 (b) 3 (c) 5 (d) 7

Q.378. The sum of the square of the first ten natural numbers is:

RRB NTPC 05/04/2021 (Morning)

- (a) 3025 (b) 5050 (c) 385 (d) 55

Q.379. If n is a natural number, then $n^3 - n$ is always divisible by _____.

RRB NTPC 05/04/2021 (Evening)

- (a) 4 (b) 6 (c) 5 (d) 8

Q.380. The product of two positive

numbers is 972 and their quotient is $\frac{4}{3}$.

The numbers are:

RRB NTPC 06/04/2021 (Morning)

- (a) 26 and 27 (b) 36 and 27

- (c) 26 and 36 (d) 46 and 56

Q.381. The negative of a non-zero rational number is:

RRB NTPC 06/04/2021 (Morning)

- (a) surd

- (b) zero

- (c) a rational number

- (d) an irrational number

Q.382. The largest four-digit number which is exactly divisible by 77 is:

RRB NTPC 06/04/2021 (Morning)

- (a) 6993 (b) 9933 (c) 9977 (d) 9693

Q.383. The least multiple of 14 which when divided by 6, 8, 12 leaves remainder 4, 6 and 10 respectively, is:

RRB NTPC 06/04/2021 (Evening)

- (a) 40 (b) 46 (c) 70 (d) 336

Q.384. For a given fraction, how many equivalent fractions can be formed?

RRB NTPC 06/04/2021 (Evening)

- (a) Infinite (b) Only 2 (c) Only 3 (d) Only 1

Q.385. The number that should be subtracted from 510 and 270 to get 24 as the GCD is:

RRB NTPC 07/04/2021 (Morning)

- (a) 16 (b) 42 (c) 24 (d) 6

Q.386. $119^2 - 111^2$ is a/an:

RRB NTPC 07/04/2021 (Evening)

- (a) Square number (b) Perfect number

- (c) Prime number (d) Composite number

Q.387. If pq is a two-digit number, then $p^2q - pq^2$ will be completely divisible by:

RRB NTPC 07/04/2021 (Evening)

- (a) 9 (b) 7 (c) 6 (d) 5

Q.388. Which of the following is INCORRECT?

RRB NTPC 07/04/2021 (Evening)

- (a) 1 is the multiplicative identity of rational numbers.

- (b) Commutative property holds in the set of natural numbers under addition.

- (c) Every rational number is a whole number.

- (d) Reciprocal of 1 is 1.

Q.389. The sum of two numbers is 15. If the sum of their reciprocals is $\frac{3}{10}$, then

find the two numbers?

RRB NTPC 07/04/2021 (Evening)

- (a) 7, 8 (b) 5, 10 (c) 6, 9 (d) -5, 20

Q.390. If x is any positive even number, then $x^{65} - x$ will always be divisible by:

RRB NTPC 08/04/2021 (Morning)

- (a) 6 (b) 10 (c) 8 (d) 12

Q.391. One-third of the sum of all the prime numbers greater than 5 but less than 18 is the square of:

RRB NTPC 08/04/2021 (Morning)

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

Q.392. What is the sum of the cubes of the first four natural numbers?

RRB NTPC 23/07/2021 (Morning)

- (a) 1000 (b) 84 (c) 9 (d) 100

Q.393. What is the value of 101^3 ?

RRB NTPC 23/07/2021 (Morning)

- (a) 1020301 (b) 1030201

- (c) 1030301 (d) 1020201

Q.394. How many factors does the number 12288 have?

RRB NTPC 23/07/2021 (Morning)

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

Q.395. The greatest number among -

$\frac{3}{2}, -\frac{3}{2}, \frac{11}{4}, \frac{5}{2}$ is:

RRB NTPC 23/07/2021 (Evening)

- (a) $-\frac{3}{2}$ (b) $\frac{11}{4}$ (c) $\frac{5}{2}$ (d) $\frac{3}{2}$

Q.396. The smallest three - digit prime number is:

RRB NTPC 23/07/2021 (Evening)

- (a) 109 (b) 103 (c) 101 (d) 107

Q.397. Which two fractions can be inserted between $\frac{5}{7}$ and $\frac{3}{4}$.

RRB NTPC 23/07/2021 (Evening)

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

- (c) $\frac{7}{9}, \frac{8}{9}$ (d) $\frac{1}{2}, \frac{2}{5}$

Q.398. Which of the following are co-prime?

RRB NTPC 23/07/2021 (Evening)

- (a) 21,56 (b) 28,81 (c) 36,20 (d) 12,27

Q.399. $(-3) \times (-7) = (-7) \times (-3)$ is _____ property.

RRB NTPC 23/07/2021 (Evening)

- (a) closure (b) distributive

- (c) commutative (d) associative

Q.400. What is the sum of $1 + 2 + 3 + \dots + 49 + 50$?

RRB NTPC 24/07/2021 (Morning)

- (a) 2550 (b) 2525 (c) 1275 (d) 5050

Q.401. Find the largest four- digit number

which when divided by 7, 9 and 11 leaves a remainder of 5 in each case.

RRB NTPC 24/07/2021 (Evening)

(a) 9763 (b) 9707 (c) 9236 (d) 9467

Q.402. Find the divisor, given that dividend is 2200, remainder is 13 and the divisor is one-third of the quotient.

RRB NTPC 24/07/2021 (Evening)

(a) 25 (b) 27 (c) 20 (d) 24

Q.403. What is the least positive integer

that should be subtracted from 2750, so that the difference is a perfect cube?

RRB NTPC 24/07/2021 (Evening)

(a) 15 (b) 9 (c) 6 (d) 14

Q.404. How many four-digit numbers are completely divisible by 5, 12 and 18?

RRB NTPC 24/07/2021 (Evening)

(a) 49 (b) 48 (c) 50 (d) 47

Q.405. The ascending order of the

fractions $\frac{2}{3}$, $\frac{1}{2}$ and $\frac{1}{6}$ is:

RRB NTPC 26/07/2021 (Morning)

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

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

Q.406. The difference between two numbers is 45. When 20% of the larger number is added to 35% of the smaller number, we get a sum of 31. What is the sum of the original numbers?

RRB NTPC 26/07/2021 (Morning)

(a) 125 (b) 115 (c) 135 (d) 131

Q.407. The number that has factors other than 1 and itself is called a _____ number.

RRB NTPC 26/07/2021 (Morning)

(a) Prime (b) Composite (c) odd (d) even

Q.408. If the numerator of a fraction is strictly less than the denominator, then the fraction is a/an:

RRB NTPC 26/07/2021 (Morning)

(a) Integer (b) proper fraction
(c) decimal fraction (d) improper fraction

Q.409. The remainder, when $11^{41} + 3$ is divided by 10 is:

RRB NTPC 26/07/2021 (Morning)

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

Q.410. The number of pairs of twin primes between 1 and 100 are:

RRB NTPC 26/07/2021 (Morning)

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

Q.411. Which of the following fraction falls between $\frac{3}{4}$ and $\frac{6}{7}$?

RRB NTPC 26/07/2021 (Morning)

(a) $\frac{9}{11}$ (b) $\frac{9}{10}$ (c) $\frac{5}{9}$ (d) $\frac{11}{9}$

Q.412. The lowest whole number, which when subtracted from both the terms of the ratio 12 : 17 gives a ratio less than $\frac{11}{20}$, is:

RRB NTPC 26/07/2021 (Evening)

(a) 4 (b) 3 (c) 6 (d) 2

Q.413. The number of factors of 4200 are:

RRB NTPC 26/07/2021 (Evening)

(a) 64 (b) 56 (c) 46 (d) 48

Q.414. Which smallest number must be subtracted from 3467860 so that it becomes exactly divisible by 19?

RRB NTPC 31/07/2021 (Morning)

(a) 11 (b) 50 (c) 30 (d) 18

Q.415. The ratio between two numbers is 3 : 5 and their sum is 80. Find the greater of the two numbers.

RRB NTPC 31/07/2021 (Morning)

(a) 55 (b) 60 (c) 45 (d) 50

Q.416. The sum of the numbers between 17 and 520 that are divisible by 6 is:

RRB NTPC 31/07/2021 (Evening)

(a) 21912 (b) 22446 (c) 22440 (d) 22428

Q.417. On dividing 12401 by a certain number, we get 76 as quotient and 13 as remainder. What is the divisor?

RRB NTPC 31/07/2021 (Evening)

(a) 947 (b) 948 (c) 163 (d) 136

Q.418. The arrangement of rational numbers $\frac{-7}{10}$, $\frac{5}{-8}$, $\frac{2}{-3}$, in ascending order is:

RRB NTPC 31/07/2021 (Evening)

(a) $\frac{-7}{10}$, $\frac{2}{-3}$, $\frac{5}{-8}$ (b) $\frac{2}{-3}$, $\frac{5}{-8}$, $\frac{-7}{10}$

(c) $\frac{5}{-8}$, $\frac{-7}{10}$, $\frac{2}{-3}$ (d) $\frac{7}{10}$, $\frac{5}{-8}$, $\frac{2}{-3}$

RRB JE

(22/05/2019 to 28/06/2019)

Q.419. Decimal part of any number is always _____.

RRB JE 22/05/2019 (Afternoon)

(a) <0 (b) >1 (c) >2 (d) <1

Q.420. What is the remainder when $7^2 \times 9^2$ is divided by 8?

RRB JE 22/05/2019 (Afternoon)

(a) 0 (b) 3 (c) 6 (d) 1

Q.421. Find the smallest integer whose cube is equal to itself.

RRB JE 22/05/2019 (Afternoon)

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

Q.422. A number of two-digits has 3 for its unit's digit, and the sum of the digits is $\frac{1}{7}$ of the number itself. Find the number.

RRB JE 22/05/2019 (Evening)

(a) 43 (b) 53 (c) 73 (d) 63

Q.423. Which of these numbers has the most number of divisors?

RRB JE 23/05/2019 (Morning)

(a) 240 (b) 156 (c) 200 (d) 172

Q.424. The arithmetic mean and geometric mean of two numbers are 7 and $2\sqrt{10}$ respectively, then find the numbers.

RRB JE 24/05/2019 (Morning)

(a) 5, 4 (b) 2, 20 (c) 4, 10 (d) 8, 5

Q.425. A number when divided by 234 gives the remainder 36. What will be the remainder when it is divided by 13?

RRB JE 24/05/2019 (Evening)

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

Q.426. When 8 times of a number is increased by 4, the result is the smallest 3 digit number. What is the number?

RRB JE 25/05/2019 (Morning)

(a) 8 (b) 12 (c) 15 (d) 10

Q.427. Find the sum of first 12 even natural numbers.

RRB JE 28/05/2019 (Afternoon)

(a) 156 (b) 112 (c) 108 (d) 126

Q.428. Three times the square of a number decreased by 4 times the number is equal to 50 more than the number. Find the number.

RRB JE 28/05/2019 (Afternoon)

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

Q.429. The product of two numbers is 9375. The quotient, when the largest number is divided by the smallest number is 15. Find the sum of these numbers.

RRB JE 30/05/2019 (Afternoon)

(a) 400 (b) 380 (c) 425 (d) 395

Q.430. In a two-digit number, the digit in the unit's place is four times the digit in ten's place and sum of the digits is equal to 10. Find the number.

RRB JE 31/05/2019 (Morning)

(a) 28 (b) 14 (c) 82 (d) 41

Q.431. A number when divided by 15 leaves the remainder 12. Another number

when divided by 5 leaves the remainder 2. What is the remainder when their sum is divided by 5?

RRB JE 31/05/2019 (Afternoon)

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

Q.432. Find the value of $1^2 + 2^2 + 3^2 + \dots + 10^2$

RRB JE 31/05/2019 (Evening)

- (a) 305 (b) 265 (c) 285 (d) 385

Q.433. If a and b are coprime, then a^2 and b^2 are-

RRB JE 31/05/2019 (Evening)

- (a) Both odd (b) Need not be coprime
(c) Both even (d) Coprime

Q.434. Find the largest 4 digit number that is exactly divisible by 88.

RRB JE 02/06/2019 (Morning)

- (a) 9944 (b) 9844 (c) 9868 (d) 8894

Q.435. $(2^{25} + 2^{26} + 2^{27} + 2^{28})$ is a multiple of which of the following numbers?

RRB JE 02/06/2019 (Afternoon)

- (a) 7 (b) 9 (c) 11 (d) 15

Q.436. If the numerator of a fraction is increased by 100% and the denominator is increased by 150%, then the fraction

becomes $\frac{16}{25}$. What is the original fraction?

RRB JE 02/06/2019 (Afternoon)

- (a) $\frac{5}{6}$ (b) $\frac{5}{12}$ (c) $\frac{7}{12}$ (d) $\frac{4}{5}$

Q.437. From the set of prime numbers between 50 and 100, how many pairs of prime are there that add up to a prime number?

RRB JE 02/06/2019 (Afternoon)

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

Q.438. Find the largest number that will divide exactly the product of four consecutive integers.

RRB JE 02/06/2019 (Afternoon)

- (a) 12 (b) 8 (c) 6 (d) 24

Q.439. Choose the number that is divisible by 11.

RRB JE 02/06/2019 (Evening)

- (a) 16461 (b) 1341
(c) 325182 (d) 3178

Q.440. When a positive number is decreased by 4, it is equal to 21 times the reciprocal of the number. Find the number.

RRB JE 02/06/2019 (Evening)

- (a) 9 (b) 4 (c) 5 (d) 7

Q.441. The square of a number ends in 4. Then its cube ends in-

RRB JE 26/06/2019 (Evening)

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

Q.442. Three times the first of three consecutive odd integers is 3 more than two times the third. Find the third integer.

RRB JE 26/06/2019 (Evening)

- (a) 15 (b) 13 (c) 11 (d) 9

Q.443. The end digit of the square of a number is 1. Then the end digit of its cube is:

RRB JE 27/06/2019 (Morning)

- (a) 9 only (b) 1 or 9
(c) Any odd number (d) 1 only

Q.444. In a school picnic group, $\frac{2}{9}$ of the

group were adults and there were 95 more number of children than adults. How many children were there?

RRB JE 27/06/2019 (Morning)

- (a) 95 (b) 133 (c) 190 (d) 103

Q.445. A two-digit number gets reversed on adding 18 to it. The product of the digits is '8'. What is the number?

RRB JE 27/06/2019 (Morning)

- (a) 42 (b) 18 (c) 32 (d) 24

Q.446. Find the range of the first 7 prime numbers.

RRB JE 27/06/2019 (Evening)

- (a) 15 (b) 8.3 (c) 9 (d) 17

Q.447. How many perfect squares are there between 100 and 200?

RRB JE 27/06/2019 (Evening)

- (a) 7 (b) 4 (c) 5 (d) 6

Q.448. If the sum of two numbers is 13 and the sum of their squares is 97, what is their product?

RRB JE 28/06/2019 (Evening)

- (a) 72 (b) 84 (c) 110 (d) 36

Q.449. The sum of three consecutive odd numbers is 20 more than the first of these numbers. Find the largest of these numbers.

RRB JE 28/06/2019 (Evening)

- (a) 9 (b) 11 (c) 7 (d) 13

Q.450. Find the number which is as much greater than 55 as it is smaller than 95.

RRB JE 28/06/2019 (Evening)

- (a) 70 (b) 75 (c) 45 (d) 65

RRB ALP Tier - 2 (21/01/2019 to 08/02/2019)

Q.451. The product of three consecutive natural numbers is always divisible by which of the following numbers?

ALP Tier II 21/01/2019 (Afternoon)

- (a) 7 (b) 6 (c) 4 (d) 5

Q.452. How many terms are there in the series $\sqrt{3}, \sqrt{12}, \sqrt{27}, \sqrt{48}, \dots, 22\sqrt{3}$?

ALP Tier II 21/01/2019 (Afternoon)

- (a) 25 terms (b) 17 terms
(c) 22 terms (d) 15 terms

Q.453. Which of the following is an irrational number?

ALP Tier II 21/01/2019 (Afternoon)

- (a) $\sqrt{3} \times \sqrt{27}$ (b) $4\sqrt{4}$
(c) $\sqrt{169} - \sqrt{196}$ (d) $\sqrt{9} + \sqrt{7}$

Q.454. The series $7/6, 4/3, 3/2, 5/3, 11/6$ is:

ALP Tier II 21/01/2019 (Afternoon)

- (a) in geometric series
(b) arithmetic-geometric progression
(c) in harmonic series
(d) in arithmetic series

Q.455. If a, b, c are in A.P., then which of the following is correct?

ALP Tier II 21/01/2019 (Afternoon)

- (a) $2c = a + b$ (b) $2a = b + c$
(c) $2b = a + c$ (d) $3b = 2a + 3c$

RPF Constable (17/01/2019 to 19/02/2019)

Q.456. How much remains after dividing the 5224 to 9?

RPF Constable 17/01/2019 (Evening)

- (a) 4 (b) 3 (c) 0 (d) 5

Q.457. Find the average of arithmetic progression whose first term is 33 and the last term is 45.

RPF Constable 18/01/2019 (Morning)

- (a) 37 (b) 39 (c) 43 (d) 41

Q.458. Find the average of the arithmetic parallel series whose first term is 45 and the last term is 57.

RPF Constable 19/01/2019 (Morning)

- (a) 49 (b) 53 (c) 55 (d) 51

RPF S.I. (19/12/2018 to 16/01/2019)

Q.459. Find the number of trailing zeros in 76!

RPF S.I. 19/12/2018 (Morning)

- (a) 18 (b) 16 (c) 20 (d) 14

Q.460. A number when divided by 42 leaves a remainder of 13. What will be the remainder when the same number is divided by 14?

RPF S.I. 19/12/2018 (Morning)

- (a) 10 (b) 8 (c) 13 (d) 12

Q.461. In how many ways can 480

mobiles be distributed equally to the students of a class?

RPF S.I. 19/12/2018 (Morning)

- (a) 14 (b) 16 (c) 20 (d) 24

RRB ALP Tier - 1 (09/08/2018 to 31/08/2018)

Q.462. Which of the following is not a Triangular number?

RRB ALP 09/08/2018 (Morning)

- (a) 3 (b) 15 (c) 10 (d) 5

Q.463. Which of the following numbers will have an irrational square root?

RRB ALP 09/08/2018 (Morning)

- (a) 1024 (b) 2048 (c) 2401 (d) 4096

Q.464. Find a two digit number which is exactly three times the product of its digits?

RRB ALP 09/08/2018 (Morning)

- (a) 12 (b) 48 (c) 24 (d) 36

Q.465. Which of the numbers given below is NOT rational?

RRB ALP 09/08/2018 (Afternoon)

- (a) $\sqrt[3]{64}$ (b) $\sqrt{8}$ (c) $\sqrt[3]{8}$ (d) $\sqrt{64}$

Q.466. Which of the following numbers is not composite?

RRB ALP 14/08/2018 (Morning)

- (a) 109 (b) 161 (c) 203 (d) 209

Q.467. The square root of which of the following numbers is irrational?

RRB ALP 14/08/2018 (Afternoon)

- (a) 3969 (b) 6560 (c) 5625 (d) 1764

Q.468. 'P' is the smallest positive integer such that every positive integer N greater than 'P' can be written as a sum of two composite numbers. Then 'P' is:

RRB ALP 17/08/2018 (Morning)

- (a) 3 (b) 11 (c) 6 (d) 10

Q.469. Which of the following is the prime number series from 1 to 20 ?

RRB ALP 20/08/2018 (Morning)

- (a) 3, 5, 7, 11, 13, 17, 19
(b) 2, 3, 5, 7, 11, 13, 17, 19
(c) 2, 5, 7, 9, 11, 13, 17, 19
(d) 1, 2, 3, 5, 7, 11, 13, 17, 19

Q.470. Which of the following will yield a recurring decimal?

RRB ALP 20/08/2018 (Afternoon)

- (a) $\frac{21}{90}$ (b) $\frac{21}{60}$ (c) $\frac{21}{30}$ (d) $\frac{21}{120}$

Q.471. How many of the factors of 256 are perfect squares?

RRB ALP 20/08/2018 (Afternoon)

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

Q.472. If the number $x3451$ is divisible by 3, where x is a digit, what can be the sum of all such values of x?

RRB ALP 20/08/2018 (Afternoon)

- (a) 16 (b) 15 (c) 11 (d) 14

Q.473. If the number $x4562$ is divisible by 9, what is the face value of x?

RRB ALP 21/08/2018 (Morning)

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

Q.474. Which of the following pairs is NOT a pair of twin primes?

RRB ALP 21/08/2018 (Afternoon)

- (a) 71, 73 (b) 191, 193
(c) 131, 133 (d) 11, 13

Q.475. A natural number, when divided by 5, 6, 7 or 8, leaves a remainder of 4 in each case. What is the smallest of all such numbers?

RRB ALP 21/08/2018 (Evening)

- (a) 214 (b) 844 (c) 424 (d) 1264

Q.476. Which of the numbers given below is exactly divisible by 12?

RRB ALP 29/08/2018 (Evening)

- (a) 28544 (b) 14632
(c) 57816 (d) 43688

Q.477. Split 69 into three parts such that they are in A.P. and the product of their smaller parts is 483.

RRB ALP 30/08/2018 (Morning)

- (a) 15,23,31 (b) 19,23,27
(c) 17,23,29 (d) 21,23,25

Q.478. Which of the following numbers is irrational?

RRB ALP 30/08/2018 (Morning)

- (a) $\sqrt{64}$ (b) $\sqrt[3]{64}$ (c) $\sqrt[6]{64}$ (d) $\sqrt[4]{64}$

Q.479. Which of the following numbers will have an irrational square root?

RRB ALP 30/08/2018 (Afternoon)

- (a) 1825 (b) 625 (c) 3025 (d) 1225

Q.480. By which least number should 1568 be divided so that the resultant number is a perfect square ?

RRB ALP 30/08/2018 (Afternoon)

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

Q.481. The square root of which of the following numbers is irrational?

RRB ALP 30/08/2018 (Afternoon)

- (a) 7840 (b) 2916 (c) 4489 (d) 1024

Q.482. What is the sum of the first 16 terms of the given series:

$$6, \frac{13}{2}, 7, \frac{15}{2}, \dots$$

RRB ALP 30/08/2018 (Afternoon)

- (a) $\frac{313}{2}$ (b) 157 (c) 156 (d) $\frac{311}{2}$

Q.483. In a 3-digit number, the hundreds digit is 4 times the units digit and the tens digit is thrice the units digit. The sum of the digits is 8. What is the tens digit in the number?

RRB ALP 30/08/2018 (Evening)

- (a) 6 (b) 3 (c) 9 (d) 4

Q.484. The denominator of a rational number exceeds its numerator by 10. If the numerator is increased by 4 and the denominator is reduced by 3, the number obtained is $\frac{5}{6}$. The original rational number is.

RRB ALP 31/08/2018 (Morning)

- (a) $\frac{9}{19}$ (b) $\frac{11}{21}$ (c) $\frac{13}{23}$ (d) $\frac{7}{17}$

Q.485. What will be the 20th term in the given sequence ?

-50, -47, -44, _____

RRB ALP 31/08/2018 (Morning)

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

Q.486. Among the following, which is a rational number?

RRB ALP 31/08/2018 (Morning)

- (a) $\sqrt[5]{32}$ (b) $\sqrt[3]{32}$ (c) $\sqrt[3]{32}$ (d) $\sqrt[4]{32}$

Q.487. How many three digit whole numbers are there between 75 and 405?

RRB ALP 31/08/2018 (Afternoon)

- (a) 304 (b) 306 (c) 305 (d) 307

Q.488. What is the difference between the place value and face value of 3 in 273965?

RRB ALP 31/08/2018 (Afternoon)

- (a) 3962 (b) 2035 (c) 2997 (d) 0

Answer key:-

1.(a)	2.(b)	3.(d)	4.(d)
5.(b)	6.(b)	7.(d)	8.(c)
9.(c)	10.(c)	11.(b)	12.(c)
13.(a)	14.(b)	15.(b)	16.(b)
17.(d)	18.(c)	19.(d)	20.(a)
21.(d)	22.(a)	23.(c)	24.(c)
25.(b)	26.(d)	27.(d)	28.(d)
29.(b)	30.(c)	31.(c)	32.(c)
33.(c)	34.(b)	35.(a)	36.(a)
37.(d)	38.(b)	39.(d)	40.(a)
41.(a)	42.(b)	43.(d)	44.(d)
45.(b)	46.(a)	47.(a)	48.(a)
49.(a)	50.(c)	51.(a)	52.(b)
53.(a)	54.(b)	55.(a)	56.(b)
57.(b)	58.(a)	59.(a)	60.(d)

61.(b)	62.(c)	63.(c)	64.(b)
65.(d)	66.(b)	67.(b)	68.(d)
69.(b)	70.(a)	71.(b)	72.(b)
73.(a)	74.(b)	75.(a)	76.(c)
77.(a)	78.(d)	79.(c)	80.(d)
81.(d)	82.(b)	83.(d)	84.(c)
85.(d)	86.(a)	87.(a)	88.(b)
89.(a)	90.(a)	91.(b)	92.(b)
93.(b)	94.(c)	95.(b)	96.(a)
97.(c)	98.(b)	99.(b)	100.(a)
101.(a)	102.(d)	103.(a)	104.(a)
105.(b)	106.(b)	107.(b)	108.(d)
109.(a)	110.(d)	111.(d)	112.(d)
113.(b)	114.(c)	115.(a)	116.(d)
117.(d)	118.(a)	119.(d)	120.(d)
121.(a)	122.(b)	123.(a)	124.(b)
125.(a)	126.(b)	127.(c)	128.(c)
129.(c)	130.(d)	131.(c)	132.(d)
133.(c)	134.(d)	135.(a)	136.(b)
137.(b)	138.(c)	139.(c)	140.(a)
141.(c)	142.(a)	143.(b)	144.(a)
145.(c)	146.(c)	147.(c)	148.(a)
149.(a)	150.(a)	151.(c)	152.(a)
153.(d)	154.(d)	155.(c)	156.(c)
157.(a)	158.(c)	159.(d)	160.(b)
161.(d)	162.(a)	163.(c)	164.(a)
165.(d)	166.(d)	167.(b)	168.(b)
169.(a)	170.(d)	171.(b)	172.(a)
173.(a)	174.(a)	175.(c)	176.(b)
177.(a)	178.(d)	179.(d)	180.(a)
181.(a)	182.(d)	183.(d)	184.(d)
185.(b)	186.(b)	187.(c)	188.(d)
189.(b)	190.(a)	191.(d)	192.(b)
193.(c)	194.(b)	195.(c)	196.(c)
197.(a)	198.(c)	199.(a)	200.(c)
201.(b)	202.(a)	203.(c)	204.(a)
205.(b)	206.(c)	207.(c)	208.(a)
209.(a)	210.(a)	211.(a)	212.(a)
213.(c)	214.(c)	215.(c)	216.(a)
217.(a)	218.(b)	219.(a)	220.(c)
221.(c)	222.(d)	223.(c)	224.(d)
225.(b)	226.(b)	227.(b)	228.(d)
229.(a)	230.(a)	231.(d)	232.(d)
233.(a)	234.(b)	235.(c)	236.(c)
237.(a)	238.(a)	239.(c)	240.(b)
241.(c)	242.(d)	243.(c)	244.(d)

245.(c)	246.(d)	247.(a)	248.(b)
249.(d)	250.(d)	251.(c)	252.(a)
253.(a)	254.(b)	255.(b)	256.(b)
257.(a)	258.(b)	259.(a)	260.(a)
261.(a)	262.(d)	263.(a)	264.(b)
265.(c)	266.(c)	267.(c)	268.(d)
269.(b)	270.(a)	271.(c)	272.(c)
273.(b)	274.(b)	275.(a)	276.(d)
277.(a)	278.(c)	279.(d)	280.(b)
281.(a)	282.(b)	283.(d)	284.(b)
285.(a)	286.(a)	287.(a)	288.(c)
289.(b)	290.(d)	291.(d)	292.(a)
293.(b)	294.(b)	295.(c)	296.(a)
297.(b)	298.(c)	299.(b)	300.(b)
301.(b)	302.(c)	303.(d)	304.(a)
305.(d)	306.(b)	307.(d)	308.(c)
309.(a)	310.(d)	311.(d)	312.(c)
313.(b)	314.(a)	315.(c)	316.(c)
317.(a)	318.(d)	319.(a)	320.(d)
321.(d)	322.(a)	323.(c)	324.(b)
325.(d)	326.(c)	327.(c)	328.(c)
329.(c)	330.(a)	331.(c)	332.(d)
333.(b)	334.(d)	335.(b)	336.(a)
337.(c)	338.(d)	339.(c)	340.(d)
341.(d)	342.(b)	343.(d)	344.(d)
345.(a)	346.(b)	347.(b)	348.(a)
349.(d)	350.(d)	351.(c)	352.(c)
353.(c)	354.(b)	355.(b)	356.(d)
357.(d)	358.(a)	359.(c)	360.(a)
361.(d)	362.(b)	363.(b)	364.(d)
365.(b)	366.(b)	367.(c)	368.(d)
369.(d)	370.(b)	371.(b)	372.(b)
373.(d)	374.(a)	375.(b)	376.(c)
377.(a)	378.(c)	379.(b)	380.(b)
381.(c)	382.(b)	383.(c)	384.(a)
385.(d)	386.(d)	387.(a)	388.(c)
389.(b)	390.(a)	391.(b)	392.(d)
393.(c)	394.(d)	395.(b)	396.(c)
397.(a)	398.(b)	399.(c)	400.(c)
401.(b)	402.(b)	403.(c)	404.(c)
405.(c)	406.(a)	407.(b)	408.(b)
409.(d)	410.(b)	411.(a)	412.(c)
413.(d)	414.(d)	415.(d)	416.(d)
417.(c)	418.(a)	419.(d)	420.(d)
421.(c)	422.(d)	423.(a)	424.(c)
425.(c)	426.(b)	427.(a)	428.(d)

429.(a)	430.(a)	431.(d)	432.(d)
433.(d)	434.(a)	435.(d)	436.(d)
437.(a)	438.(d)	439.(c)	440.(d)
441.(d)	442.(a)	443.(b)	444.(b)
445.(d)	446.(a)	447.(b)	448.(d)
449.(b)	450.(b)	451.(b)	452.(c)
453.(d)	454.(d)	455.(c)	456.(a)
457.(b)	458.(d)	459.(a)	460.(c)
461.(d)	462.(d)	463.(b)	464.(c)
465.(b)	466.(a)	467.(b)	468.(b)
469.(b)	470.(a)	471.(d)	472.(b)
473.(d)	474.(c)	475.(b)	476.(c)
477.(d)	478.(d)	479.(a)	480.(d)
481.(a)	482.(c)	483.(b)	484.(b)
485.(d)	486.(a)	487.(c)	488.(c)

Solutions :-**Sol.1.(a)** Difference = $335 - 265 = 70$

According to the question,

Quotient = $70 \times 3 = 210$, Divisor= $335 + 265 = 600$, remainder = 35

We know that, Dividend

= quotient \times divisor + remainder

Therefore, Number

= $210 \times 600 + 35 = 126035$ **Sol.2.(b)** If $3x5479y4$ is divisible by 88 it must be divisible 11 and 8Divisibility rule for 8 \rightarrow if last three digit number of any number divisible by 8 it will be divisible by 8For $3x5479y4 \Rightarrow Y = 0, 4, 8$ (for greatest value we take $Y = 8$)Divisibility rule for 11 \rightarrow difference between sum of digit of odd place and sum of digit of even place should be 0 or multiple of 11 $3 + 5 + 7 + y - (x + 4 + 9 + 4) = 0$ or 11 $15 + y - (x + 17) = 0 \Rightarrow 15 + y = (x + 17)$ Put $Y = 8$ we get $X = 6$ Divisibility rule for 9 \rightarrow sum of all digit is divisible by 9, 425139z2 $\rightarrow 4 + 2 + 5 + 1 + 3 + 9 + z + 2 = 26 + z$ $= Z = 1 = (3x + 2y - z) = (3 \times 6 + 2 \times 8 - 1) = 33$ **Sol.3.(d)** Let the numerator be x and denominator be y

$$\frac{x+2}{y+5} = \frac{1}{2} \Rightarrow 2x - y = 1 \dots\dots\dots (1)$$

$$\frac{x-2}{y-2} = \frac{1}{3} \Rightarrow 3x - y = 4 \dots\dots\dots (2)$$

Subtracting eq, (2) from (1)

$$x = 3 \text{ and } y = 5, \text{ Required fraction} = \frac{x}{y} = \frac{3}{5}$$

Sol.4.(d) $1771 = 7 \times 11 \times 23$

Sum of last two prime numbers = 82

Fourth prime number = $82 - 23 = 59$

7, 11, 23, 59

Product of the last two prime numbers
= $23 \times 59 = 1357$

$$\text{Sol.5.(b)} \quad 9^6 \times 12^4 \times 7^7 = (3 \times 3)^6 \times (2 \times 3)^4 \times 7^7$$

Hence, sum of the prime factors
= $2 + 3 + 7 = 12$

Sol.6.(b) 688xy Divide by L.C.M.(11, 21)
= 231 let xy = 99 greatest number

$$\begin{array}{r} 231 \overline{) 68899} \quad (298 \\ \underline{-462} \\ 2269 \\ \underline{-2079} \\ 1909 \\ \underline{-1848} \\ 61 \end{array}$$

So number (XY) = $99 - 61 = 38$
⇒ value of $(8x - 3y + xy)$
= $8 \times 3 - 3 \times 8 + 3 \times 8 = 24$

Sol.7.(d) Divisibility of 3 = Sum of digits should be divisible by 3.

$3 + 2 = 5$, then new number

= 567 (divisible by 3)

$4 + 2 = 6$, then new number

= 689 (not divisible by 3)

$5 + 2 = 7$, then new number

= 714 (divisible by 3)

$6 + 2 = 8$, then new number

= 832 (not divisible by 3)

$7 + 2 = 9$, then new number

= 928 (not divisible by 3)

So, there are two numbers which will be divisible by 3.

Sol.8.(c) Smaller positive integers is x and the larger positive integer = x+1

$$\Rightarrow x(x + 1) = 552 \Rightarrow x^2 + x - 552 = 0$$

Sol.9.(c) $12600 = p^3 \times q^2 \times r^2 \times s^1$

$$12600 = 7^1 \times 3^2 \times 2^3 \times 5^2$$

$$P = 2, Q = 3, R = 5, S = 7$$

$$(3p + 2q - r + s)$$

$$= 3(2) + 2(3) - 5 + 7 = 14$$

Sol.10.(c) Let the number = x

Actual result = $2.4x$

Mistaken result = $4.2x$

As per question,

$$4.2x = 65.1 \Rightarrow x = 15.5$$

So, Actual number

$$= 2.4x = 2.4 \times 15.5 = 37.2$$

Sol.11.(b)

$$947 + 1218 = 861 + 1304 = 787 + 1378$$

$$2165 \Rightarrow 2165 = 2165$$

NOTE :- During exam, Just check the unit digit and eliminate the options.

Sol.12.(c) As there are as many students in a row as there are rows in the auditorium, it means this arrangement forms a square where the number of

rows and columns are equal. So as the total number of students = 6889, the number of rows = $\sqrt{6889} = 83$

$$\text{Sol.13.(a)} \quad \text{Given, } 1^2 + 2^2 + 3^2 + \dots + 14^2 = 1015,$$

Then, $3^2 + 6^2 + 9^2 + \dots + 42^2$

$$= 3^2 \times (1^2 + 2^2 + 3^2 + \dots + 14^2)$$

$$= 9 \times 1015 = 9135$$

Sol.14.(b) The given numbers are

$$\sqrt{3^2 + 4^2}, \sqrt{12.96}, \sqrt{125} \text{ and } \sqrt{900}$$

$$\text{Here, } \sqrt{3^2 + 4^2} = 5\sqrt{12.96} = 3.6$$

$$\sqrt{125} = 5\sqrt{5}$$

$$\sqrt{900} = 30$$

So, the only irrational (not rational) number is $\sqrt{125} = 5\sqrt{5}$

Sol.15.(b) Here

$$(18 - 7) = (21 - 10) = (24 - 13) = 11,$$

LCM of 18, 21, 24 = 504,

So, the least multiple of 23 when divided by 18, 21 and 24 leave the remainder 7, 10 and 13 respectively is = $504k - 11$

[where $k = 1, 2, 3, \dots$]

Now we can write,

$$504k - 11 = 483k + 21k - 11$$

[here 483 is divisible by 23, so we have to find for which value of k, $(21k - 11)$ will be divisible by 23]

If we put $k = 6$,

$$21k - 11 = 126 - 11 = 115$$

[115 is divisible by 23]

So, the least multiple of 23 when divided by 18, 21 and 24 leave the remainder 7, 10 and 13 respectively

$$= 504k - 11 = 504 \times 6 - 11$$

$$= 3024 - 11 = 3013$$

Sol.16.(b)

301 to 399 ⇒ in first place = 99 times

330 to 339 ⇒ in 2nd place = 10 times

In 3rd place = 10 times

$$\text{Total} = 99 + 10 + 10 = 119$$

$$\text{Sol.17.(d)} \quad \left(1 - \frac{1}{n}\right) + \left(1 - \frac{2}{n}\right) + \left(1 - \frac{3}{n}\right)$$

.....+ up to n terms

$$= (n) - \frac{1}{n}(1 + 2 + 3 + 4 + \dots + n)$$

$$= (n) - \frac{1}{n} \times \frac{n(n+1)}{2}$$

$$= (n) - \frac{(n+1)}{2} = \frac{n-1}{2}$$

Sol.18.(c) Let the number of correct

answer = x Incorrect answers = $120 - x$

According to question,

$$x - \frac{1}{2}(120 - x) = 90 \Rightarrow x - 60 + \frac{x}{2} = 90$$

$$\Rightarrow \frac{3x}{2} = 150 = x = \frac{300}{3} = 100$$

Sol.19.(d) According to question,

$$= 10000a + 1000b + 100c + 10d + e$$

$$= 10^4a + 10^3b + 10^2c + 10d + e$$

Sol.20.(a) Number of total handshakes

$$= \frac{40 \times 39}{2} = 780$$

Sol.21.(d) Reverse of 14 = 41

Difference between 41 and 14 = 27

Five numbers of two digits increase by 27 when their digits are reversed.

$$25 \leftrightarrow 52, 69 \leftrightarrow 96, 47 \leftrightarrow 74, 41 \leftrightarrow 14$$

and $58 \leftrightarrow 85$

Sol.22.(a) If we multiply 495 by 36 we get 17820 as result. But if boy read 6 in place of 9 he got 16740 as result

So 9 is erroneously read as 6.

$$\text{Sol.23.(c)} \quad (I^2 - C^2 \times \frac{P}{R}) + 8$$

$$= (9^2 - 3^2 \times \frac{16}{18}) + 8 = (81 - 9 \times \frac{16}{18}) + 8$$

$$= 81$$

Sol.24.(c)

$$\frac{1}{1 \times 4} + \frac{1}{4 \times 7} + \frac{1}{7 \times 10} + \dots + \frac{1}{47 \times 50}$$

$$= \frac{1}{3} \times \left[\frac{3}{1 \times 4} + \frac{3}{4 \times 7} + \frac{3}{7 \times 10} + \dots \right]$$

$$= \frac{1}{3} \times \left[1 - \frac{1}{4} + \frac{1}{4} - \frac{1}{7} + \frac{1}{7} - \frac{1}{10} + \dots + \frac{1}{47} - \frac{1}{50} \right] = \frac{49}{150}$$

$$\frac{1}{10} \dots + \frac{1}{47} - \frac{1}{50} = \frac{49}{150}$$

Short Tricks :-

$$\text{Sum} = \frac{1}{(n-1)d} \left\{ \frac{1}{k} - \frac{1}{L} \right\}$$

Where, n = no. of terms in denominator

d = difference between the terms

k = first term of first denominator and

L = last term of last denominator.

$$\text{Required Sum} = \frac{1}{(2-1)3} \left\{ \frac{1}{1} - \frac{1}{50} \right\}$$

$$= \left\{ \frac{49}{150} \right\}$$

Sol.25.(b) Let the numbers are = x and y

$$x + y = r \quad (1)$$

$$x \div y = \frac{s}{t} \Rightarrow \frac{x}{y} = \frac{s}{t} \Rightarrow x = \frac{sy}{t}$$

Putting value of x in equation (1)

$$\frac{sy}{t} + y = r \Rightarrow y \left(\frac{s}{t} + 1 \right) = r$$

$$\Rightarrow y = \frac{rt}{s+t}$$

From equation (1)

$$x = r - \frac{rt}{s+t} = \frac{rs}{s+t}$$

Sol.26.(d) Arithmetic mean = 10

Let the numbers be a and b

According to question,

$$a + b = 20$$

$$\text{And, } \sqrt{ab} = 5 \Rightarrow ab = 25$$

Now,

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

$$\Rightarrow 20^2 = a^2 + b^2 + 2 \times 25$$

$$\Rightarrow 400 = a^2 + b^2 + 50 \Rightarrow a^2 + b^2 = 350$$

Sol.27.(d) Given,

$$\frac{1}{16} > \frac{n}{160} > \frac{1}{20} \Rightarrow 10 > n > 8$$

since n is a integer so n = 9 as it is greater than 8 and less than 10

Sol.28.(d) $9X + 7 + 8YZ + 7Z1 = 2526$

When we add unit digits we get 8 + Z, but in the result it is given 6

So possible value of Z = 8, (8 + 8 = 16)
Sum of 100th place digits = 9 + 8 + 7 = 24
So, X + Y + Z + 1 = 12, X + Y + 8 + 1 = 12
X + Y = 3, X = 3 (maximum)

Sol.29.(b) If P is a prime number and P divides Q^2 , then P will also divide Q
So P will not divide the next number after Q
So Q + 1 is not divisible by P.

Sol.30.(c) For Possible value of x
Given, Remainder = x - 5

{ The remainder cannot be less than five or five because By taking these values we will get 0 and -ve, which is not possible.}

Let,

(i) $x = 6$ then, $\frac{43}{x} = \frac{43}{6}$, remainder

= 1, So, $1 = x - 5 \Rightarrow x = 6$ [proved]

(ii) $x = 8$ then, $\frac{43}{x} = \frac{43}{8}$, remainder

= 3 So, $3 = x - 5 \Rightarrow x = 8$ [proved]

(iii) $x = 12$ then, $\frac{43}{x} = \frac{43}{12}$, remainder

= 7, So, $7 = x - 5 \Rightarrow x = 12$ [proved]

(iv) $x = 16$ then, $\frac{43}{x} = \frac{43}{16}$, remainder

= 11, So, $11 = x - 5 \Rightarrow x = 16$ [proved]

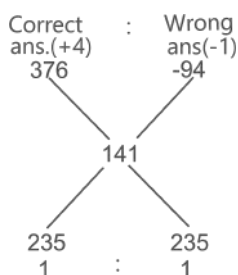
(v) $x = 24$ then, $\frac{43}{x} = \frac{43}{24}$, remainder

= 19 So, $19 = x - 5 \Rightarrow x = 24$ [proved]

(vi) $x = 48$ then, $\frac{43}{x} = \frac{43}{48}$, remainder

= 43, So, $43 = x - 5 \Rightarrow x = 48$ [proved]

Sol.31.(c) Using Alligation method we have :



Here, $1 + 1 = 2$ uni= 94 questions

Then, $1 \text{ unit} = \frac{94}{2} = 47$

The no of question wrongly answered by X = 47

Sol.32.(c) Divisibility of 4 = last two digits must be divisible by 4.

Divisibility of 8 = last three digits must be divisible by 8.

Here, 3824 is divisible by both 4 and 8.

Sol.33.(c) The 2-digit number which are divisible by 2 and 4 = 12, 16,96

Total number = $\frac{96 - 12}{4} + 1 = 21 + 1 = 22$

Sol.34.(b) $115x y$ is divisible by 90

So, y = 0 as this number must be divisible by 10, For divisibility of 9, sum of digits must be divisible by 9

$1 + 1 + 5 + x + 0 = 7 + x = 9$, so, x = 2

Value of (x + y) = 2 + 0 = 2

Sol.35.(a) $34^2 < 1212 < 35^2$

Smallest number that should be added = $35^2 - 1212 = 1225 - 1212 = 13$

Sol.36.(a) HCF of coprime numbers = 1.

H.C.F of 34 and 35 = 1.

Sol.37.(d) $6300 = 2 \times 2 \times 3 \times 3 \times 5 \times 5 \times 7$

Hence, 7 must be multiplied by 6300 to make a perfect square.

$6300 \times 7 = 44100 = 210^2$

Sol.38.(b)

Let the numbers are x and x + 18.

Now, $x + x + 18 = 32$

$\Rightarrow 2x = 32 - 18 \Rightarrow 2x = 14 \Rightarrow x = 7$

Greater number = x + 18 = 7 + 18 = 25

Sol.39.(d) (11, 13) is co-prime because

H.C.F of 11 and 13 = 1

(15, 17) is co-prime because

H.C.F of 15 and 17 = 1

(17, 23) is co-prime because

H.C.F of 17 and 23 = 1

(17, 34) is not co-prime because

H.C.F of 17 and 34 = 17

Sol.40.(a) Mohit's 1 month salary = ₹15000

His 1 month expenditure

= 5000 + 2000 = ₹ 7000

1 month saving = 15000 - 7000 = ₹ 8000

He spends his total saving of birthday month on celebration.

Now, his saving for 11 month

= 8000 × 11 = ₹ 88,000

Sol.41.(a)

Largest 2-digit prime number = 97

and Largest 3-digit prime number = 997

Required sum = 2 × 97 + 3 × 997

= 194 + 2991 = 3185

Sol.42.(b) Prime numbers between 51 and 100 are 53, 59, 61, 67, 71, 97

Sum of the smallest and the greatest prime numbers = 53 + 97 = 150

Sol.43.(d) Let the price of each pencil be ₹ x and price of each pen be ₹ y

$3x + 5y = 81$(1)

$5x + 3y = 71$(2)

By solving eq, (1) and (2), we get

x = 7 and y = 12

C.P of 1 pencil and 2 pens

= (1 × 7) + (2 × 12) = 7 + 24 = ₹31

Sol.44.(d) Let the digit at one's place be x and the digit at ten place be y.

$\Rightarrow x + y = 9$(1) $\Rightarrow 10y + x = 5x + 6$

$4x - 10y = -6$(2)

By solving eq, (1) and (2), we get

x = 6, y = 3, Required number

= 10y + x = 10 × 3 + 6 = 30 + 6 = 36

Sol.45.(b) Sum of first 8 prime numbers

= 2 + 3 + 5 + 7 + 11 + 13 + 17 + 19 = 77

Required number = 77 ÷ 7 = 11

Sol.46.(a) Let the first multiple of 9 be x.

$9x + 9(x + 1) + 9(x + 2) = 2457$

$\Rightarrow 9x + 9x + 9 + 9x + 18 = 2457$

$\Rightarrow 27x = 2457 - 27$

$\Rightarrow 27x = 2430 \Rightarrow x = 90$

Largest number

= 9 × (90 + 2) = 9 × 92 = 828

Sol.47.(a) Three digit numbers are 100, 101998, 999

total numbers divisible by 2 = 450 = n(2)

total numbers divisible by 5 = 180 = n(5)

total numbers divisible by both 2 and 5

= 90 = n(2 and 5)

The total numbers of three-digit numbers

divisible by 2 or 5 = n(2 or 5)

= n(2) + n(5) - n(2 and 5)

The total number of three-digit numbers

divisible by 2 or 5 = 450 + 180 - 90 = 540

Sol.48.(a) Let the first consecutive natural number be x

Now, $x^2 + (x + 1)^2 = 313$

$\Rightarrow x^2 + x^2 + 1 + 2x = 313$

$\Rightarrow 2x^2 + 2x - 312 = 0$

$\Rightarrow x^2 + x - 156 = 0$

$\Rightarrow x^2 + 13x - 12x - 156 = 0$

$\Rightarrow (x + 13)(x - 12) = 0$

Smaller number = 12

Sol.49.(a) 1 + 3 + 5 + 7 + + 21

Sum of odd numbers = n^2 , where n is number of terms.

Here n = 11, sum = $11^2 = 121$

Sol.50.(c) Divisible by both 3 and 4

→ divisible by 12

The numbers between 1 to 150 divisible by 12 = $\frac{150}{12} = 12$

Sol.51.(a) $4 + 4^{n+5} = 260$

$$4^{n+5} = 256 = 4^4$$

On comparing powers, we get: $n + 5 = 4$

$$\Rightarrow n = -1 \Rightarrow 5^{-1+3} = 5^2 = 25$$

Sol.52.(b)

3	266805
3	88935
5	29645
7	5929
7	847
11	121
11	11
	1

$$266805 = 3^2 \times 5 \times 7^2 \times 11^2$$

Sol.53.(a) Number (N) = DQ + R, where D is the divisor, Q is quotient and R is the remainder So, $N = DQ + 16$

$$2N = 2DQ + 32 \text{ or } 29 + 3$$

Now, the divisor is either 29 itself or the factor of 29 which is more than 3.

On checking the options, we get the least possible value of D = 29

Sol.54.(b) Let the first number be x then second number = $(27 - x)$

$$5x = 4(27 - x)$$

$$\Rightarrow 5x + 4x = 108 \Rightarrow 9x = 108 \Rightarrow x = 12$$

Smaller number = 12

Sol.55.(a) Let the unit digit number be x, and the digit at ten's place be y.

$$10y + x + 10x + y = 99$$

$$\Rightarrow 11x + 11y = 99 \Rightarrow x + y = 9 \dots\dots\dots (1)$$

$$x - y = 5 \dots\dots\dots (2)$$

By solving eq.(1) and (2),

we get $x = 7$ and $y = 2$

Hence, the required number = 27

Sol.56.(b) Let the number = x

$$\text{ATQ, } x + \frac{x}{2} + \frac{x}{3} + 27 = 71$$

$$\Rightarrow \frac{6x + 3x + 2x}{6} = 44 \Rightarrow \frac{11x}{6} = 44$$

$$\text{So, } x = 24$$

Sol.57.(b) $A \times B = 143 \Rightarrow 11 \times 13$

Let $A = 11$ So, $B = 13$,

$B \times C = 195$ So, $C = 15$

11, 13 and 15 are co-prime to each other The sum = $11 + 13 + 15 = 39$

Sol.58.(a) By taking option A

$$467851 + 5 = 467856$$

Which is square of 684

Sol.59.(a) Let the numbers are a and b.

$$a + b = 45 \dots\dots\dots (1) \text{ and } a - b = 19 \dots\dots\dots (2)$$

On solving eq.(1) and (2), we get $a = 32$ and $b = 13$

Sol.60.(d) $158 - 4 = 154$ and $215 - 5 = 210$
H.C.F of 154 and 210 = 14

Sol.61.(b)

Let the first consecutive number be x

$$6x + 6(x + 1) = 66$$

$$\Rightarrow 12x = 66 - 6 \Rightarrow 12x = 60 \Rightarrow x = 5$$

Smaller multiple of 6 = $6 \times 5 = 30$

Sol.62.(c) Divisibility of 8 : last 3 digits must be divisible by 8. 6 4 8 4 y 6

$$\rightarrow 4y6 \div 8 \rightarrow 416 \div 8 = 52$$

Least value of y = 1

Sol.63.(c) Let the number be x.

$$5x = 65 \Rightarrow x = 13, \text{ Required number} = 13$$

Sol.64.(b)

Prime numbers between 20 and 80 ;

23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79.

Hence, there are 14 prime numbers between 20 and 80.

Sol.65.(d) Let the number be N and the quotient be x, then the number $\Rightarrow N = 15x + 9$

$$\text{Now, } \frac{15x + 9}{5} = \frac{15x}{5} + \frac{9}{5}$$

$$\Rightarrow \text{remainder} = 0 + 4$$

Hence, the required remainder = 4

Sol.66.(b)

Composite numbers are numbers that have more than two factors

Factors of 4 = 1, 2 and 4, Therefore, 4 is the smallest composite number.

Sol.67.(b) Let the number = x

ATQ,

$$\Rightarrow \frac{x}{3} - \frac{x}{5} = 6 \Rightarrow \frac{5x - 3x}{15} = 6 \Rightarrow \frac{2x}{15} = 6$$

Therefore, $x = 45$

Sol.68.(d) let the number = $10x + y$

$$\text{ATQ, } (x + y) \times 7 = 10x + y$$

$$\Rightarrow 7x + 7y = 10x + y$$

$$\text{So, } x = 2y \text{ And } 10x + y - (10y + x) = 18$$

$$\Rightarrow x - y = 2 \dots\dots (1)$$

By putting value of x in the equation (1)

$$\Rightarrow 2y - y = 2 \text{ So, } y = 2 \text{ and } x = 4$$

Product of digits = $2 \times 4 = 8$

Sol.69.(b) Prime number less than 50 :

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, Total prime numbers = 15

$$\text{Sol.70.(a)} \left(\frac{3}{7}\right)^8 \times \left(\frac{3}{7}\right)^{-14} = \left(\frac{3}{7}\right)^{3p-3}$$

$$\left(\frac{3}{7}\right)^{8-14} = \left(\frac{3}{7}\right)^{3p-3}$$

If two terms have the same base, then we can equate their powers.

$$3p - 3 = -6 \Rightarrow 3p = -3 \Rightarrow \text{So, } p = -1$$

Sol.71.(b) Middle number of consecutive numbers = average of the numbers

$$\text{So middle number} = \frac{141}{3} = 47$$

Sol.72.(b) By observing options,

$$x + y = 11 + 7 = 18 \Rightarrow xy = 11 \times 7 = 77$$

Therefore option (b) is the right answer.

Sol.73.(a)

Average of the five consecutive number

$$= \frac{240}{5} = 48 \text{ We know that,}$$

Average of consecutive number

$$= \frac{\text{first number} + \text{last number}}{2}$$

So, $\text{first number} + \text{last number}$

$$= 48 \times 2 = 96$$

Sol.74.(b) We know that $n^0 = 1$ (where n = natural number)

$$(11^0 + 21^0 - 7^0 + 3^0) \times 5^0$$

$$= (1 + 1 - 1 + 1) \times 1 = 2$$

Sol.75.(a)

Divisibility of 2 = last two digit (0,2,4,6,8)

Divisibility of 3 = sum of digits divisible by 3.

Divisibility of 5 = last digit must be 0, 5

Now, by options we can see that 3150 is divisible by 2,3 and 5.

Sol.76.(c) Let the number = x

$$2x + 3 \times 52 = 342$$

$$\Rightarrow 2x + 156 = 342 \Rightarrow 2x = 342 - 156$$

$$\Rightarrow 2x = 186 \Rightarrow x = 93$$

Now, Required number

$$= 4x + 2 \times 52 = 372 + 104 = 476$$

Sol.77.(a) Let the numbers are x and y.

$$x + y = 9 \dots\dots\dots (1) \text{ and } x^2 + y^2 = 41 \dots\dots\dots (2)$$

$$\text{Squaring eq.(1), } x^2 + y^2 + 2xy = 81$$

$$\Rightarrow xy = 81 - 41 = 20$$

Now, by hit and trial method, $x = 5$ and $y = 4$

Sol.78.(d) Let the first even number be x

$$x + x + 2 + x + 4 + x + 6 + x + 8 = 2720$$

$$\Rightarrow 5x = 2720 - 20 \Rightarrow 5x = 2700 \Rightarrow x = 540$$

Required number = 3rd + 5th

$$= (540 + 4) + (540 + 8)$$

$$= 544 + 548 = 1092$$

Sol.79.(c) Given number:

242, 657, 864, 264, 764, 218, 845

after 1 is added to the first digit and 1 is subtracted for the last digit of each number = 341, 756, 963, 363, 863, 317,

944 = (341, 963, 363), Therefore "3" will be correct answer

Sol.80.(d) Given number : 72514368

Number obtained by subtracting each digit of the number from 9 = 27485631
Even digit will be 4 in newly formed number

Sol.81.(d)

Given number : 3 5 4 6 9 8 3 2 9
ascending order : 2 3 3 4 5 6 8 9 9
(left) (right)

The positions of only 8 numbers change after they are arranged in ascending order.

Sol.82.(b) Two numbers are co-prime when H.C.F of the numbers is 1.

Value of y is less than 20, so y = 1, 5, 7, 11, 13, 17, 19

So, there are 7 possible values of y.

Sol.83.(d) Smallest prime number is 2.

Sol.84.(c) Given : 167, 876, 567, 187, 873
After subtracting 11 from the number we get 156, 865, 556, 176, 862

After reversing the digit of numbers we get 651, 568, 655, 671, 268

After arranging the number in ascending order we get 268, 568, 651, 655, 671

From the above we can clearly see that, Position of only one number got unchanged i.e. 568.

Sol.85.(d) The sum of all prime numbers between 11 to 20 (both include)

$$11 + 13 + 17 + 19 = 60$$

The sum of all prime numbers between 30 to 50 (both include)

$$31 + 37 + 41 + 43 + 47 = 199$$

Now, required difference = 199 - 60 = 139

Sol.86.(a) The numbers between

$$87^2 \text{ and } 88^2 =$$

$$7569, 7570, 7571, \dots, 7743, 7744$$

The non-square numbers

$$= 7570, 7571, \dots, 7743,$$

Total number of terms

$$= \frac{7743 - 7570}{1} + 1 = 173 + 1 = 174$$

Sol.87.(a) The smallest number which is divisible by 8, 12, 28, 36 i.e. its L.C.M.

L.C.M of 8,12,28 and 36 = 504

Sol.88.(b) Let the unit digit number be x and tenth place digit be y.

$$x + y = 12 \dots (1)$$

$$(10x + y) - (10y + x) = 18$$

$$\Rightarrow 10x + y - 10y - x = 18$$

$$\Rightarrow 9(x - y) = 18 \Rightarrow x - y = 2 \dots (2)$$

By solving eq, (1) and (2)

we get, x = 7 and y = 5

Hence, the required number = 10y + x = 57

Sol.89.(a) Let the first odd consecutive number be x. = $x^2 + (x + 2)^2 = 74$

$$\Rightarrow x^2 + x^2 + 4 + 4x = 74$$

$$\Rightarrow 2x^2 + 4x - 70 = 0$$

$$\Rightarrow x^2 + 2x - 35 = 0$$

$$\Rightarrow x^2 + 7x - 5x - 35 = 0$$

$$\Rightarrow (x + 7)(x - 5) = 0 \Rightarrow x = 5 \text{ or } -7$$

Hence, the number = 5

Sum of the numbers = 5 + 7 = 12

Sol.90.(a) Let the unit digit be x and tenth place digit be y in the given number z.

$$10y + x = 6(x + y)$$

$$\Rightarrow 10y - 6y + x - 6x = 0$$

$$\Rightarrow 5x - 4y = 0 \dots (1)$$

$$(10y + x) - (10x + y) = 9$$

$$\Rightarrow 9y - 9x = 9 \Rightarrow y - x = 1 \dots (2)$$

By solving eq, (1) and (2) we get x = 4 and y = 5, Number will be 54

Sol.91.(b) Let the first number be x and the other number be y.

$$(x + 1) + (y + 1) = 40$$

$$\Rightarrow x + y = 38 \dots (1)$$

$$x - y = 6 \dots (2)$$

By solving eq, (1) and (2) we get, x = 22 and y = 16

Hence, the numbers are 22 and 16.

Sol.92.(b) Let the first consecutive number be x and other number be x+1

$$\frac{x}{4} - \frac{x+1}{5} = 3 \Rightarrow \frac{5x - 4x - 4}{20} = 3$$

$$\Rightarrow \frac{x - 4}{20} = 3 \Rightarrow x - 4 = 60 \Rightarrow x = 64$$

Hence, the larger number is 65.

Sol.93.(b) All prime numbers are odd.

Sol.94.(c) Numbers between 1 to 10 both inclusive; 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Now, L.C.M of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 = 2520 Hence, the required number is 2520

Sol.95.(b)

$$4^{2n+1} = 2^{3n+9} \Rightarrow 2^{4n+2} = 2^{3n+9}$$

$$\Rightarrow 4n + 2 = 3n + 9 \dots$$

$$(If m^a = m^b \text{ then } a = b) \Rightarrow n = 7$$

Sol.96.(a) Let the three consecutive odd numbers be x, x + 2 and x + 4.

$$x + x + 2 + x + 4 = 309$$

$$\Rightarrow 3x + 6 = 309 \Rightarrow 3x = 303 \Rightarrow x = 101$$

Hence, the larger number is 105.

Sol.97.(c) Those natural numbers which only one common factor i.e 1.

By option, (161, 192) is a pair of co-prime number.

Sol.98.(b) Divisibility rule of 125 → if last 3 digit of any number divisible by 125

then the number will be divisible by 125

Possible value of last three digit

→ 125, 250, 375, 500, 625, 750, 875

For 473xy5,

possible value → 125, 375, 625 and 875

Therefore numbers = 4

Sol.99.(b) if any number is divisible by 44 it must be divisible by 11 × 4

In this type question we go through option,

155232 = last two digit divisible by 4 and difference b/w odd and even place is 0

or multiple of 11 then, number is divisible by 11 ⇒ (1 + 5 + 3) - (5 + 2 + 2) = 0

156992 = last two digit divisible by 4

and difference b/w odd and even place is 0 or multiple of

$$11(1 + 6 + 9) - (5 + 9 + 2) = 0$$

Sol.100.(a) $x = 55^{100} + 55^{101} + 55^{102}$

$$\Rightarrow x = 55^{100}(1 + 55 + 3025)$$

$$\Rightarrow x = 55^{100} \times 3081$$

According to option, only 71 prime number is not a factor of X.

Sol.101.(a) By hit and trial method, From option (a)

198 when divided by 15 remainder = 3

198 when divided by 17 remainder = 11 (satisfies)

Hence option (a) is the right answer

Sol.102.(d)

$$\text{Required fraction} = \frac{45}{24 \times 60} = \frac{1}{32}$$

Sol.103.(a) By hit and trial

From option (a), 1887 ÷ 17 = 111

Sol.104.(a) Let the number be a and b

According to the question,

$$a - b = 18 \dots (i), \quad a^2 - b^2 = 360$$

$$(a + b)(a - b) = 360, \quad (a + b) = 20 \dots (ii)$$

Possible value of a = 19 and b = 1

So, larger number = 19

Sol.105.(b) 1st multiple of 3 = 3

7th multiple of 3 = 21

$$\text{Therefore average} = \frac{21 + 3}{2} = 12$$

Sol.106.(b) Numbers : 365, 125, 486, 548, 654, 552, 354

If 3 is added to first digit of every number, then, Numbers = 665, 425, 786, 848, 954,

852, 654, Numbers in which the first digit is exactly divisible by the second digit

= 665, 425, 848

Hence, there are 3 such numbers.

$$\text{Sol.107.(b) Biggest fraction} = \frac{5}{6}$$

$$\text{Smallest fraction} = \frac{1}{2}$$

$$\text{Required difference} = \frac{5}{6} - \frac{1}{2} = \frac{2}{6} = \frac{1}{3}$$

Sol.108.(d) 705.0, 7.005, 7.500, 70.50, 7050, 7.050, 75

On arranging in ascending order,
7.005, 7.050, 7.500, 70.50, 75, 705.0, 7050

Sol.109.(a)

Prime numbers between 61 and 100
= 61, 67, 71, 73, 79, 83, 89, 97.

Second smallest prime between
61 and 100 = 67

Second largest prime between
61 and 100 = 89

Hence, required sum = 67 + 89 = 156

Sol.110.(d) LCM of 12, 16 and 18 = 144
Remainder = 5

So, required number = 144 + 5 = 149

Sol.111.(d)

Possible distinct prime numbers = 2, 7, 31
Required product = $2 \times 7 \times 31 = 434$

Sol.112.(d)

ATQ, the fourth statement is true.

For divisibility of 4,

Last two digits should be divisible by 4

Sol.113.(b) 1 is a prime number (False)

All prime numbers except the number 2
are odd numbers. (True)

There are seven prime numbers between
1 and 20. (False)

If number x is prime, then number x + 1 is
always prime. (False)

Sol.114.(c) The least value of x so that
the number $478265475x + 25481459x$
is divisible by 8, is given by:

$478265475x + 25481459x$,

For divisibility of 8,

Last 3 digits should be divisible by 8.

Number = $478265475x$

Possible value of x = 2

Number = $25481459x$

Possible value of x = 2

$478265475x + 25481459x$

Now, Go through last 3 digits,

$752 + 592 = 1344$

So, least value of x = 2

Sol.115.(a) $2^2 = 4$ and $3^2 = 9$

So, total integers between 2^2 and 3^2

$= (9 - 4) - 1 = 4 = 3^2 = 9$ and $4^2 = 16$

So, total integers between 3^2 and 4^2

$= (16 - 9) - 1 = 6$

Integers lying between 891^2 and 892^2

$= (892^2 - 891^2) - 1 = (892 - 891)(892$

$+ 891) - 1 = 1783 - 1 = 1782$

Sol.116.(d) According to question,

$\Rightarrow 8a + 8b = 56 \Rightarrow 8(a + b) = 56$

$a + b = 7$

Possible value a and b = 3 and 4

Numbers are 24 and 32

Greater number = 32

Sol.117.(d)

Let the original number be : $10x + y$

According to the question,

$$\frac{1}{7} (10x + y) = \frac{10x + y}{2} - 15$$

$$20x + 2y = 70x + 7y - 210$$

$$50x + 5y = 210 \Rightarrow 10x + y = 42$$

So, sum of digits = $4 + 2 = 6$

Sol.118.(a) ATQ, $x^2 = 5x + 6$

Going with options we get option (a) = 6
satisfies this.

Sol.119.(d) Let the two number = a and b

So, $a + b = 17$ and $a^2 + b^2 = 157$

Short trick:-

Put a = 11 and b = 6

Sum of cubes = $a^3 + b^3 = 11^3 + 6^3$

$= 1331 + 216 = 1547$

Sol.120.(d) As per question,

$$P \times \frac{3}{4} - Q \times \frac{2}{3} = \frac{5}{8}$$

$$\frac{3P}{4} - \frac{2Q}{3} = \frac{5}{8}$$

$$\frac{9P - 8Q}{12} = \frac{5}{8} \Rightarrow 9P - 8Q = \frac{15}{2}$$

Sol.121.(a) LCM of 7, 11 and 13 = 1001

$(1001)^2 = 1002001$

So, option (a) is divisible by 7, 11 and 13.

Sol.122.(b)

Dividend = divisor \times quotient + remainder

Dividend = $22.8 \times 8.5 + 0 = 193.8$

Sol.123.(a) Let total number of pencils = x

No of coloured pencils = $\frac{3}{4}x$

No of red coloured pencils

$$= \frac{3}{4}x \times \frac{8}{15} = \frac{2}{5}x$$

$$\Rightarrow \frac{2}{5}x = 40 \Rightarrow x = 100$$

So total number of pencils = 100

Sol.124.(b)

There are 96 pencils in 12 packets.

Then, 1 pencil in $\frac{12}{96}$ packets

So, 304 pencils in

$$\frac{12}{96} \times 304 = 38 \text{ packets.}$$

Sol.125.(a)

13.5 kg of grapes cost ₹681.75

1 kg of grapes cost = $\frac{681.75}{13.5}$

12 kg of grapes cost

$$= ₹ \frac{681.75}{13.5} \times 12 = ₹606$$

Sol.126.(b) Let the positive integer be n.

n is divided by 7 leaves remainder as 3;

n leaves 0 as the remainder when 4 is
added to n i.e. $n + 4$

Sol.127.(c)

$$\frac{37}{92.5} = \frac{16}{y} \Rightarrow y = \frac{92.5 \times 16}{37} = 40$$

Sol.128.(c) $y = \frac{460.8}{16} = 28.8$

Now, $\frac{28.8}{16} = 1.8$

Sol.129.(c)

$$\text{Number} = \frac{243}{0.225 \times 0.36} = 3000$$

Sol.130.(d) By option; 10098

$$\Rightarrow \frac{1 + 9 + 8}{9} = 2$$

Hence, it is divisible by 9

Add alternate digits of the number and
find the difference which should be
divided by 11.

So, $(1 + 0 + 8) - (0 + 9) = 0$, which is
divisible by 11.

Hence, it is divisible by 11.

Sol.131.(c) We will get the unit digit of

$4 \times 38 \times 764 \times 1256$ if we just multiply
the last digits of each numbers.

i.e. $4 \times 8 \times 4 \times 6 = 768$

So, the unit digit in $4 \times 38 \times 764 \times 1256$
is 8.

Sol.132.(d) As we know,

for any natural number n, 6^n always ends
with 6 and 5^n ends with 5.

So, $6^n - 5^n$ will end with $(6 - 5) = 1$.

Sol.133.(c) The mean of the first eight
composite natural numbers = $\frac{78}{8}$

The mean of the first eight prime
numbers = $\frac{77}{8}$

So, the required difference = $\frac{78}{8} - \frac{77}{8}$

$$= \frac{1}{8}$$

Sol.134.(d) The multiples of 12 just after
100 is 108, and just near 200 is 192.

So the multiples of 12 between 100 and
200 forms an arithmetic progression with
first term (a) = 108, common difference
(d) = 12, last term (l) = 192

So the sum of all the numbers between
100 and 200 which are divisible by 12,

$$= \frac{n}{2} (a + l) \text{ [where } n = 8 \text{]}$$

$$= \frac{8}{2} (108 + 192) = 1200$$

Sol.135.(a) In case of the number
0.232323, we can see it is a pure

recurring number and '23' is repeated successively. So the bar will be above 0.23, i.e. denominator will be 99 and the numerator will be 23. So, if we convert it into a fraction it will be = $\frac{23}{99}$

Sol.136.(b) $1 + 3 + 7 + 9 + 11 + 13 = 44$

As we know, the perfect square number means such numbers whose square roots come to be an integer number. So, perfect squares near 44 are 36 and 49. Now, $44 + 5 = 49$

So, the number that should be added to 44 to make it a complete square is 5.

Sol.137.(b) Given, quotient = 6 and remainder = 5

Let smaller number = a (Divisor)

bigger number = b (Dividend)

From question, $b - a = 1540$ ----(1)

We know that,

Dividend = Divisor \times Quotient + Remainder

$b = a \times 6 + 5$

$b - 6a = 5$ ----(2)

Subtract equation (2) from (1),

we get, $5a = 1535$

$\therefore a = \frac{1535}{5} = a = 307$

Sol.138.(c) The greatest number of 5 digits = 99999

When we divide 99999 by 468, we get 315 as remainder.

So, the required 5-digit number which is divisible by 468 is = $99999 - 315 = 99684$

Sol.139.(c) If the denominator of a rational number is of the form $2^n 5^m$, where n and m are non-negative integers, then the decimal expansion of the number will definitely be a terminating decimal. i.e. a decimal number which has all terms zero, after some places on the right side of the decimal place.

E.g. $\frac{7}{20} = \frac{7}{2^2 \times 5^1} = 0.35$

[here both n, m are non-negative integers and the result is a terminating decimal number]

Sol.140.(a) Prime factors of 21600

$= 5^2 \times 2^5 \times 3^3 \Rightarrow (5^2 \times 2^4 \times 3^2) \times (2 \times 3)$

Now, we have to take only even powered factors to find the perfect square factors,

$\Rightarrow 5^2 \times 2^4 \times 3^2 = (5^2)^1 \times (2^2)^2 \times (3^2)^1$

So, the number of factors for this part

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

$= 2 \times 3 \times 2 = 12$

i.e. 12 factors of the number 21600 are perfect squares.

Sol.141.(c) Out of the four given statements only the statement, every real number can be written in the complex form is true. As we know, complex numbers are written as $\rightarrow a + ib$ form.

Now, any real number can be written in this form by making the part $b = 0$, e.g. the real number $5 = 5 + i \times 0$

Sol.142.(a) The numbers from 2 to 12 are = 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 (11 numbers), Composite numbers are = 4, 6, 8, 9, 10, 12 (6 numbers)

Required fraction = $\frac{6}{11}$

Sol.143.(b) $A + 0 = 0 + A = A$

This is the additive property of zero.

Sol.144.(a) Let the consecutive odd integers are x, x + 2.

As the difference between squares of two consecutive positive odd integers is 56. $\Rightarrow (x + 2)^2 - x^2 = 56 \Rightarrow x = 13$

Then the two consecutive odd integers are 13 and 15.

Sol.145.(c) The number is = n,

When n is divided by 5, the remainder is 2.

$\Rightarrow n = 5q + 2$ [where q is the quotient]

Squaring both sides we get,

$\Rightarrow n^2 = 25q^2 + 20q + 4$

Here, the part $25q^2 + 20q$ is divisible by 5, So, when n^2 is divided by 5, the remainder will be 4.

Sol.146.(c) Decimal expansion of $\frac{109}{100}$ is $= \frac{109}{100} = 1 + \frac{0}{10} + \frac{9}{100}$

Sol.147.(c) $\frac{15}{600} = 0.025$

\Rightarrow It is a terminating decimal because this decimal has a finite number of digits

$\frac{29}{343} = 0.08454.....$ [it is a non terminating decimal]

$\frac{7}{2^2 \times 7^2} = \frac{7}{196} = 0.03571.....$

[it is a non terminating decimal]

$\frac{77}{210} = 0.36666.....$ [it is a non terminating decimal]

Sol.148.(a) The product of two even consecutive numbers is always divisible by 8.

Examples-

$2 \times 4 = 8, 4 \times 6 = 24, 6 \times 8 = 48$ etc

Sol.149.(a) Let the three consecutive numbers be x, x + 1, x + 2

ATQ,

$2x + 3(x + 1) + 4(x + 2) = 74$

$\Rightarrow 9x + 11 = 74 \Rightarrow 9x = 63 \Rightarrow x = 7$

\therefore Greater number = $x + 2 = 7 + 2 = 9$

Sol.150.(a) Any number which is divisible by 4, 8, 12 and 16 must be divisible by 3, 4 and 8. If the last 3 digits of any number are divisible by 8, then the number is divisible by 8.

So, from given options only 100032 and 100800 are divisible by all but the smallest number of 6 digits will be 100032.

Sol.151.(c) $3^{71} + 3^{72} + 3^{73} + 3^{74} + 3^{75}$

$= 3^{71}(1 + 3 + 3^2 + 3^3 + 3^4)$

$= 3^{71}(1 + 3 + 9 + 27 + 81) = 3^{71} \times 121$

This will be divisible by 11.

Sol.152.(a)

Let both the numbers be, a and b.

ATQ, $a^2 + b^2 = 2437$ ----(1)

And $\sqrt{a} = 7$ ----(2)

Squaring both sides we get,

$a = 49 \Rightarrow a^2 = 2401$

From equation (1),

$2401 + b^2 = 2437$

$\Rightarrow b^2 = 2437 - 2401 = 36 \Rightarrow b = 6$

Sol.153.(d) $0.03\bar{7} = \frac{(37 - 3)}{900} = \frac{17}{450}$

Sol.154.(d) Odd numbers from 3 to 60, that are exactly divisible by 5 are : 5, 15, 25, 35, 45, 55 i.e. 6 numbers.

Sol.155.(c)

Let the two digit number be $10x + y$,

So $x + y = 6$,

According to the question,

$2(10x + y) - (10y + x) = 6$

$\Rightarrow 19x - 8y = 6 \Rightarrow 19(6 - y) - 8y = 6$

$\Rightarrow y = 4$ & $x = 2$

So, the number is 24.

Sol.156.(c) The numbers which are divisible by 7 between 300 to 1000 are 301, 308 ----- 994.

First term(a) = 301, last term(l) = 994, difference(d) = 7

n^{th} number = $(\frac{l - a}{d}) + 1$

$= (\frac{994 - 301}{7}) + 1 = 99 + 1 = 100$

Sol.157.(a) Let the number = xy

A/Q,

$x + y = 9 \Rightarrow y = 9 - x$ ---- (1)

When the digits are reversed new number = $yx \Rightarrow 10y + x + 9 = 3(10x + y)$

$\Rightarrow 10y + x + 9 = 30x + 3y$

$\Rightarrow 7y - 29x + 9 = 0$ ---- (2)

Put $y = 9 - x$ in equation (2)

$$\Rightarrow 7(9-x) - 29x + 9 = 0$$

$$\Rightarrow 63 - 36x + 9 = 0 \Rightarrow 72 = 36x \Rightarrow x = 2$$

From eq. (1)

$$y = 7 \text{ Number} = 27$$

Sol.158.(c) A number is divisible by 1 and itself are numbers from 3 to 29 are 3, 5, 7, 11, 13, 17, 19, 23 and 29.
Total = 9 no. are there.

Sol.159.(d) Let the sum of all even integers from 2 to 281 is = S;
It is an Arithmetic progression series with $a = 2$, $d = 2$, $l = 280$;
Where $n =$ number of terms

$$= \frac{l-a}{d} + 1 = 140$$

$$\text{So, } S = \frac{140}{2} \times (280 + 2) = 19740$$

Sol.160.(b) The fractions are given as :

$$\frac{2}{5}, \frac{1}{3}, \frac{3}{5}, \frac{1}{4}, \frac{7}{10}, \frac{5}{8}$$

To arrange it in ascending order the denominators should be made equal to compare among them.

$$\Rightarrow \frac{48}{120}, \frac{40}{120}, \frac{72}{120}, \frac{30}{120}, \frac{84}{120}, \frac{75}{120}$$

So, the ascending order will be :

$$\frac{1}{4}, \frac{1}{3}, \frac{2}{5}, \frac{3}{5}, \frac{5}{8}, \frac{7}{10}$$

Sol.161.(d) Let the four consecutive odd numbers are $x, x + 2, x + 4, x + 6$;

So, the sum of these four consecutive odd numbers is :

$$x + x + 2 + x + 4 + x + 6 = 160$$

$$\Rightarrow 4x + 12 = 160 \Rightarrow x = 37$$

Sol.162.(a) Let the number is = $10x + y$;
The sum of the digits of a two-digit number is 5 $\Rightarrow x + y = 5$;

If the digits are reversed, the new number when increased by 1 equals three times the original number.

$$10y + x + 1 = 3(10x + y)$$

$$29x = 7y + 1 \rightarrow 29(5-y) = 7y + 1$$

$$\Rightarrow 36y = 144 \Rightarrow y = 4$$
;

$$\text{So, } x = (5 - 4) = 1$$
;

$$\text{Then the number is } (10 \times 1 + 4) = 14$$

Sol.163.(c)

Let the number of students = x

A/Q,

$$\frac{9000}{x} - \frac{9000}{x+20} = 160$$

$$\Rightarrow \frac{9000(x+20) - 9000x}{x(x+20)} = 160$$

$$\Rightarrow \frac{180000}{x(x+20)} = 160$$

$$\Rightarrow x(x+20) = \frac{180000}{160} = 1125$$

$$\Rightarrow x(x+20) = 25 \times 45$$

On comparing, $x = 25$

Sol.164.(a)

Numbers are = 55, 65, 75, 85, 95

Sol.165.(d) $\frac{N}{5} \Rightarrow \text{Rem.} = 3$

$$\frac{N^2}{5} \Rightarrow \text{Rem} = \frac{3^2}{5} = \frac{9}{5} = 4$$

Sol.166.(d) for no. of trailing zeroes

$$\left[\frac{n}{5^1} + \frac{n}{5^2} + \frac{n}{5^3} \dots \right]$$

Number of Zeros in 19!

$$= \frac{19}{5} = 3 \text{ (integer part)}$$

So a hundredth place digit of 19! Would be 0.

Sol.167.(b) LCM of 12, 21, 32, 18
= $2016 \times 3 = 6048$ which lies between 6000 and 7000.

Sol.168.(b) Greatest no. of 4 digit = 9999
When we divide 9999 by 307 leaves remainder = 175,
So number = $307 - 175 = 132$

Sol.169.(a) $1 + 2 + 3 + \dots + 30 + 31 + 30 + 29 + \dots + 3 + 2 + 1$

$$= \frac{31 \times 32}{2} + \frac{30 \times 31}{2}$$

$$= 31 \times 16 + 31 \times 15 = 31 \times 31 = 961$$

Sol.170.(d) Let the four consecutive numbers be $x, x + 1, x + 2, x + 3$

$$A/Q, x + x + 1 = x + 3$$

$$\Rightarrow 2x + 1 = x + 3 \Rightarrow x = 2$$

Numbers are 2, 3, 4, 5

$$\text{Sum} = 14, \text{ Half of sum} = 7$$

Sol.171.(b) Given number = 61827354

Face value of 6 = 6

Face value of 5 = 5

$$\text{Sum} = 6 + 5 = 11$$

Sol.172.(a) Let the number = x

$$A/Q, x + 14x = 135$$

$$\Rightarrow 15x = 135 \Rightarrow x = 9$$

Sol.173.(a) 1.112123123412345 is an irrational number because 1234 is repeating after decimal.

Sol.174.(a) 45 is divisible by 15 so the number which is divisible by 45 will be also divisible by 15, we need to check only the remainder.

When we divide 28 by 15,

Remainder = 13

Sol.175.(c) $4660 - 1300 = 3360$

$$6900 - 4660 = 2240$$

$$\text{HCF of } 2240 \text{ and } 3360 = 112$$

$$N = 112$$

$$\text{Sum of digits} = 1 + 1 + 2 = 4.$$

Sol.176.(b) $\frac{(3\sqrt{5} + \sqrt{125})}{(\sqrt{80} + 6\sqrt{5})}$

$$= \frac{(3\sqrt{5} + 5\sqrt{5})}{(4\sqrt{5} + 6\sqrt{5})} = \frac{8\sqrt{5}}{10\sqrt{5}}$$

$$= \frac{4}{5} \text{ (Rational number)}$$

Sol.177.(a)

Let the two numbers are N and M .

One fourth of N is equal to three-eighth

$$\text{of } M. \Rightarrow \frac{N}{4} = \frac{3M}{8} \Rightarrow M = \frac{2N}{3}$$

If 30 is added to the first number, then it becomes six times that of the second number.

$$\Rightarrow N + 30 = 6 \times M$$

$$\Rightarrow 3N = 30 \Rightarrow N = 10$$

So, the first number is 10.

Sol.178.(d) 4, 8, 16, 32, -----512.

This series is in Geometric Progression, where $a = 4$, $r = 2$, $l = 512$;

$$\Rightarrow l = a \times r^{n-1} \Rightarrow 2^{n-1} = 2^7 \Rightarrow n = 8$$

Sol.179.(d) If we observe the given number we find that the nearest number to 327 which would be a perfect square is 324.

$$\text{So } 0.000327 - 0.000324 = 0.000003$$

Sol.180.(a) $4^{61} + 4^{62} + 4^{63} + 4^{64}$

$$= 4^{61}(1 + 4 + 4^2 + 4^3)$$

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

$$= 4^{61} \times 85 = 4^{60} \times 340$$

Divisible by 10.

Sol.181.(a) The number which is divisible by 280 will also be divisible by 35. So we have to check only the remainder.

$$\frac{73}{35} \Rightarrow \text{Remainder} = 3$$

Sol.182.(d) Let the Number = x

$$A/Q, x - 3 = \frac{28}{x}$$

$$\Rightarrow x(x - 3) = 28 = 7 \times 4$$

On comparing we get $x = 7$

Sol.183.(d) Let the bigger number = x

$$\text{As per the question, } x - 40 = \frac{x}{5}$$

$$\Rightarrow x - \frac{x}{5} = 40 \Rightarrow \frac{4x}{5} = 40 \Rightarrow x = 50$$

Sol.184.(d) On comparing all, the greatest rational number = $\frac{19}{27}$

So this will be the greatest ratio.

Sol.185.(b)

2	63535	252
2	4	
45	235	
5	225	
502	1035	
2	1004	
504	31	

31 must be subtracted from 63535 to make it a perfect square.

Sol.186.(b) $99.75 \times 0.05554 = 5.540115$
6 digits will be here to the right of the decimal.

Sol.187.(c)

Greatest number of four digit = 9999

When we divide 9999 by 307 we get 175 as Remainder.

Required number = $307 - 175 = 132$

Sol.188.(d)

1	12519	112
1	1	
21	025	
1	21	
222	419	
2	444	
	25	

Sol.189.(b) The number whose only factors are 1 and the number itself is called a Prime number.

e.g. 2,3,5,7,.....

Sol.190.(a)

If 111.....1 (n digits) is divisible by 9,

Then the value of n will be = 9

Because as we know to be divisible by 9, the sum of the digits has to be = 9 or a multiple of 9.

Here $(1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1) = 9$

So, the least value of n = 9

Sol.191.(d) There are two 9's in 96961

Their place values are = 90000 and 900

Sum = $90000 + 900 = 90900$

Sol.192.(b) LCM of 6,8, 12, 15 and 20 is

= 120

The greatest number of 5 digit = 99999

When $99999 \div 120$ then the remainder is 39

If we subtract 39 from 99999, then number becomes divisible by 120

$99999 - 39 = 99960$ is exactly divisible by 120.

Sol.193.(c) A terminating decimal is always a rational number As it can be represented by p/q form.

Sol.194.(b) $\frac{31}{2.5} = 12.4$

Sol.195.(c) The product of $4\sqrt{6}$ and $3\sqrt{24}$ is 144 and it's a rational number.

Sol.196.(c) On solving the term

$$(\sqrt{2} - \sqrt{3})^2 = 2 + 3 - 2\sqrt{6}$$

is obtained and this is an irrational term.

Sol.197.(a) $\frac{3}{8} = 0.375$ i.e. the decimal expression of $\frac{3}{8}$ comes to an end after 3 digits, after the decimal.

Sol.198.(c) $0.\overline{23} = \frac{23}{99} \Rightarrow$ It is a rational number because it can be written in the fraction of two integers $(\frac{P}{Q})$

Sol.199.(a)

The rational number between

$$\sqrt{5} \approx 2.24 \text{ and } \sqrt{7} \approx 2.65 = 2\frac{2}{5} = 2.4$$

Sol.200.(c) Let the number is = N ;

According to the question,

$$\Rightarrow \frac{N}{5 \times 3} = 3 \times \frac{1}{2} \times \frac{40}{10} \Rightarrow N = 90$$

Sol.201.(b)

$\sqrt[3]{40} = \sqrt[3]{2 \times 2 \times 2 \times 5} = 2 \times \sqrt[3]{5} = 2 \times 5^{\frac{1}{3}}$
The rationalizing factor of an irrational number is a number that must be multiplied by that irrational number to make it rational.

There might be many rationalizing factors of an irrational number but we must find the simplest number that must make it rational when multiplied by it.

To make $(2 \times 5^{\frac{1}{3}})$ rational, we have to multiply it by $(5^{\frac{2}{3}})$

Sol.202.(a) The greatest prime number less than 200 = 199

Because prime numbers are a number that can be divided exactly only by itself and 1, for example 7, 17, 41 and 199 etc.

Sol.203.(c) According to the question,

$$= \frac{2}{11} \times (\text{reciprocal of } -\frac{5}{14})$$

$$= \frac{2}{11} \times -\frac{14}{5} = -\frac{28}{55}$$

Sol.204.(a) $3 = \sqrt{9}$ and $5 = \sqrt{25}$

If we find irrational numbers between 3 and 5, it means that the number lies between $\sqrt{9}$ and $\sqrt{25}$.

$\sqrt{17}$ lies between $\sqrt{9}$ and $\sqrt{25}$

Sol.205.(b) $\frac{2}{7} = \overline{0.285714}$

$$\frac{2}{5} = 0.4, \quad \frac{2}{3} = 0.\overline{6}, \quad \frac{2}{9} = 0.\overline{2}$$

Hence, We can see that only $\frac{2}{5}$ has terminal decimal.

Sol.206.(c) integers are numbers that can be positive, negative or zero, but cannot be a fraction.

Sol.207.(c) 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47 are the prime numbers that are less than 50.

Sol.208.(a) Given number = 71,624

Place value of 7 = 70,000

Sol.209.(a)

Let the numbers be x, x + 2, x + 4, x + 6

A/Q, $x + x + 2 + x + 4 + x + 6 = 484$

$$\Rightarrow 4x + 12 = 484 \Rightarrow 4x = 472$$

$$\Rightarrow x = \frac{472}{4} = 118 \text{ (Smallest no.)}$$

Sol.210.(a) The given number = 3,15,298

Face value of 9 = 9

Face value of 3 = 3

Difference = $9 - 3 = 6$

Sol.211.(a) Let the initial number = x

$$A/Q, x^2 - 15 = (x - 15)^2$$

$$\Rightarrow x^2 - 15 = x^2 + 225 - 30x$$

$$\Rightarrow 30x = 240 \Rightarrow x = 8$$

Sol.212.(a) The sum of first 'n' natural

$$\text{numbers} = \frac{n(n+1)}{2}$$

Sol.213.(c) A/Q $N \div 5 = 3$

Example, $8 \div 5 = 3, 13 \div 5 = 3$

Sol.214.(c) Let number = x

$$A/Q, \Rightarrow \frac{x}{2} = 2 \Rightarrow x = 4$$

actual answer = $2x = 2 \times 4 = 8$

Sol.215.(c)

Difference between 1000 and 200 = 800
800 is divided by 7 then we get 114 as complete value and the remainder is 2 so that 114 numbers between 200 to 1000 are completely divisible by 7.

Sol.216.(a) We know that when 'm' is an odd number $(x^m + a^m)$ is divisible by $(x + a)$. Each one is divisible by $(41 + 43)$. So Common factor = $(41 + 43) = 84$.

Sol.217.(a) In 516372, face value of 6 = 6 and place value of 6 = 6000
Difference between the place value and face value of 6 in 516372 = $6000 - 6 = 5994$

Sol.218.(b)

Greatest six digits number = 999999

Smallest six digits number = 100000

Difference between greatest and smallest = $999999 - 100000 = 899999$

Sol.219.(a) The smallest number divisible by 6, 12 and 18 \rightarrow $\text{LCM}(6,12,18) = 36$
when largest 4-digit number is divided by 36 it gives quotient 277 and
Remainder 27

So, the number is $9999 - 27 = 9972$

ATQ,

The required number is $9972 + 5 = 9977$

Sol.220.(c) Largest 3-digit number = 999

Largest 4-digit number = 9999

Difference = $9999 - 999 = 9000$

Numbers divisible by 5 = $\frac{9000}{5} = 1800$

Sol.221.(c) How many 3-digit numbers leave remainder 1 when divided by 7

First such number is $105 + 1 = 106$

Last such number is $994 + 1 = 995$

AP with $d = 7$, $a(\text{First term}) = 106$, l

(last term) = 995, Then $n = ?$

So, $106 + (n - 1) \times 7 = 995$

$n = \frac{889}{7} + 1 = 128$

Sol.222.(d) Any number divided by 2 and 3 then number is divided by 6

Divisibility of $6 = 3 \times 2$

Every option is an even number. So, We only have to check the divisibility by 3.

$\rightarrow 87937A = 8 + 7 + 9 + 3 + 7 + A = 7 + A$

Here, we need the least value of A.

So, 2 is the correct answer.

Sol.223.(c) The face values of 8 and 5 in the number 817354 = 8 and 5

The sum of the face values - 13

[NOTE - Face value is the actual value of a digit in a number.]

Sol.224.(d) When we divide square of same number the remainder

$= \frac{4^2}{7} = \frac{16}{7} = 2$

Sol.225.(b) 1st term = $a = 2$

Common difference = $d = 7 - 2 = 5$

10th term of AP = $2 + (10 - 1) \times 5 = 47$

Sol.226.(b) Place value of 5 = 50000000

$= 5 \times 10^7$

Sol.227.(b)

Unit digit of $9^{\text{odd}} = 9$ and $9^{\text{even}} = 1$
 \Rightarrow cyclicity = 2

$19^{300} = 19^{\text{even}} \Rightarrow$ unit digit = 1

So when we divide

19^{300} by 20, we get remainder = 1

Sol.228.(d)

Total numbers between 1 to 700 = 700

When we divide 700 by 17 we get
quotient = 41

So 41 numbers are divisible by 17.

Sol.229.(a) Let the numbers be x and y

A/Q, $x + y = 30$

And $xy = 50$

Now, $\frac{1}{x} + \frac{1}{y} = \frac{x+y}{xy} = \frac{30}{50} = \frac{3}{5}$

Sol.230.(a) Let the original fraction = $\frac{x}{y}$

A/Q, $y - x = 5$ ----- (1)

$\frac{x-2}{y+2} = \frac{2}{5}$

$\Rightarrow 5x - 10 = 2y + 4$

$\Rightarrow 5x - 2y = 14$ ----- (2)

On solving equation (1) and (2), we get

$x = 8$ and $y = 13$

Fraction = $\frac{8}{13}$

Alternate :- In only option (a), The numerator is 5 less than its denominator.

So, It is the correct answer.

Sol.231.(d) $1216 - 32D = \text{DDD}$

1216 is divisible by 8 so 32D should also be divisible by 8 then the result DDD will be divisible by 8.

For 32D, D should be equal to 8

Sol.232.(d) 67843A2 is divisible by 11

Sum of odd place digits - the sum of even place digits = 0 or a multiple of 11

$= 19 - (11 + A) = 8 - A = 0$

So, $A = 8$

Sol.233.(a) Let, small number = X and

larger number = Y

ATQ, $Y = X + 5 \Rightarrow Y - X = 5$ -----(i)

$X + Y = 19$ -----(ii)

Solving the equation (i) & (ii)

We get the value of $Y = 12$ and $X = 7$

The product of these numbers

$= XY = 12 \times 7 = 84$

Sol.234.(b) Let, number = x

A/Q

$[3 < x < 8]$ and $[6 < x < 10]$

Only, $[6 < x < 8]$ is possible

So that the number is 7

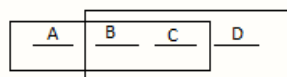
Sol.235.(c) Factorization of 6250

$= 2 \times 5 \times 5 \times 5 \times 5 \times 5$

When 6250 is multiplied by $2 \times 2 \times 5$ then 6250 will be a perfect cube.

So, the required number = $2 \times 2 \times 5 = 20$

Sol.236.(c)



$\frac{B \times C \times D}{A \times B \times C} = \frac{7429}{4199}$

$\rightarrow \frac{D}{A} = \frac{23}{13}$

So, the largest prime no. is 23.

Sol.237.(a) $2^7 \times 3^3 \times 5^4 \times 7$

Even number of factors =

$7 \times (3 + 1)(4 + 1)(1 + 1)$

$= 7 \times 4 \times 5 \times 2 = 280$

Sol.238.(a) $9^2 = 81$ and $10^2 = 100$

And 90 lies between 81 and 100 so its square root must lie between 9 and 10.

Sol.239.(c) Put $x = 72$

$\frac{136}{x-4} = \frac{136}{72-4} = \frac{136}{68} = 2$

Put $x = -132$

$\frac{136}{x-4} = \frac{136}{-132-4} = \frac{136}{-136} = -1$

Put $x = -268$ $\frac{136}{x-4}$

$= \frac{136}{-268-4} = \frac{136}{-272}$

$= -\frac{1}{2} \neq \text{integer}$

The lowest value of $x = -132$

Sol.240.(b) Prime numbers between 50 and 60 = 53, 59,

Sum = $53 + 59 = 112$

Sol.241.(c) Perfect squares can't end with 2, 3, 7 and 8.

Sol.242.(d) LCM of 6 and 8 = 24

Numbers which are divisible by both 6 and 8 must be divisible by 24

Total numbers divisible by both 6 and 8 =

$\frac{100}{24} = \text{Quotient} = 4$

Sol.243.(c) Rational number between $\frac{1}{4}$

and $\frac{1}{2} = \frac{\frac{1}{4} + \frac{1}{2}}{2} = \frac{3}{8}$

Sol.244.(d) Let the middle digit be x Then

$2x = 18$ or $x = 9$ So, the number is either 396 or 693 and another pair is 594 or 495

Since the number increases on reversing the digits, so the hundred's digits is smaller than the units digit Hence,

required number is 396 because difference of 594 and 495 is not 297

Sol.245.(c) Concept \rightarrow the smallest four digit number is 1000

Now, LCM of 2, 3 and 5 = 30

When we divide 1000 by 30 we get 10 as the remainder.

The smallest four digit number which is divisible by 2, 3 and 5 = $1000 - 10 + 30$

$= 1020$, the smallest 4-digit number which

when divided by 2, 3 and 5 leaves a remainder of 1 in each case = $1020 + 1 = 1021$

Sol.246.(d) Let, number = X, then

$$A/Q, X^2 - X = 812$$

$$X(X - 1) = 812, 29 \times 28 = 812$$

Sol.247.(a) A/Q,

factors of $2^2 \times 3^1 \times 5^2 \times 7^1$ are divisible by 50 but not by 100

(i) 25×2 (ii) $25 \times 2 \times 3$ (iii) $25 \times 2 \times 7$

(iv) $25 \times 2 \times 7 \times 3$

Possible numbers- 4

We will not take '2' twice because it will be a multiple of 100.

Sol.248.(b)

$$120 = 2 \times 2 \times 2 \times 3 \times 5 = 2^3 \times 3 \times 5$$

Number of total factors

$$= (3 + 1)(1 + 1)(1 + 1) = 4 \times 2 \times 2 = 16$$

Number of even factors

$$= 3 \times 2 \times 2 = 12$$

Number of divisors = no. of factors

Number of even divisors = 12

Number of odd divisors = $16 - 12 = 4$

Sol.249.(d) - 0.96, - 0.64, 0.24, 0.58, 0.83

Sol.250.(d) LCM of (21, 35, 63) = 315

Number should be divisible by 315

$$\text{Now, } \frac{10000}{315} = 31(\text{Quotient})$$

Sol.251.(c) $2^3 \times 3^3 \times 5^4 \times 7^2$

No. of factors divisible by 50 =

$$5^2 \times 2 (2^2 \times 3^3 \times 5^2 \times 7^2)$$

$$\rightarrow 3 \times 4 \times 3 \times 3 = 108$$

No. of factors divisible by 100 =

$$5^2 \times 2^2 (2 \times 3^3 \times 5^2 \times 7^2)$$

$$\rightarrow 2 \times 4 \times 3 \times 3 = 72$$

$$\text{Required no. of factors} = 108 - 72 = 36$$

Sol.252.(a) $120 = 2^3 \times 3 \times 5$

Number of factors = $(3 + 1) \times (1 + 1)$

$$\times (1 + 1) = 4 \times 2 \times 2 = 16$$

Sol.253.(a) Given that Remainder = 8

$$A/Q, \text{Divisor} = 6 \times 8 = 48$$

Quotient = 24 Dividend

= Divisor \times Quotient + Remainder

$$= 48 \times 24 + 8, = 1160$$

Sol.254.(b) Let the number = x

$$A/Q, \frac{4x}{5} - \frac{3x}{4} = 4 \Rightarrow \frac{16x - 15x}{20} = 4$$

$$\Rightarrow \frac{x}{20} = 4 \Rightarrow x = 80$$

Sol.255.(b)

Let, the numbers are "a" and "b"

A/Q, $a + b = 40$ and $a \times b = 60$

$$\frac{1}{a} + \frac{1}{b} = \frac{a+b}{ab} = \frac{40}{60} = \frac{2}{3}$$

Sol.256.(b) sum of the cubes of the natural numbers from 5 to 14

$$= 5^3 + 6^3 + 7^3 + 8^3 \dots\dots\dots 14^3 = 10925$$

Sol.257.(a) smallest five -digit number

formed by using the digits 2, 3, 4, 0, 5

$$= 20345$$

Sol.258.(b)

6 digit greatest number = 999999

and 6 digit smallest number = 100000

Difference between them = 899999

Sol.259.(a) $a^2 + b^2 + c^2 + d^2 = 1$

Put $a = b = c = d = \frac{1}{2}$ satisfies the given

equation, abcd

$$= \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{16}$$

Sol.260.(a)

Smallest 6-digit number = 100000

Largest 4-digit number = 9999

$$100000 - 9999 = 90001$$

Sol.261.(a) Descending order of

numbers divisible by 2 from 1 to 26

26, 24, 22, 20, 18, 16, 14, 12, 10, 8, 6, 4

2, Number which will be at the 9th from

the bottom = 18

Sol.262.(d) Sum of squares of natural

$$\text{numbers} = \frac{n(n+1)(2n+1)}{6}$$

$$= \frac{12 \times 13 \times 25}{6} = 650$$

Sol.263.(a) $\sqrt{4225} = 65$

$$\text{so that, } \sqrt{42.25} = 6.5$$

$$\text{Sol.264.(b)} \frac{5}{100} + \frac{2}{5} - \frac{6}{25}$$

$$= \frac{5 + 40 - 24}{100} = 0.21$$

Sol.265.(c) 109 and 113 are two integers

and they are prime between 109 and

121. (Including 109 and 121)

Sol.266.(c)

six digits greatest number = 999999 and

six digit smallest number = 100000

The sum of the greatest and smallest

numbers of six digits = 1099999

Sol.267.(c) $15971 = x \times 55 + 21$

$$15950 = x \times 55 \rightarrow x = 290$$

Sol.268.(d) smallest four digit number

formed by using the digits 3, 5, 0, 6

$$= 3056$$

Sol.269.(b) $1^3 + 2^3 + 3^3 + 4^3 + 5^3 + 6^3 +$

$$7^3 + 8^3 + 9^3 + 10^3 = 3025 \text{ Or}$$

Sum of cubes of natural numbers

$$= \left(\frac{n(n+1)}{2}\right)^2 = \left(\frac{10 \times 11}{2}\right)^2 = (55)^2 = 3025$$

$$\text{Sol.270.(a)} \frac{\text{Boys}}{\text{total students}} = \frac{58}{100} = 0.58$$

Sol.271.(c) 1st term (a)

= 5, common difference (d) = 4

9th term of AP = $a + (n - 1)d$

$$= 5 + (9 - 1) \times 4 = 5 + 32 = 37$$

Sol.272.(c) Both statements are incorrect.

Sol.273.(b) Nearest square of 40125 is

$$40000 = (200)^2$$

$$\text{Soldier left} = 40125 - 40000 = 125$$

Sol.274.(b)

Every integer is a rational number.

Sol.275.(a) Hundreds place = 2

Unit place = $2 \times 2 = 4$

Thousand place = 0

Ten thousand place = 6, Ten place = 5

So that, Number = 60254

Sol.276.(d) When 294 is multiplied with 6 then we have a perfect square.

$$294 \times 6 = 1764, \sqrt{1764} = 42$$

Sol.277.(a) $BA \times B3 = 57A$

By the option

Only A = 5, B = 2 is satisfied by the given

equation.

Sol.278.(c) $91 \times 92 \times 93 \times \dots\dots\dots \times 99$

When 2 of 92 and 5 of 95 are multiplied

it will make 10. Now any number

multiplied with 10, its unit digit will be 0.

Sol.279.(d) Number which are divisible

by 3, from 1 - 30

3, 6, 9, 12, 15, 18, 21, 24, 27, 30

Now in descending order

30, 27, 24, 21, 18, 15, 12, 9, 6, 3

7th from the bottom = 4th from the top

Number = 21

Sol.280.(b) Sum of squares from 1 to 18

$$= \frac{18 \times (18 + 1)(2 \times 18 + 1)}{6}$$

$$= \frac{18 \times 19 \times 37}{6} = 2109$$

Sum of squares from 3 to 18

$$= 2109 - 1 - 4 = 2104$$

Sol.281.(a) Smallest 6-digit number

formed using 0, 4 and 6 = 400006

Largest 6-digit number formed using 0, 4

and 6 = 666640

$$\text{Sum} = 666640 + 400006 = 10,66,646$$

Sol.282.(b) Let, number = x

$$\left\{x + \left(\frac{1}{3} - \frac{1}{4}\right)\right\} - \left(\frac{1}{3} \times \frac{1}{4}\right) = \left(\frac{1}{3} + \frac{1}{4}\right)$$

$$\left\{x + \left(\frac{1}{12}\right)\right\} - \frac{1}{12} = \frac{7}{12} \Rightarrow x = \frac{7}{12}$$

Sol.283.(d) Factorization of 288 then we get $-2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3$

For making a perfect cube, 288 will be multiply with (2×3)

Then 288×6 , now we can say that 6 is the smallest natural number.

Sol.284.(b) a (first term) = 2,

t_n (last term) = 84, Common Difference d

= 2, No. of terms, $t_n = a + (n - 1)d$

$$\Rightarrow 84 = 2 + (n - 1)2$$

$$\Rightarrow \frac{84 - 2}{2} = n - 1 \Rightarrow n = 41 + 1 = 42$$

$$\text{Now, Sum}(S_n) = \frac{n}{2} \{2a + (n - 1)d\}$$

$$= \frac{42}{2} (2 \times 2 + 41 \times 2) \Rightarrow 21 \times 86 = 1806$$

Sol.285.(a) 3.14×10^6

$$= \frac{314}{100} \times 1000000 = 3140000$$

Sol.286.(a)

Dividend = (Divisor \times quotient) + remainder

Let us assume p is the quotient when x is divided by 7 and q is the quotient when y is divided by 7.

$$X = (7 \times p) + 1 \text{ and } Y = (7 \times q) + 2$$

$$\text{Therefore, } X + Y = 7p + 7q + 1 + 2$$

$$= 7(p + q) + 3 \Rightarrow (X + Y)$$

when divided by 7 leaves remainder 3.

Sol.287.(a) The greatest four digit number is 9999. After finding Square root by the long division method we get 198 as remainder, So now we subtract 198 from 9999 to get a perfect square number that is $9999 - 198 = 9801$

Sol.288.(c) Let the six consecutive numbers are = $x, x + 1, x + 2, x + 3, x + 4, x + 5$, $X + x + 1 + x + 2 = 27$

$$\Rightarrow 3x + 3 = 27, \Rightarrow 3x = 24, \Rightarrow x = 8$$

$$\text{Sum of next three numbers} = 3x + 12$$

$$= 3 \times 8 + 12 = 36$$

$$\text{Sol.289.(b)} \quad \frac{1}{4} + \frac{1}{4 \times 5} + \frac{1}{4 \times 5 \times 6}$$

$$= \frac{30 + 6 + 1}{4 \times 5 \times 6} = \frac{37}{120} = 0.3083$$

Sol.290.(d) $95.75 \times 0.02554 = 2.445445$ the decimal point will be after 6 digits from the right

Sol.291.(d) Let the number = x

$$\frac{11x}{5} - \frac{5x}{11} = 192$$

$$\Rightarrow \frac{121x - 25x}{55} = 192 \Rightarrow \frac{96x}{55} = 192$$

$$\Rightarrow x = \frac{192 \times 55}{96} = 110$$

$$\text{Sol.292.(a)} \quad 5.\overline{46} = \frac{546 - 5}{99} = \frac{541}{99}$$

Sol.293.(b) Total numbers between 500 and 700 = 200

$$\text{Number divisible by 11} = \frac{200}{11}$$

$$= 18 \text{ (quotient)}$$

Sol.294.(b) For the given AP

First term $a = 2$, Common difference

$$= d = 5 - 2 = 3$$

$$\text{Tenth term} = a + 9d, = 2 + 9 \times 3 = 29$$

Sol.295.(c) Sum of squares of first ten

$$\text{natural numbers} = \frac{10(10 + 1)(20 + 1)}{6}$$

$$= \frac{10 \times 11 \times 21}{6} = 385$$

Sol.296.(a) In the given sequence

Sum of the Two conjugative number = 0

$$= \{1 - 1 + 1 - 1 + 1 - 1 + \dots \dots \dots 100\text{th term}\}$$

$$+ 101^{\text{th}} \text{ term}, = 0 + 1, = 1$$

Sol.297.(b)

First 5 whole number = 0, 1, 2, 3, 4

The product of first five whole numbers = 0

Sol.298.(c) fraction of 1275 is 816

$$\Rightarrow \frac{816}{1275} = \frac{16}{25}$$

Sol.299.(b) $42 \times (4 + 2) = (42 \times 4) + (42 \times 2)$ is an example of distributive property.

$$\text{Sol.300.(b)} \quad 5.\overline{6} = \frac{56 - 5}{90} = \frac{51}{90}$$

Sol.301.(b) Square root of 18769 = 137
137 consists of 3 digits.

Sol.302.(c) First multiple of 6 = 6

And 12th multiple of 6 = 72

Sum of 1st 12 multiple of 6 = $6 \times (1 + 2 + \dots \dots \dots + 12)$

$$\Rightarrow \frac{6 \times 12 \times 13}{2} = 78 \times 6 = 468$$

Sol.303.(d) Descending order

$$= \frac{9}{10}, \frac{8}{9}, \frac{7}{8}$$

$$\text{Sol.304.(a)} \quad 27 \frac{3}{4} = \frac{111}{4}, \text{ Remainder} = 3$$

Sol.305.(d) Let the numbers are x and y

$$A/Q, x + y = 20 \text{ -----(i)}$$

$$\text{And } x^2 - y^2 = 80 \text{ -----(ii)}$$

Put $x = 20 - y$ in equation (ii)

$$(20 - y)^2 - y^2 = 80$$

$$\Rightarrow 400 + y^2 - 40y - y^2 = 80$$

$$\Rightarrow 40y = 320 \Rightarrow y = 8$$

$$\text{And } x = 20 - 8 = 12$$

Sol.306.(b) Let, number = $10x + y$

$$x + y = 8 \text{(1)}$$

$$10x + y + 36 = 10y + x$$

$$9(x - y) = -36 \Rightarrow x - y = -4 \text{(2)}$$

From (1) and (2), we get

$$x = 2, y = 6, \text{ Number} = 26$$

Sol.307.(d) Here, x is a even number.

Let, numbers are = $x, (x + 2), (x + 4)$

$, (x + 6), (x + 8)$

$$A/Q, x + (x + 2) + (x + 4) + (x + 6) +$$

$$(x + 8) = 660,$$

$$5x + 20 = 660 \Rightarrow x = 128$$

Therefore, the number will be -- 128, 130, 132, 134 and 136

Greatest number = 136 and smallest number = 128

$$\text{Sol.308.(c)} \quad 115 + x = \frac{100}{x}$$

$$15x + x^2 = 100 \Rightarrow x^2 + 15x = 100$$

Then, we get +ve root $(x) = 5$

Sol.309.(a) Let, $r = 16$

$$\text{then, } \frac{r^2}{16} = \frac{16 \times 16}{16} = 16$$

Sol.310.(d) The difference between the biggest and the smallest fraction

$$= \frac{5}{6} - \frac{2}{3} = \frac{1}{6}$$

Sol.311.(d) Sum of 20th term of the series

$$\frac{1}{5 \times 6} + \frac{1}{6 \times 7} + \frac{1}{7 \times 8} + \dots + \frac{1}{24 \times 25}$$

$$= \frac{1}{5} - \frac{1}{6} + \frac{1}{6} - \frac{1}{7} + \dots \dots \dots + \frac{1}{24} - \frac{1}{25}$$

$$= \frac{1}{5} - \frac{1}{25} = \frac{5 - 1}{25} = \frac{4}{25} = 0.16$$

Short Tricks :-

$$\text{Sum} = \frac{1}{(n-1)d} \left\{ \frac{1}{k} - \frac{1}{L} \right\}$$

Where, n = no. of terms in denominator

d = difference between the terms

k = first term of first denominator and

L = last term of last denominator.

$$\text{Required Sum} = \frac{1}{(2-1)1} \left\{ \frac{1}{5} - \frac{1}{25} \right\}$$

$$= \left\{ \frac{4}{25} \right\} = 0.16$$

Sol.312.(c) Let, numbers are - X and Y

$$X + Y = 24 \text{ -----(i)}$$

$$\text{and } X - Y = 10 \text{ -----(ii)}$$

From equation (i) & (ii)

$$X = 17, Y = 7$$

The value of two times the product of the numbers = $2(17 \times 7) = 238$

Sol.313.(b) The multiples of 4

$$= 4, 8, 12, 16, 20 \dots \dots$$

These are in A.P., having first term as 4 and common difference as 4

Therefore, $a = 4, d = 4, S_{12} = ?, n = 12$

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

$$S_{12} = \frac{12}{2} \{8 + (12-1)4\}$$

$$S_{12} = 6(8 + 44), \quad S_{12} = 312$$

Sol.314.(a)

$$\left(1 + \frac{1}{3}\right) \left(1 + \frac{1}{4}\right) \left(1 + \frac{1}{5}\right) \dots \dots \dots \left(1 + \frac{1}{n-1}\right)$$

$$= \frac{4}{3} \times \frac{5}{4} \times \frac{6}{5} \dots \dots \dots \frac{n}{n-1} = \frac{n}{3}$$

Sol.315.(c)

All factors of 817 = 1, 19, 43, 817.

817 is not a prime number because 817 has factors.

Note - A number that can be divided exactly only by itself and 1 are called prime numbers.

Example - 2, 3, 5, 7 etc

Sol.316.(c) In $5X1 + 6Y7 + 3Z3 = 1471$, highest value of X will be possible = 6

Sol.317.(a) $\frac{25^{25}}{26} = \frac{(26-1)^{25}}{26}$

Remainder = 25

Sol.318.(d) Largest 4 digit square number will be smaller than 9999

And smallest 4 digit square number will be greater than 1000

So when we divide Largest number by smaller number the quotient will be always less than 10

Sol.319.(a) $124^n + 124^{(n+1)}$

Unit place of $4^{even} = 6$, $4^{odd} = 4$

n and n + 1, both are consecutive numbers so one will be odd and other will be even

Unit place digit = $4 + 6 = 10 = 0$

Sol.320.(d) $64 = 2^6$

Number of factors = $6 + 1 = 7$

$729 = 3^6$ Number of factors = $6 + 1 = 7$

Sum = $64 + 729 = 793$

Sol.321.(d) Let the number of the students = x, Fee = x

According to question,

$$x \times x = 2601 \Rightarrow x^2 = 2601 \Rightarrow x = 51$$

Sol.322.(a) Let the numbers = a and b

According to question,

$$a - b = 14, \quad a = b + 14$$

$$\text{And } a^2 - b^2 = 56$$

$$\Rightarrow (b + 14)^2 - b^2 = 56$$

$$\Rightarrow b^2 + 196 + 28b - b^2 = 56$$

$$\Rightarrow 28b = 56 - 196 = -140$$

$$\Rightarrow b = -5, \quad \text{And } a = -5 + 14 = 9$$

Alternate Method: check by options

9 and -5 will satisfy the conditions given in question.

Sol.323.(c) Let the numbers are = x and y
A/Q, $x + y = 13$

$$y = 13 - x, \text{ And } x^2 - y^2 = 39$$

$$x^2 - (13 - x)^2 = 39$$

$$\Rightarrow x^2 - (169 + x^2 - 26x) = 39$$

$$\Rightarrow 26x - 169 = 39 \Rightarrow 26x = 208$$

$$\Rightarrow x = 8, \quad y = 13 - 8 = 5$$

Alternate method:

Check by options : (8, 5) will satisfy the question

Sol.324.(b) $4^7 - 4$

$$= 4(4^6 - 1), = 4(4^3 + 1)(4^3 - 1)$$

$$= 4 \times 65 \times 63$$

So $4^7 - 4$ is not divisible by 8.

Sol.325.(d) Let the numbers are x and y

A/Q, $\frac{x}{3} + \frac{y}{2} = 8$

$$\Rightarrow 2x + 3y = 48 \dots (1)$$

And $\frac{x}{5} + \frac{y}{6} = 4$

$$\Rightarrow 6x + 5y = 120 \dots (2)$$

On solving equation (1) and (2), we get

$$x = 15 \text{ and } y = 6$$

Sol.326.(c) Sum of first 25 odd numbers

$$= n^2 = 25 \times 25 = 625$$

Sol.327.(c) A/Q, we have to find

$$12^2 + 16^2 + 20^2 + \dots \dots \dots + 96^2$$

Taking 4^2 common to all

$$4^2(3^2 + 4^2 + \dots \dots \dots + 24^2)$$

Sum of squares of 1 to 24 Sum

$$= \frac{24(24+1)(48+1)}{6}$$

$$= 4 \times 25 \times 49 = 4900$$

$$\Rightarrow (3^2 + 4^2 + \dots \dots \dots + 24^2)$$

$$= 4900 - 5 = 4895$$

$$\Rightarrow 4^2(3^2 + 4^2 + \dots \dots \dots + 24^2)$$

$$= 16 \times 4895 = 78320$$

Sol.328.(c) Let the number of pages in the book = x, Pages read by boy on 1st

$$\text{day} = \frac{3}{8}x,$$

$$\text{Remaining pages} = x - \frac{3x}{8} = \frac{5x}{8}$$

Pages read by boy on 2nd day

$$= \frac{5x}{8} \times \frac{4}{5} = \frac{x}{2}$$

$$\text{Total pages read by boy} = \frac{3x}{8} + \frac{x}{2} = \frac{7x}{8}$$

A/Q, $x - \frac{7x}{8} = 45 \Rightarrow \frac{x}{8} = 45$

$$\Rightarrow x = 360$$

Sol.329.(c) $\frac{7}{5} + \frac{5}{9} = \frac{63+25}{45} = \frac{88}{45}$

Reciprocal of $\frac{88}{45}$ is $= \frac{45}{88}$

Sol.330.(a) 231 is not a prime number.

Factor of 231 = 1, 3, 7, 11, 22 etc

Sol.331.(c) Let the length of the pillar = x

$$1\text{st part} = \frac{x}{4}$$

$$2\text{nd part} = \frac{x}{4} \times \frac{4}{8} = \frac{x}{8}$$

3rd part =

$$x - \left(\frac{x}{4} + \frac{x}{8}\right) = x - \frac{3x}{8} = \frac{5x}{8}$$

A/Q, $\Rightarrow \frac{5x}{8} = 10 \Rightarrow x = 16m$

Sol.332.(d) The odd numbers between 0 and 52 = 1, 3, 51

Total odd numbers = 26

Sum of all odd numbers

$$= 26 \times 26 = 676$$

Sol.333.(b) Let the number = x

A/Q,

$$\frac{(x+7) \times 5}{9} = 12 + 3$$

$$\Rightarrow 5x + 35 = 135 \Rightarrow 5x = 100$$

$$\Rightarrow x = 20$$

Sol.334.(d) Let the denominator = x

Numerator = $x - 2$

A/Q, $\frac{x-2-2}{x+2} = \frac{1}{3}$

$$\Rightarrow 3x - 12 = x + 2 \Rightarrow 2x = 14$$

$$\Rightarrow x = 7$$

$$\text{Original fraction} = \frac{7-2}{7} = \frac{5}{7}$$

Sol.335.(b) Given,

$$4 \times 1 + 5Y3 + 2Z7 = 1181$$

Where,

$$\begin{array}{r} 1 \\ 4 \ X \ 1 \\ 5 \ Y \ 3 \\ 2 \ Z \ 7 \\ \hline 11 \ 8 \ 1 \end{array}$$

$$X + Y + Z = 8 - 1, \text{ for maximum value}$$

$$X = 7 \text{ (when } y = 0, z = 0)$$

Sol.336.(a)

$$(89^{89} + 87^{89}) \text{ and } (89^{97} + 87^{97})$$

Common factor = $89 + 87 = 176$

Sol.337.(c) LCM of 2, 3 and 6 = 6

Such term will be in the form of $6k - 1$

where $k = 1, 2, 3$ and so on third term in the sequence will be $= 6 \times 3 - 1 = 17$

Sol.338.(d) The difference between the place values of 2 and 3 in the number 128935 = $20000 - 30 = 19970$

Sol.339.(c)

Let the numbers are = $x, x + 1, x + 2$
 $x + (x + 1) + (x + 2) = 120$
 $3x + 3 = 120, x = 39$
 Largest number = $x + 2 = 39 + 2 = 41$

Sol.340.(d) 571 is a prime no.

Note - A number greater than 1, with exactly two factors, 1 and itself, is defined as a prime number.

Sol.341.(d) Rational number between 9.2 and 10.5 = 9.55

Sol.342.(b) The CP of 10 pencils and 12 pens = Rs 150
 CP of 30 pencils and 36 pens = $150 \times 3 = Rs 450$

Sol.343.(d) Let the number = x
 According to question,

$$x \times \frac{1}{8} \times \frac{1}{4} = 300$$

$$\Rightarrow x = 32 \times 300 = 9600$$

$$\text{Now, One fifth of } x = \frac{9600}{5} = 1920$$

Sol.344.(d) LCM of 8,12 and 16 = 48
 $48k + 3$ must be multiple of 7
 For $k = 3$,
 $48 \times 3 + 3 = 147$

Sol.345.(a) Infinitely decimal numbers can be found between 0.225 and 0.227

Sol.346.(b)

Let the prime numbers be a, b and c
 According to question,,

$$ab = 323 \text{ ---(1)}$$

$$bc = 221 \text{ ---(2)}$$

Dividing (1) by (2)

$$\frac{a}{c} = \frac{19}{13}, \text{ Greatest number} = a = 19$$

Sol.347.(b) First 6 even numbers = 2, 4, 6, 8, 10, 12

$$2 \times 4 \times 6 \times 8 \times 10 \times 12 = 46,080$$

Sol.348.(a) As the number 2893# $\$$ is divisible by 8 and 5, Then the last digit must be $\$ = 0$; And the last 3 digits must be divisible by 8;

So, in 3#0, # will be equal to = 2, to make it divisible by 8;

i.e. the digits that will come in place of # and \$ are 2, 0 respectively.

Sol.349.(d)

Let the smallest whole number = x

$$\Rightarrow \frac{3}{5}x > 6 \Rightarrow x > 10$$

So, when going through options only 11 is greater than 10

so, smallest whole number = 11

Sol.350.(d) The least number which is

added in 1000 such that the number is divisible by 15 is 5.

Sol.351.(c) Sum of 1 to 75 natural numbers = $\frac{75 \times (75 + 1)}{2} = \frac{75 \times 76}{2}$
 = 2850 And sum of 1 to 24 natural numbers = $\frac{24 \times (24 + 1)}{2} = 300$

Then,

$$25 + 26 + \dots + 75 = 2850 - 300 = 2550$$

Sol.352.(c)

$$\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \dots + \frac{1}{99 \times 100}$$

$$= \frac{1}{2} + \frac{1}{6} + \frac{1}{12} + \dots + \frac{1}{99 \times 100}$$

$$= \frac{99}{100} = 0.99$$

Short Tricks :-

$$\text{Sum} = \frac{1}{(n-1)d} \left\{ \frac{1}{k} - \frac{1}{L} \right\}$$

Where, n = no. of terms in denominator
 d = difference between the terms
 k = first term of first denominator and
 L = last term of last denominator.

$$\text{Required Sum} = \frac{1}{(2-1)1} \left\{ \frac{1}{1} - \frac{1}{100} \right\}$$

$$= \left\{ \frac{99}{100} \right\} = 0.99$$

Sol.353.(c) Let numbers are x, y and z ratio between x, y and $z = 6 : 3 : 2$

Then, $6 + 3 + 2 = 11$ unit

11 unit = 253, 1 unit = 23

So, 2nd number = $y = 3$ unit = 69

Sol.354.(b) Sum of squares of n natural numbers = $\frac{n \times (n + 1) \times (2n + 1)}{6}$

$21^2 + 22^2 + 23^2 + \dots + 30^2 = (\text{Sum of square of 1 to 30}) - (\text{Sum of square of 1 to 20})$

$$= \frac{30 \times (30 + 1) \times (2 \times 30 + 1)}{6}$$

$$= \frac{930 \times 61}{6} = 9455$$

Sum of square of 1 to 20

$$= \frac{20 \times (20 + 1) \times (2 \times 20 + 1)}{6}$$

$$= \frac{17220}{6} = 2870$$

$$\text{Hence, } 21^2 + 22^2 + 23^2 + \dots + 30^2 = 9455 - 2870 = 6585$$

Sol.355.(b) Given, $x + y = 10$ ----(i)

$$\text{and } x^2 - y^2 = 60$$

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

$$60 = (x - y)10,$$

$$6 = x - y \text{ ----(ii)}$$

Then, From equation (i) and (ii)

$$2x = 16 \Rightarrow x = 8$$

Now, putting the value of x in equation (i)

$$x + y = 10, 8 + y = 10 \Rightarrow y = 2$$

Hence, Numbers are 8 and 2

Alternate method,

We can go through the options and find solution.

Sol.356.(d) Let, least +ve integer = x

$$x^2 = 5x - 6, x^2 - 5x + 6 = 0$$

$$X = 3 \text{ and } 2$$

Hence, least +ve integer = 2

Sol.357.(d) Any number is divisible by 4 if the last 2 digits of the number are divisible by 4.

If we put 5 in place of \$, the last 2- digit will be 54 and not divisible by 4.

$$\text{Sol.358.(a)} \frac{17^{200}}{18} = \frac{(18-1)^{200}}{18}$$

$$\text{Remainder} = (-1)^{200} = 1$$

Sol.359.(c) Smallest prime number = 2, greatest prime number = 7

Difference between the largest and the smallest single-digit prime numbers = $7 - 2 = 5$

$$\text{Sol.360.(a)} 29^2 = 841$$

$$0.000845 - 0.000004 = 0.000841$$

0.000841 is a perfect square number.

$$\sqrt{0.000841} = 0.029$$

$$\text{Sol.361.(d)} (127)^{153} \times (341)^{89}$$

$$153 \div 4 = \text{Remainder} = 1$$

$$\text{Unit digit} = 7^1 \times 1 = 7$$

Sol.362.(b) LCM of (4, 5, 6, 7, 8) = 840

The number should be multiple of 13 and remainder = 2, it will in the form of

$$840k + 2, \text{ Put } k = 3$$

$$840 \times 3 + 2 = 2522$$

Sol.363.(b) 3 digits number which is divisible by 7 = 105, 112, 119..., 994

$$a_n = a + (n - 1)d$$

Where, First term = $a = 105$, Common difference = $d = 112 - 105 = 7$

$$\Rightarrow 994 = 105 + (n - 1)(7)$$

$$\Rightarrow 994 = 105 + 7n - 7 \Rightarrow 896 = 7n$$

$$\Rightarrow n = 128$$

$$\text{Sol.364.(d)} 6^{61} + 6^{62} + 6^{63} + 6^{64} + 6^{65}$$

$$6^{61} (1 + 6 + 6^2 + 6^3 + 6^4)$$

$$6^{61} (1 + 6 + 36 + 216 + 1296)$$

$$6^{61} (1555) 6^{60} (9330)$$

$$6^{60} (622 \times 15) \text{ so, it is divisible by 15}$$

Sol.365.(b) Here $(72 - 52) = 20, (80 - 60) = 20$ and $(88 - 68) = 20$

required number (LCM of 72, 80 and 88) - 20 = $7920 - 20 = 7900$

Sol.366.(b) Total numbers between 100 and 300 = 200

Now, $\frac{200}{7} = 28$ (quotient)

28 numbers are divisible by 7.

Sol.367.(c) Let the number = x
According to question,

$$\Rightarrow \frac{6x}{5} - \frac{5x}{6} = 572$$

$$\Rightarrow \frac{36x - 25x}{30} = 572 \Rightarrow \frac{11x}{30} = 572$$

$$\Rightarrow x = \frac{572 \times 30}{11} = 52 \times 30 = 1560$$

Sol.368.(d) Largest number of four digit = 9999 LCM of (5, 35, 39, 65) = 1365

When we divide 9999 by 1365, We get remainder = 444

Now, 9999 - 444 = 9555

Sol.369.(d) $(\sqrt{2} + \frac{1}{\sqrt{8}})^2 = 2 + \frac{1}{8}$

$$+ 2 \times \sqrt{2} \times \frac{1}{\sqrt{8}} = 2 + \frac{1}{8} + 1$$

$$= 3 + \frac{1}{8} = \frac{24+1}{8} = \frac{25}{8}$$

It is a rational number.

Sol.370.(b) 285 - 9 = 276

1249 - 7 = 1242

HCF of 276 and 1242 = 138

Sol.371.(b) When K is divided by 18, the remainder is 9.

So, $K = 18 \times 1 + 9 = 27$

When $K = 27$ is divided by 6, remainder will be = 3

Sol.372.(b) LCM of 6, 8, 12 = 24

Number should be multiple of 7

$24k + 1$, Put $k = 2$

$24 \times 2 + 1 = 49$

Sol.373.(d) $588 = 2 \times 2 \times 3 \times 7 \times 7$

Only prime number 3 has no pair so, 3 is the least number multiplied to get a perfect square.

Sol.374.(a) Prime numbers between 8 and 59 = 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53,

Sum = $11 + 13 + 17 + 19 + 23 + 29 + 31 + 37 + 41 + 43 + 47 + 53 = 364$

Sol.375.(b) $(2 \times 3)^7 \times (5 \times 7)^3 \times 11^{10}$
Number of 2 = 7, Number of 3 = 7,
Number of 5 = 3, Number of 7 = 3
Number of 11 = 10

So that,

total number of prime numbers = 30

Sol.376.(c) Let, number = x

According to question,

$$\frac{3}{5} + x = \frac{5}{3}, x = \frac{5}{3} - \frac{3}{5}$$

$$x = \frac{25 - 9}{15}, x = \frac{16}{15}$$

Sol.377.(a) Single digit prime numbers - 2, 3, 5, 7,

Total numbers = 4

Sol.378.(c) Sum of squares of first ten natural numbers = $\frac{n(n+1)(2n+1)}{6}$

$$= \frac{10(10+1)(2 \times 10 + 1)}{6}$$

$$= \frac{10 \times 11 \times 21}{6} = 385$$

Sol.379.(b)

$n = 1, 1^3 - 1 = 0$

$n = 2, 2^3 - 2 = 6$

$n = 3, 3^3 - 3 = 24$

So, all values are divisible by only 6

Sol.380.(b) The product of two positive numbers is 972 and their quotient is $\frac{4}{3}$

Let the numbers are $4x$ and $3x$;

Then $12x^2 = 972 \Rightarrow x^2 = 81 \Rightarrow x = 9$

So, the numbers are $4 \times 9 = 36$ and

$3 \times 9 = 27$

Sol.381.(c) Rational numbers can be both positive and negative;

So, the negative of a non-zero rational number is also a rational number.

Sol.382.(b) Largest four digit number is = 9999 Number divisible by 77 means also divisible by 7 & 11;

So, the largest four-digit number which is exactly divisible by 77 near to 9999 is : = 9933 [as it is divisible by both 7 & 11]

Sol.383.(c) LCM of (6, 8, 12,) = 24

$24 \times 3 = 72$

It is not multiple of 14

When we subtract 2 from it now 70 is divisible by 14. And when we divide it by 6, 8 and 12 leaves remainder 4, 6, 10 respectively.

Sol.384.(a) For a given fraction we can form an infinite number of equivalent fractions by multiplying it by natural numbers.

Sol.385.(d) Case 1. 510 is divided by 24 then we get remainder = 6

Case 2. 270 is divided by 24 then we get remainder = 6

So, subtract 6 from both numbers.

$$\begin{aligned} \text{Sol.386.(d)} \quad & 119^2 - 111^2 \\ & = (119 + 111)(119 - 111) \\ & = 230 \times 8 = 1840 \end{aligned}$$

Sol.387.(a) pq is a two digit number, we can write it as

$$10p + q, \quad qp = 10q + p$$

According to question,

$$(10p + q) - (10q + p)$$

$$= 10p - p + q - 10q = 9p - 9q = 9(p - q)$$

So $pq - qp$ must be divisible by 9.

Sol.388.(c) Every rational number is a whole number is incorrect.

Sol.389.(b) Let both numbers = x and y
 $x + y = 15$

$$\frac{1}{x} + \frac{1}{y} = \frac{3}{10} \Rightarrow \frac{x + y}{xy} = \frac{3}{10}$$

$$\frac{15}{xy} = \frac{3}{10} \Rightarrow xy = 50$$

$x = 5$ and $y = 10$

Sol.390.(a) $x^{65} - x = x(x^{64} - 1)$

x^{64} is an even number because x is even.

When we subtract 1 from it it would become a odd number So it will be divisible by both 2 and 3

Hence this will be divisible by 6.

Sol.391.(b) All prime numbers greater than 5 and less than 18 are

7, 11, 13, 17

Sum = $7 + 11 + 13 + 17 = 48$

One third of 48 = 16

16 is square of 4.

Sol.392.(d)

Sum of cubes of first 4 natural numbers

$$= \left(\frac{4(4+1)}{2}\right)^2 = (10)^2 = 100$$

Sol.393.(c) $101^3 = 10,30,301$

Sol.394.(d) Prime factorisation of 12288

$$12288 = 2^{12} \times 3$$

Number of factors

$$= (12 + 1) \times (1 + 1) = 13 \times 2 = 26$$

Sol.395.(b) $\frac{3}{2}, -\frac{3}{2}, \frac{11}{4}, \frac{5}{2}$

Make the denominator equal

$$\frac{-6}{4}, \frac{6}{4}, \frac{11}{4}, \frac{10}{4}$$

Now compare on the basis of numerator. If numerator is greater then the fraction will be greater.

$$\text{Greater number} = \frac{11}{4}$$

Sol.396.(c)

Smallest 3 digit prime number = 101

Sol.397.(a) $\frac{5}{7} = 0.71$ and $\frac{3}{4} = 0.75$

$$\frac{8}{11} = 0.72, \frac{11}{15} = 0.73$$

Sol.398.(b) HCF of 28 and 81 = 1

Sol.399.(c) $(-3) \times (-7) = (-7) \times (-3)$
is commutative property.

Sol.400.(c) Given sequence -

$$1 + 2 + 3 + \dots + 49 + 50$$

$$\text{Sum} = \frac{n(n+1)}{2} = \frac{50(50+1)}{2},$$

$$= \frac{50 \times 51}{2} = 25 \times 51 = 1275$$

Sol.401.(b) As we know the largest 4-digit number = 9999;

LCM of 7, 9, 11 is = 693;

Multiple of the LCM nearest to 9999 is = $693 \times 14 = 9702$;

Then largest four-digit number which when divided by 7, 9 and 11 leaves a remainder of 5 in each case = $(9702 + 5) = 9707$;

Sol.402.(b) Let the divisor = d and the divisor is one-third of the quotient q i.e. $q = 3d$;

Given that dividend is 2200,

remainder is 13

$$\Rightarrow d \times q + 13 = 2200$$

$$\Rightarrow 3d^2 + 13 = 2200$$

$$\Rightarrow d^2 = 729 \Rightarrow d = 27$$

Sol.403.(c) As we know :

$$14^3 < 2750 < 15^3$$

So, the least positive integer that should be subtracted from 2750, so that the difference is a perfect cube = $(2750 - 2744) = 6$;

Sol.404.(c) LCM of 5, 12, 18 is = 180;
the smallest 4 digit number divisible by 180 is = 1080;

the largest 4 digit number divisible by 180 is = 9900;

These multiples of 180 forms an Arithmetic Progression having first term = 1080, last term = 9900 and common difference = 180;

Then number of such terms = n

$$= \frac{9900 - 1080}{180} + 1 = 50;$$

So, there are 50 four digit numbers which are completely divisible by 5, 12, 18;

Sol.405.(c) To find the ascending order of the given numbers : $\frac{2}{3}$, $\frac{1}{2}$ and $\frac{1}{6}$

we have to equalize the denominators.

$$\Rightarrow \frac{4}{6}, \frac{3}{6}, \text{ and } \frac{1}{6}$$

Then the Ascending order will be :

$$\frac{1}{6} < \frac{3}{6} < \frac{4}{6} \text{ i.e. } \frac{1}{6}, \frac{1}{2}, \frac{2}{3}$$

Sol.406.(a) Let the two numbers are a and b ; i.e. $a - b = 45$ (1)

When 20% of the larger number is added to 35% of the smaller number, we get a sum of 31.

$$\Rightarrow \frac{a}{5} + \frac{7b}{20} = 31 \Rightarrow 4a + 7b = 620 \dots(2)$$

Solving these two equations we get :

$$a = 85 \text{ and } b = 40;$$

Then the sum of the original numbers = 125

Sol.407.(b) The number that has factors other than 1 and itself is called a composite number.

Sol.408.(b) If the numerator of a fraction is strictly less than the denominator, then the fraction is a Proper fraction, e.g. $\frac{3}{7}$

Sol.409.(d)

We can write $11^{41} + 3$ as $= (10 + 1)^{41} + 3$; when $11^{41} + 3$ is divided by 10, Then the remainder = $(+1)^{41} + 3 = 4$;

Sol.410.(b) As we know :

Two prime numbers are called twin primes if there is present only one composite number between them, we can also say two prime numbers whose difference is two are called twin primes.

Then the number of pairs of twin primes between 1 and 100 are = 8;
(3, 5), (5, 7), (11, 13), (17, 19), (29, 31), (41, 43), (59, 61), (71, 73);

$$\text{Sol.411.(a)} \quad \frac{3}{4} = 0.75 \text{ and } \frac{6}{7} = 0.8571$$

Then the fraction $\frac{9}{11} = 0.8181$;

So, $\frac{9}{11}$ lies between $\frac{3}{4}$ and $\frac{6}{7}$

Sol.412.(c)

Let the lowest whole number = x

$$\text{A/Q, } \frac{12-x}{17-x} = \frac{11}{20}$$

$$\Rightarrow 240 - 20x = 187 - 11x$$

$$\Rightarrow 9x = 53 \Rightarrow x = 5.88$$

In whole number x should be at least 6.

$$\text{Sol.413.(d)} \quad 4200 = 2^3 \times 3 \times 5^2 \times 7$$

Number of factors =

$$(3+1)(1+1)(2+1)(1+1)$$

$$= 4 \times 2 \times 3 \times 2 = 48$$

$$\text{Sol.414.(d)} \quad \frac{3467860}{19}, \text{ Remainder} = 18$$

So, the number = $3467860 - 18$

$$= 3467842$$

Sol.415.(d)

Ratio of the two numbers = 3:5

A/Q, 8 units = 80, 5 units = 50

3 units = 30

So, greatest number = 50

Sol.416.(d) Total numbers divisible by 6

$$\text{between 1 and } 520 = \frac{520}{6}$$

$$= 86 \text{ (only integer part)}$$

Multiple of 6 less than 17 = 2

Total multiples of 6 between 17 and 520 = $86 - 2 = 84$

Multiples of 6 are

18, 24, 516

$$\text{Sum} = \frac{1st \text{ term} + last \text{ term}}{2} \times 84$$

$$= \frac{18 + 516}{2} \times 84 = 534 \times 42 = 22428$$

Sol.417.(c)

Dividend = Divisor \times Quotient + Remainder

$$\Rightarrow 12401 = D \times 76 + 13$$

$$\Rightarrow 12401 - 13 = 76 \times D$$

$$\Rightarrow 12,388 = 76 \times D \Rightarrow D = \frac{12388}{76} = 163$$

Sol.418.(a) Rational numbers are

$$= \frac{-7}{10}, \frac{-5}{8}, \frac{-2}{3}$$

Make denominator equal

LCM of (10, 8, 3) = 120

$$\frac{-7 \times 12}{10 \times 12} = \frac{-84}{120} = \frac{-5 \times 15}{8 \times 15}$$

$$= \frac{-75}{120}, \frac{-2 \times 40}{3 \times 40} = \frac{-80}{120}$$

New Rational numbers obtained are

$$= \frac{-84}{120}, \frac{-75}{120}, \frac{-80}{120}$$

Now compare with numerator

$$\frac{-84}{120}, \frac{-80}{120}, \frac{-75}{120} = -\frac{7}{10}, \frac{2}{-3}, \frac{5}{-8}$$

Sol.419.(d) Decimal number has two parts : the whole part and the decimal part.

Decimal part of the decimal number is always less than 1.

$$\text{Sol.420.(d)} \quad \frac{7^2 \times 9^2}{8} = \frac{49 \times 81}{8} = 1 \times 1$$

So, after dividing this, we get the remainder as 1.

Sol.421.(c)

Check each option one by one.

$$\text{We get that } -1 = (-1)^3$$

$$\Rightarrow -1 = -1$$

Sol.422.(d) Let the ten's place digit of the number = x and unit digit = 3

$$\text{A/Q, } x + 3 = \frac{1}{7}(10x + 3)$$

$$\Rightarrow 7x + 21 = 10x + 3$$

$$\Rightarrow 3x = 18 \Rightarrow x = 6$$

So, the required number = 63

Sol.423.(a)

$$\text{Option (a)} \quad 240 = 1 \times 2 \times 2 \times 2 \times 2 \times 3 \times 5$$

Divisor of 240 = 1, 2, 4, 8, 16, 48, 240, 3, 6, 12, 24, 5, 10, 20, 40 and 80

No. of divisors of 240 is 16.

Option (b) $156 = 1 \times 2 \times 2 \times 3 \times 13$

Divisor of 156 = 1, 2, 4, 12, 156, 3, 6, 12, 13, 26 and 52

No. of divisors of 156 is 11.

Option (c) $200 = 1 \times 2 \times 2 \times 2 \times 5 \times 5$

Divisor of 200 = 1, 2, 4, 8, 40, 200, 5, 10, 20, 40, 25, 50 and 100

No. of divisors of 200 is 13.

Option (d) $172 = 1 \times 2 \times 2 \times 43$

Divisor of 172 = 1, 2, 4, 172, 43 and 86

No. of divisors of 172 is 6.

Clearly, 240 has maximum no. of divisors.

Sol.424.(c)

Arithmetic mean (AM) = $\frac{a+b}{2}$

Geometric mean (GM) = \sqrt{ab}

$$\frac{a+b}{2} = 7 \Rightarrow a+b = 14 \dots\dots (1)$$

$$\sqrt{ab} = 2\sqrt{10} \Rightarrow ab = 40 \dots\dots (2)$$

By solving eq.(1) and (2) we get,

$a = 4$ and $b = 10$

Sol.425.(c) Let number be x

According to the question,

$X = 234q + 36$ (where q is quotient)

$x = 13(18q + 2) + 10$

So the remainder will be 10.

Sol.426.(b) Let the number be $\rightarrow x$

Then, $8x + 4 = 100 \rightarrow x = 12$

Sol.427.(a) The sum of 'n' even natural numbers = $n(n+1)$

The sum of '12' even natural numbers

$$\rightarrow 12 \times 13 = 156$$

Sol.428.(d) According to the question

$$3 \times N^2 - 4N = 50 + N$$

$$3N^2 - 5N = 50 \Rightarrow 3N^2 - 5N - 50 = 0$$

$$3N^2 - 15N + 10N - 50 = 0$$

$$(3N + 10)(N - 5) = 0 \Rightarrow N = 5$$

Sol.429.(a) Let, the largest number is a and the smallest number is b

According to question,

$a = 15b$, and product of these number

$$\rightarrow (a \times b) = 9375 \Rightarrow (15b \times b) = 9375$$

$$b^2 = \frac{9375}{15} \Rightarrow b^2 = 625 \Rightarrow b = 25$$

Now, $a = 15b \Rightarrow a = 15 \times 25 = 375$

Required sum = $375 + 25 = 400$

Sol.430.(a)

Let, unit digit of a two digit number is $4x$ and the digit in ten's place is x

According to question,

$$(x + 4x) = 10 \Rightarrow 5x = 10 \Rightarrow x = 2$$

So, unit digit is $4x = (4 \times 2) = 8$ and digit in ten's place is 2, Therefore number = 28

Sol.431.(d) 1st no. $(N_1) = (15a + 12)$

and 2nd no. $(N_2) = (5a + 2)$

$$\text{A.T.Q. } \frac{N_1 + N_2}{5} = \frac{(15a + 12) + (5a + 2)}{5}$$

$$\rightarrow \frac{20a + 14}{5} = \text{Rem. } 4$$

Sol.432.(d)

We know that n sum of square of n natural numbers is

$$\Rightarrow \frac{1}{6} n(n+1)(2n+1)$$

$$\Rightarrow \frac{1}{6} \times 10 \times 11 \times 21 = 385$$

Sol.433.(d) If a and b are coprime then a^2 and b^2 are also Co-prime number

Sol.434.(a) Largest 4-digit no. be 9999.

$$\frac{9999}{88} = 88 \times 113 + 55 \Rightarrow \text{rem.}(55)$$

Required no. = $9999 - 55 = 9944$

Sol.435.(d) $(2^{25} + 2^{26} + 2^{27} + 2^{28})$

$$\Rightarrow 2^{25} (1 + 2^1 + 2^2 + 2^3)$$

$$\Rightarrow 2^{25} (1 + 2 + 4 + 8) \Rightarrow 2^{25} (15)$$

Therefore, $(2^{25} + 2^{26} + 2^{27} + 2^{28})$ is the multiple of 15.

Sol.436.(d) Let the original fraction be $\frac{a}{b}$

According to the question,

$$\frac{a + 100\% \text{ of } a}{b + 150\% \text{ of } b} = \frac{16}{25} \Rightarrow \frac{a+a}{b+\frac{3}{2}b} = \frac{16}{25}$$

$$\Rightarrow \frac{4a}{5b} = \frac{16}{25} \Rightarrow \frac{a}{b} = \frac{4}{5}$$

Sol.437.(a) Prime no. between 50 and 100 = 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.

Not any pairs of prime numbers are there that add up to a prime number.

Sol.438.(d) Let the four consecutive numbers be $x, x+1, x+2$ and $x+3$

\Rightarrow their product = $x(x+1)(x+2)(x+3)$

Let $x = 1 \Rightarrow 1(2)(3)(4) = 24$

Sol.439.(c) Divisibility rule of 11 :- if the difference between the sums of the alternate digits of the given number is either 0 or divisible by 11, then the number is divisible by 11.

Let choose option (c)

$$\Rightarrow (3 + 5 + 8) - (2 + 1 + 2) = 11$$

Clearly, option (c) 325182 is divisible by 11.

Sol.440.(d) Let the number be x .

According to question,

$$(x - 4) = \frac{1}{x} \times 21 \Rightarrow x^2 - 4x - 21 = 0$$

$$x^2 - 7x + 3x - 21 = 0$$

$$\Rightarrow x(x-7) + 3(x-7) = 0$$

$$\Rightarrow (x-7)(x+3) = 0 \Rightarrow x = 7, x = -3$$

The number is 7.

Sol.441.(d) If the number ends with 2 and 8, there square always ends with 4 and The cube of that number always ends with 2 or 8.

Sol.442.(a) Let three consecutive odd integers be $(x-2), (x), (x+2)$

according to the question

$$\Rightarrow 3 \times (x-2) = 2 \times (x+2) + 3 \Rightarrow x = 13,$$

So the third integer

$$(x+2) \rightarrow (13+2) = 15.$$

Sol.443.(b) Numbers having unit digit 1 and 9, their square will always end with unit digit 1, but the unit digit of their cube is either 1 or 9.

Sol.444.(b)

Total person in picnic group = 9 unit,

total adult in that group = 2 unit

Then, total children = 7 unit,

Difference b/w children and adult $(7-2)$ units $\rightarrow 5$ units = 95

Total children (7 units) = $19 \times 7 = 133$

Sol.445.(d) According to question,

Let the number is $(10x + y)$, Then

$$(10x + y) + 18 = (10y + x)$$

$$9x - 9y = -18 \Rightarrow x - y = -2 \dots\dots \text{eq.}(1)$$

$$(x \times y) = 8 \dots\dots \text{(given)}$$

$$(x + y)^2 - (x - y)^2 = 4xy$$

$$\Rightarrow (x + y)^2 - (-2)^2 = 4 \times 8$$

$$(x + y)^2 = 36 \Rightarrow (x + y) = \sqrt{36}$$

$$\Rightarrow (x + y) = 6 \dots\dots \text{eq.}(2)$$

From eq.(1) and eq.(2) we get,

$x = 2, y = 4$ so number is 24

Sol.446.(a) First seven prime number are 2, 3, 5, 7, 11, 13, 17

Range \Rightarrow Larger number - smaller number

$$\text{Range} \Rightarrow 17 - 2 = 15$$

Sol.447.(b) No. of perfect squares between 100 and 200 are 4.

These are 121, 144, 169, 196.

Sol.448.(d) Let two numbers be x and y

$$x + y = 13 \text{ and } x^2 + y^2 = 97$$

Using formula,

$$(x + y)^2 = x^2 + y^2 + 2xy \Rightarrow (13)^2 = 97 + 2xy$$

$$2xy = 169 - 97 \Rightarrow xy = 36$$

Sol.449.(b) Let three consecutive odd number be $(x-2), x, (x+2)$

According to given question

$$(x+2) + x + (x-2) = 20 + (x-2)$$

$$\Rightarrow 2x = 18 \Rightarrow x = 9$$

So, the largest number be $(x+2)$

$$\Rightarrow 9 + 2 = 11.$$

Sol.450.(b) According to question,

$$95 - x = 55 + x \Rightarrow 2x = 40 \Rightarrow x = 20$$