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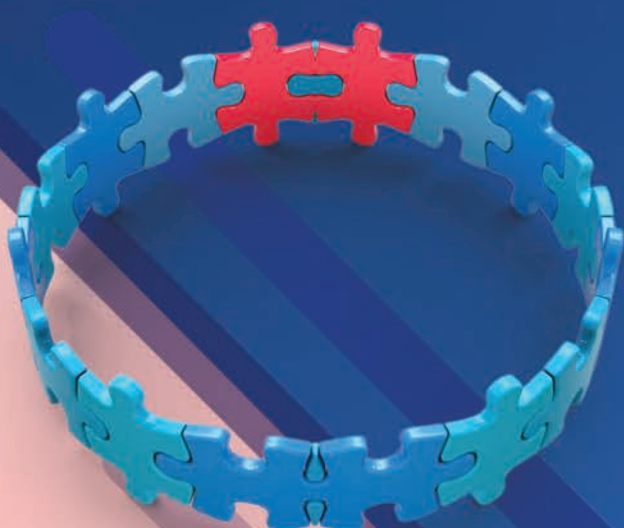
COMPLETELY **Revised Edition**

How to Crack
TEST OF ARITHMETIC



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How to Crack

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Richa Agarwal

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PREFACE

Books play a pivotal role in the preparation of any examination and an individual cannot deny the importance of books in the competitive exams. Arithmetic section is an equally weighted section in each and every competitive examination. This section tests your calculation and mental ability skills.

In exams, different types of questions are asked that are difficult to solve and one cannot solve them without proper guidance and efficient practice. But once you have the proper knowledge of the basic concepts and ideas, you can solve such questions in a very short time.

This book '*How to Crack* **Test of Arithmetic**' prepared after an exhaustive research. is here to help the aspirants to master the concepts of arithmetic.
This book gives you a perfect study of all chapters related to Arithmetic or Quantitative Aptitude Section in a smart way by introducing all the necessary concepts at the start followed by basic and important formulae and all types of questions asked in various competitive examinations. Solved Examples gives here to teach you to use the concepts/formulae to solve different types of problems.

At the end of chapters here are two levels of exercise; Base level and Advanced level with detailed solutions to all the questions.

Key Features associated with this book are :

- A perfect amalgamation of Relevant Theory and Necessary Formulae.
- Inclusion of Most Important Short Tricks.
- Solved Examples covering all types of questions.
- Two Levels Exercises i.e. Base Level and Advanced Level.
- Covering all latest trending questions of all exams.

I am thankful to **Arihant Publications (India) Limited** for giving me the opportunity to write such a book, which covers complete syllabus of almost all competitive exams; SSC, Railways, Bank, CDS, Police Recruitments, etc.

I hope that this book will add a new edge to you preparation and prove to be more beneficial to crack the exams.

Reader's feedbacks will be highly appreciated.

Richa Agarwal

CONTENTS

CHAPTER 01

Number System

A system in which we study different types of numbers, their relationships and operations on numbers is called **Number System**.

In Hindu Arabic system, we use ten symbols 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 to represent any number. These symbols are called digits.

Out of these 10 digits, 0 is called an insignificant digit whereas the others are called significant digits. These digits are used to form numbers as 10, 12, 135, 1305 etc. A group of digits, representing a number is called a numeral.

Value of Digits in a Number

The digits in a numeral or number can be read in two ways i.e. by face value and place value.

1. Face Value

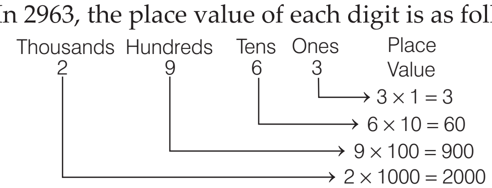
The face value of a digit in a numeral is the value of the digit itself. It does not depend on its place in the numeral.

e.g. In '2543', face value of 5 is five and face value of 3 is three.

2. Place Value

It is the value of a digit depending on its place in a number. Place value is the product of face value and position of the digit according to decimal system.

e.g. In 2963, the place value of each digit is as follows.



Types of Numbers

There are following types of numbers

1. **Natural Numbers** All counting numbers starting from 1 are called natural numbers. These numbers are denoted by N.

   $N = \{1, 2, 3, 4, ...\}$

2. **Whole Numbers** All counting numbers starting from 0 are called whole numbers. These numbers are denoted by W.

   $W = \{0, 1, 2, 3, 4, ...\}$

3. **Integers** All whole numbers, negative counting numbers, zero and all positive counting numbers are called integers. Integers do not include decimal numbers. These numbers are denoted by I.

   $I = \{......, -4, -3, -2, -1, 0, 1, 2, 3, 4, ...\}$

4. **Even Numbers** A counting number which is exactly divisible by 2 is called even number.

   e.g. 2, 4, 6, 8, 10, 12 etc.

5. **Odd Numbers** A counting number which is not divisible by 2 is called odd number.

   e.g. 1, 3, 5, 7, 9, 11, 13, 15, etc.

6. **Prime Numbers** A counting number, which is only divisible by 1 and itself, is called prime number.

   e.g. 2, 3, 5, 7, 11, 13, 17 etc.

7. **Coprimes** Two natural numbers, whose common divisor (or HCF) is 1, are called coprimes.

   e.g. (6, 7), (9, 11), (15, 16) etc.

8. **Composite Numbers** A counting number that has atleast one factor apart from 1 and itself is called composite number.
   e.g. 4, 6, 8, 9 etc.
9. **Rational Numbers** The numbers, which can be expressed in $\frac{p}{q}$ form, where p and q are integers and $q \neq 0$, are called rational numbers.
   e.g. $\frac{1}{2}, \frac{7}{9}, \frac{3}{5}$, etc.
10. **Irrational Numbers** The numbers, which can not be expressed in the form of p/q are called irrational numbers.
    e.g. $\sqrt{2}, \sqrt{3}, \sqrt{7}$ etc.
11. **Real Numbers** The numbers, which include both rational and irrational, positive and negative numbers are called real numbers. These numbers are denoted by R.
    $R = \frac{7}{9}, \sqrt{5}, \frac{8}{9}$, etc.

Operations on Numbers

There are following operations on numbers

1. Addition

When two or more numbers are combined together, then it is called addition. It is denoted by '+' sign.

e.g. $22 + 38 + 23 = 83$

2. Subtraction

When one or more numbers are taken out from another number, then it is called subtraction.

It is denoted by '–' sign.

e.g. $140 - 15 - 4 = 140 - 19 = 121$

3. Multiplication

The product of two or more than two numbers, is called multiplication. It is denoted by '×' sign.

e.g. $10 \times 5 = 50$

Or, Multiplication of two numbers is the process of calculating addition of one number with itself by other number times.

e.g. 2×4

$\Rightarrow$ Addition of 2 with itself (i.e. 2) by 4 times

$$= 2 + 2 + 2 + 2 = 8$$

4. Division

If there are two numbers a and b, then a/b is called the operation of division. It is denoted by '÷' sign.

In the problems of division, we have four quantities. They are

(i) **Dividend** The number which is being divided is called the dividend.
In $\frac{'a'}{b}$, it is 'a'.

(ii) **Divisor** The number which is dividing the other number is called the divisor.
In $\frac{'a'}{b}$, it is 'b'.

(iii) **Quotient** Quotient is the resulting number obtained from the division of one number by another number.
e.g. $225 \div 25 = \frac{225}{25} = 9$, here 9 is quotient.

(iv) **Remainder** The value which is left undivided is called the remainder.
e.g. in $\frac{25}{4}$, 1 is remainder. $[\because 25 = 4 \times 6 + 1]$

Dividend = Divisor × Quotient + Remainder

Test of Divisibility of Numbers

The test of divisibility of numbers is as follows

- **Divisibility by 2**
  Rule The last digit of the number must be 0, 2, 4, 6 or 8.
  e.g. 242, 428, etc.
- **Divisibility by 3**
  Rule The sum of digits of number must be divisible by 3.
  e.g. 95643 is divisible by 3 because $9 + 5 + 6 + 4 + 3 = 27$ is divisible by 3.
- **Divisibility by 4**
  Rule The number formed by last two digits of given number must be divisible by 4.
  e.g. 79164 is divisible by 4 because 64 is divisible by 4.
- **Divisibility by 5**
  Rule The last digit of given number must be either 5 or 0.
  e.g. 265, 950, etc.

- **Divisibility by 6**

  Rule The number must be divisible by both 3 and 2.

  e.g. 78342 is divisible by 6 because 78342 is divisible by 3 and 2 separately.

- **Divisibility by 7**

  Rule The difference between the number formed by the digits other than the unit's digit and twice the unit digit must be either 0 or a multiple of 7.

  e.g. 763 is divisible by 7 because
  $76 - 2 \times 3 = 76 - 6 = 70$ and 70 is divisible by 7.

- **Divisibility by 8**

  Rule The number formed by last three digits of given number, must be divisible by 8.

  e.g. 453256 is divisible by 8 because 256 is divisible by 8.

- **Divisibility by 9**

  Rule The sum of digits of given number must be divisible by 9.

  e.g. 743454 is divisible by 9 because
  $7 + 4 + 3 + 4 + 5 + 4 = 27$, is divisible by 9.

- **Divisibility by 10**

  Rule The last digit of a given number must be zero.

  e.g. 340, 520, 1200, etc.

- **Divisibility by 11**

  Rule The difference between 'sum of digits at even place' and 'sum of digits at odd place' must be either zero or divisible by 11.

  e.g. In 3865422

  Sum of digits at odd places $(A) = 3 + 6 + 4 + 2 = 15$

  Sum of digits at even places $(B) = 8 + 5 + 2 = 15$

  $\because \quad A - B = 15 - 15 = 0$

  Hence, 3865422 is divisible by 11.

Test of Numbers to be Prime

Step I First of all, find the approximate value of the square root of the given number.

e.g. check the number 211 is a prime number or not.

Now, $\sqrt{211} < 15$

Step II Write down all the prime numbers upto this approximate value.

Prime numbers up to 15 = 2, 3, 5, 7, 11 and 13.

Step III Check that, if the given number is divisible by any of these prime numbers, then it is not the prime number and if the given number is not divisible, then it is a prime number.

$\therefore$ 211 is not divisible by any of the prime numbers up to 15. Hence, 211 is a prime number.

To Find the Unit's Place Digit

In order to find the unit's place digit, all operations are performed by considering the unit digit of given numbers.

1. To Find the Unit's Place Digit in Product of Numbers

(i) First of all, consider the unit's place digit of all the numbers to be multiplied.

(ii) Multiply all the unit's place digits together.

(iii) The unit's place digit of the number obtained after multiplication will be the unit's place digit obtained after the multiplication of the given numbers.

e.g. Unit's place digit of $769 \times 368 \times 234$

The unit's place digits are 9, 8 and 4.

Multiply them, $9 \times 8 \times 4 = 288$

The unit's place digit in 288 is 8.

$\therefore$ Unit's place digit of $769 \times 368 \times 234$ will be 8.

2. To Find the Unit's Place Digit in the Number of Index Form

(i) **If 0, 1, 5 or 6 at unit's place** If there is 0, 1, 5 or 6 in the given number at unit's place, then it will be unaltered.

e.g. Unit's place digit of $(576)^{1151} = 6$

and Unit's place digit of $(131)^{156} = 1$

(ii) **If 2 or 8 at unit's place** If there is 2 or 8 in the given number at unit's place, then convert them in the form of 2^4 or 8^4 respectively and then find its unit's place digit.

Unit's place digit in 2^4 = Unit's place digit in $8^4 = 6$

e.g. Unit's place digit in $(572)^{443}$
$= $ Unit's place digit in $(2^4)^{110} \times 2^3$
$= $ Unit's place digit in 6×8
$= $ Unit's place digit in $48 = 8$

(iii) **If 4 at unit's place** If there is 4 in the given number at the unit's place, then unit's place digit can be determined as follows
(a) if power of that number is even, then unit's place digit will always be '6'.
(b) if power of that number is odd, then unit's place digit will always be '4'.
e.g. Unit's place digit in $(214)^{555} = 4$
and Unit's place digit in $(624)^{322} = 6$

(iv) **If 3 or 7 at unit's place** If there is 3 or 7 in the given number at unit's place, then it is simplified as point (ii) but unit's place digit in 3^4 = Unit's place digit in $7^4 = 1$
e.g. $(5627)^{153} = (7)^{153} = (7)^{38\times4+1}$
$= 1\times7 = 7$ at unit's place
and $(1283)^{343} = (3)^{343} = (3)^{85\times4+3} = 1\times7$
$= 7$ at unit's place

(v) **If 9 at unit's place** If there is 9 at unit's place of given number and power is even, then unit's place digit will be 1 and if power is odd, then unit's place digit will be 9.
e.g. Unit's place digit in $(539)^{140} = 1$
and Unit's place digit in $(539)^{141} = 9$

Some Other Operations on Numbers

Sometimes, we are asked to determine the number of divisors of a large number and in the similar way, the number of prime factors is also asked. Let us discuss how these type of questions are solved.

Finding the Number of Divisors of a Given Number

To find the number of divisors, use the following steps

Step I If N is a given number, then find out the product of its prime factors by prime factorisation.

Step II Arrange the product of prime factors in terms of $a^p \times b^q \times c^r \times d^s$ ……, where a, b, c, d and so on are different prime numbers and p, q, r, s and so on are their respective powers.

Step III Now, use the formula of the total number of divisor
$= (p+1)(q+1)(r+1)(s+1) \ldots - 2$.

e.g. Total number of divisors of 864

Step I Prime factorisation of 864,

2	864
2	432
2	216
2	108
2	54
3	27
3	9
3	3
	1

$= 2\times2\times2\times2\times2\times3\times3\times3$

Step II $2^5 \times 3^3$

Step III ∴ Total number of divisors
$= (5+1)(3+1) - 2$
[∵ Number of divisors $= (p+1)(q+1) - 2$]
$= 22$

Finding the Number of Prime Factors of a Given Product

To find the number of prime factors, use the following steps

Let the given product be $A^P \times B^Q \times C^R \times D^S$.

Step I Change the given product in the form of $a^p \times b^q \times c^r \times d^s$ by using exponent formulae, where a, b, c and d are prime factors and p, q, r and s are their respective powers.

Step II Now, add all the powers to obtain the number of prime factors of given product.
i.e. Number of prime factors $= p+q+r+s$

e.g. Total number of prime factors in $(5)^2 \times (4)^9 \times (7)^5$

Step I Here, bases are 5, 4 and 7, in which 5 and 7 are prime numbers.
Now, change the base 4 also in prime number.
$\therefore \quad (5)^2 \times (4)^9 \times (7)^5 = (5)^2 \times (2^2)^9 \times (7)^5$
$= (5)^2 \times (2)^{18} \times (7)^5$
$[\because (a^m)^n = a^{m\times n}]$

Step II Add all the powers, i.e. $2 + 18 + 5 = 25$
∴ Required number of prime factors is 25.

Binary Numbers

A binary number is a number expressed in the base-2 numeral system or binary numeral system that uses only two symbols i.e. 0 and 1.

The base-2 numeral system is a positional notation with a radix of 2. Each digit is referred to as a bit.

e.g. 10101 is a binary number and it is written with the base 2 as $(10101)_2$.

Decimal Numbers

A decimal number is a number expressed in the base-10 numeral system or decimal numeral system that uses 10 symbols ranging from 0 to 9.

e.g. 9675 is a decimal number and it is written with the base 10 as $(9675)_{10}$.

1. Conversion of a Decimal Number into Binary Number

To convert a decimal number into binary equivalent, first of all write down the given decimal number and divide it continuously by 2 until the final result equals zero.

In each step of division, write the remainder whether 0 or 1 aside as shown below.

After that write down these remainders in reverse, and get a binary number equivalent to it's decimal number system.

e.g. Convert $(249)_{10}$ into binary.

		Remainder
2	249	1
2	124	0
2	62	0
2	31	1
2	15	1
2	7	1
2	3	1
2	1	1
	0	

↑ Order to write

$(249)_{10} = (11111001)_2$

2. Conversion of a Binary Number into Decimal Number

To convert a binary number into decimal equivalent, first of all write down a binary number and write under the each digit before decimal point from right to left as $2^0, 2^1, 2^2, 2^3$, …… and so on and after decimal point from left to right as $2^{-1}, 2^{-2}, 2^{-3}$, …… and so on.

Now, solve all the values of base 2 and add them. Final result will be a decimal number.

e.g. Convert $(100101)_2$ into decimal.

$$\begin{array}{cccccc} 1 & 0 & 0 & 1 & 0 & 1 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ (1\times 2^5) & (0\times 2^4) & (0\times 2^3) & (1\times 2^2) & (0\times 2^1) & (1\times 2^0) \end{array}$$

The decimal form of $(100101)_2$ is

$= 1\times 2^5 + 0\times 2^4 + 0\times 2^3 + 1\times 2^2 + 0\times 2^1 + 1\times 2^0$

$= 32 + 0 + 0 + 4 + 0 + 1 = 37$

So, $(100101)_2 = (37)_{10}$

Important Facts and Formulae

1. Sum of first n natural numbers $= \dfrac{n(n+1)}{2}$
2. Sum of first n odd numbers $= n^2$
3. Sum of first n even numbers $= n(n+1)$
4. Sum of even numbers upto $n = \dfrac{n}{2}\left(\dfrac{n}{2}+1\right)$
5. Sum of square of first n natural numbers $= \dfrac{n(n+1)(2n+1)}{6}$
6. Sum of cubes of first n natural numbers $= \left[\dfrac{n(n+1)}{2}\right]^2$
7. $(x^n - a^n)$ is divisible by $(x-a)$ for all values of $n; x \in n$.
8. $(x^n - a^n)$ is divisible by $(x+a)$ for even values of $n; x \in n$.
9. $(x^n + a^n)$ is divisible by $(x+a)$ for odd values of $n; x \in n$.

Worked Out Examples

Example -1 Find the sum of the face values of 3 and 6 in 907364.
(a) 15 (b) 20 (c) 9 (d) 18

Sol. (c) We know that the face value is the value of digit itself.
$\therefore$ Required sum = 3 + 6 = 9

Example -2 The difference between the place values of the both 5s in 1452058 is **[RRB ALP 2018]**
(a) 51950 (b) 49950 (c) 49050 (d) 0

Sol. (b) We know that place value of a digit is the face value of the digit multiplied by it's place.
$\therefore$ Place value of first 5 from left $= 5 \times 10000 = 50000$
and Place value of second 5 from left $= 5 \times 10 = 50$
$\therefore$ Required difference = 50000 − 50 = 49950

Example -3 Which of the number is neither prime nor composite? **[RRB ASM 2009]**
(a) 0 (b) 1 (c) 3 (d) 2

Sol. (b) 1 is neither prime number nor composite number.

Example -4 Which of the following is both odd as well as prime number?
(a) 17 (b) 15
(c) 21 (d) 9

Sol. (a) 17 is a prime number and also an odd number.

Example -5 Which of the following number is divisible by 9?
(a) 2350821 (b) 2870052
(c) 4213533 (d) 6400080

Sol. (d) We know that for a number to be divisible by 9, the sum of digits given in the number must be divisible by 9.
Consider one option at a time.
Option (a), 2 + 3 + 5 + 0 + 8 + 2 + 1 = 21 is not divisible by 9
Option (b), 2 + 8 + 7 + 0 + 0 + 5 + 2 = 24 is not divisible by 9
Option (c), 4 + 2 + 1 + 3 + 5 + 3 + 3 = 21 is not divisible by 9
Option (d), 6 + 4 + 0 + 0 + 0 + 8 + 0 = 18 is divisible by 9.

Example -6 If $295x5$ is divisible by 11, then the value of x is **[RRB Group D 2018]**
(a) 4 (b) 3 (c) 2 (d) 1

Sol. (b) We know from the condition of divisibility that a number is completely divisible by 11, when difference between 'sum of digits at even place' and 'sum of digits at odd place' is either zero or divisible by 11.
$\therefore \quad (2 + 5 + 5) - (9 + x) = 0$
$\Rightarrow \quad 12 - 9 - x = 0 \Rightarrow x = 3$
Hence, x must be 3.

Example -7 The unit digit in $3 \times 38 \times 537 \times 1256$ is **[SSC CGL 2013]**
(a) 4 (b) 2 (c) 6 (d) 8

Sol. (d) Unit digit in $3 \times 38 \times 537 \times 1256$
= Unit digit in $3 \times 8 \times 7 \times 6$
= Unit digit in 1008 = 8

Example -8 Unit's place digit in $(122)^{173}$ is **[SSC CGL 2011]**
(a) 2 (b) 4 (c) 6 (d) 8

Sol. (a) Considering unit's digit only $(2^{(173)}) = 2^{4\times43+1}$
$= 2^{4\times43} \times 2$ $\quad [\because a^{m+n} = a^m \times a^n]$
= Unit's place digit in $(2^4)^{43} \times 2$
= Unit's place digit in $(6) \times 2$
[$\because$ unit's place digit in $2^4 = 6$ and 6 is unaltered]
= Unit's place digit in 12 = 2

Example -9 The total number of divisors of 432 are
(a) 12 (b) 14 (c) 18 (d) 16

Sol. (c) $\because 432 = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 = 2^4 \times 3^3$
Total number of divisors,
$N = (p + 1)(q + 1) - 2$ where, $p = 4$ and $q = 3$
$N = 5 \times 4 - 2 = 18$

Example -10 How many prime factors are there in $7^4 \times 8^3 \times 27^4$?
(a) 16 (b) 13 (c) 25 (d) 23

Sol. (c) Given, $7^4 \times (8)^3 \times (27)^4$
$= (7)^4 \times (2^3)^3 \times (3^3)^4$
$= (7)^4 \times (2)^9 \times (3)^{12}$ $\quad [\because (a^m)^n = a^{m\times n}]$
Total number of prime factors $= p + q + r$
$= 4 + 9 + 12 = 25$
[$\because p = 4, q = 9$ and $r = 12$]

Example ~11 Convert binary number 11101 into decimal number.
(a) 22 (b) 18 (c) 29 (d) 36

Sol. (c) Binary number = 11101

Conversion of Binary number into Decimal number is given as

$$\begin{array}{lllll} 1 & 1 & 1 & 0 & 1 \\ \Rightarrow 2^4 \times 1 & 2^3 \times 1 & 2^2 \times 1 & 2^1 \times 0 & 2^0 \times 1 \\ \Rightarrow 16 & 8 & 4 & 0 & 1 \end{array}$$

By adding these numbers, we get equivalent decimal number,

$\therefore$ Decimal number = 16 + 8 + 4 + 0 + 1 = 29

$$(11101)_2 = (29)_{10}$$

Example ~12 Convert decimal number 32 into binary number.
(a) 101100 (b) 100010
(c) 111110 (d) 100000

Sol. (d) Decimal number = 32

By prime factorisation,

2	32	0
2	16	0
2	8	0
2	4	0
2	2	0
2	1	1
	0	

Now, by taking remainders in reverse direction, we get equivalent binary number.

$\therefore$ Required binary number = 100000

$$(32)_{10} = (100000)_2$$

Example ~13 The nearest number to 99548 which is divisible by 687, is **[RRB Group D 2018]**
(a) 99481 (b) 99615
(c) 99550 (d) 99540

Sol. (b) When we divide 99548 by 687

$$\Rightarrow \frac{99548}{687} = 144\frac{620}{687}$$

We get the quotient as 144 and remainder as 620.

That means 687 – 620 = 67 will be added to 99548 to get the number which will be divisible.

$\therefore$ Required number = 99548 + 67 = 99615

Example ~14 What is the sum of first 25 natural numbers?
(a) 320 (b) 325 (c) 400 (d) 600

Sol. (b) By using the formula,

Sum of first n natural numbers

$$= \frac{n(n+1)}{2} = \frac{25 \times (25+1)}{2} = 325$$

Example ~15 What is the sum of 1, 3, 5, 7, 9, 11, 13, 15, 17 and 19?
(a) 100 (b) 120 (c) 90 (d) 110

Sol. (a) $\because$ There are 10 numbers, so $n = 10$

These numbers are odd numbers.

$\therefore$ Sum of first n odd numbers $= n^2 = 10^2 = 100$

Example ~16 The sum of squares of first 50 natural numbers is **[RRB ASM 2009]**
(a) 40000 (b) 58725
(c) 42925 (d) 255025

Sol. (c) By using the formula,

Sum of squares of first n natural numbers

$$= \frac{n(n+1)(2n+1)}{6}$$

$$\therefore \text{ Required sum} = \frac{50 \times (50+1)(2 \times 50+1)}{6} = 42925$$

Example ~17 The sum of cubes of first 10 natural numbers is
(a) 2046 (b) 1000 (c) 3025 (d) 4005

Sol. (c) By using the formula,

Sum of cubes of first n natural numbers

$$= \left[\frac{n(n+1)}{2}\right]^2$$

$$\therefore \text{Required sum} = \left[\frac{10(10+1)}{2}\right]^2 = 3025$$

Example ~18 If $(43^{45} + 5)$ is divided by 44, then remainder is
(a) 5 (b) 4 (c) 3 (d) 6

Sol. (b) We know that, $(x^n + a^n)$ will be divided by $(x + a)$ for odd values of n.

$\because (43^{45} + 1^{45}), (43 + 1)$ is divided by 44.

So, if $(43^{45} + 1^{45} + 4) = (43^{45} + 5)$ is divided by 44, then remainder is 4.

Example ~19 $142^2 - 1$ is divisible by **[SSC (10 + 2) 2015]**
(a) 19 (b) 7 (c) 9 (d) 13

Sol. (d) Given, $142^2 - 1 = (142 - 1)(142 + 1)$

$[\because a^2 - b^2 = (a - b)(a + b)]$

$= 141 \times 143 = 141 \times 11 \times 13$

Hence, $142^2 - 1$ is divisible by 13.

Base Level Exercise

1 The difference between the place values of '4' and '2' in the number 833749502 is **[RRB ALP 2018]**
(a) 49998 (b) 390986
(c) 39998 (d) 30098

2 Which one is a rational number?
(a) $\sqrt{4}$ (b) $\sqrt{3}$ (c) $2+\sqrt{3}$ (d) $5\sqrt{3}$

3 By using 2, 9, 6 and 5 digits, find the difference of biggest and smallest number **[SSC CPO 2019]**
(a) 6993 (b) 7056 (c) 6606 (d) 7083

4 Which of the following is a prime number? **[IB Security Assist. 2018]**
(a) 12 (b) 7
(c) 9 (d) 4

5 Total prime numbers between 0 and 100 are
(a) 31 (b) 29
(c) 25 (d) 23

6 If a number is as much greater than 31 as it is less than 75, then the number is **[SSC 10+2 2013]**
(a) 44 (b) 74 (c) 53 (d) 106

7 A number is as much greater than 50, as it is lesser than 84. What is the number? **[RRB ALP 2018]**
(a) 68 (b) 65 (c) 66 (d) 67

8 Unit's place digit of 7^{105} is
(a) 5 (b) 7 (c) 9 (d) 1

9 The unit's place digit in $(124)^{372}+(124)^{373}$ is **[SSC CGL 2011]**
(a) 5 (b) 4 (c) 2 (d) 0

10 The unit's place digit in $6^{256}-4^{256}$ is **[SSC MTS 2017]**
(a) 1 (b) 4 (c) 0 (d) 7

11 Find the unit's place digit in $(194)^{102}+(294)^{103}$. **[SSC CHSL 2016]**
(a) 0 (b) 6 (c) 8 (d) 2

12 Unit's place digit in $674\times218\times437\times513$ is
(a) 2 (b) 3 (c) 4 (d) 5

13 What is the unit's place digit in $3^{66}\times6^{41}\times7^{53}$? **[RRB ALP 2019]**
(a) 8 (b) 7 (c) 6 (d) 3

14 What is the unit's place digit in $9^{53}\times4^{26}\times6^{105}$?
(a) 6 (b) 2 (c) 4 (d) 8

15 In the following, the number divisible by 11 is **[CDS 2013]**
(a) 45678940 (b) 54857266
(c) 87524398 (d) 93455120

16 Which one of the numbers is divisible by 25? **[SSC CGL 2013]**
(a) 303310 (b) 373355 (c) 303375 (d) 22040

17 Which of the given value is exactly divisible by 30? **[SSC MTS 2016]**
(a) 2530 (b) 1570 (c) 2370 (d) 1520

18 The number 23474 is exactly divisible by **[SSC CPO 2019]**
(a) 2 and 3 (b) 2 and 4 (c) 2 and 11 (d) Only 2

19 The smallest five-digit number which is exactly divisible by 41, is **[RRB Group D 2012]**
(a) 10045 (b) 10004 (c) 10041 (d) 10025

20 What is the greatest four-digit number that is exactly divisible by 49? **[RRB Group D 2018]**
(a) 9992 (b) 9996 (c) 9994 (d) 1998

21 Which of the following is divisible by 99? **[SSC CGL 2006]**
(a) 114345 (b) 3572404
(c) 135792 (d) 913464

22 The largest value of x for which $5x793x4$ is divisible by 3, is **[RRB Group D 2008]**
(a) 9 (b) 7 (c) 4 (d) 3

23 If $P713$ is divisible by 11, find the value of the smallest natural number P. **[RRB NTPC 2016]**
(a) 5 (b) 6 (c) 7 (d) 9

24 Sum of all positive integers from 1 to 100 is
(a) 5050 (b) 5020
(c) 10800 (d) 2400