SIMPLIFICATION

Helping Hands:

1. Digits - 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

2. Types of numbers.

(i) Natural numbers. = {1, 2, 3, 4, ...}

(ii) Whole numbers = {0, 1, 2, 3, 4.....}

(iii) Integers = {....., -3, -2, -1, 0, 1, 2, 3, ...}

(iv) Real numbers = {----, 2.8, -2, -10, 1, 1.9, --2, 3, 3.12, 3.13-----}

(v) Even numbers = {2, 4, 6, ---------}

(vi) Odd numbers = {1, 3, 5, 7----------}

(vii) Prime numbers = {2, 3, 5, 7, 11, 13, 17, 19, - -----}

3.

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

$(a-b)^2 = a^2 - 2ab + b^2$

$a^2 - b^2 = (a+b).(a-b)$

$(a+b)^3 = a^3 + b^3 + 3ab\,(a+b)$

$(a-b)^3 = a^3 - b^3 - 3ab\,(a-b)$

$a^3 + b^3 = (a+b)\,(a^2 + b^2 - ab)$

$a^3 - b^3 = (a-b)\,(a^2 + b^2 + ab)$

ADDITION & SUBTRACTION

Ex-1. ? = 8+88+888+8888+88888

? = 8(1+11+111+1111+11111)

? = 8(12345) ⇒ 98760

Ex-2. ? = 0.8 + 0.88 + 0.888 + 0.8888 + 0.88888

? = 8(0.1+0.11+0.111+0.1111+0.11111)

? = 8(0.54321)

⇒ 4.34568

Ex-3. 8.8 + 8.88 + 8.888 + 8.8888 + 8.88888 =?

First, we can calculate decimal number and then whole no.

From Ex-2.

8(0.54321) = 4.34568

and 8+8+8+8+8 i.e., 8×5=40

Therefore, 40+4.34568 = 44.34568

Ex-4. 8456+3891+4560 =?

= 16907

Ex-5. 3.981+14.34+12.5=?

First, we can balance the number of decimal digits and then use the elimination method.

i.e., 3.981 +14.340 + 12.500 =?

= 30.821

MULTIPLICATION

Some Special Types

1. When the sum of the unit digit is 10 and the remaining digit is same.

Example- 43 × 47

= 4 × (4+1) / 3×7

= 4 × 5 / 21

= 20 / 21

Ans = 2021.

2. When sum of tens digit is 10 and unit digit is same

Example- 46 × 66

= (4 × 6) + 6 / 6 × 6

= 24 + 6 / 36

= 30 / 36

Ans = 3036

3. When the unit digit is 5 in both the numbers and difference between each number is 10.

Example- 75 × 65

= 6 × (7 + 1) / 75

= 48 / 75

Ans = 4875

SQUARE AND SQUARE ROOTS

Learn Square of 1 to 50

Square of 1-50 numbers

1^2 = 1

2^2 = 4

3^2 = 9

4^2 = 16.....$50^2 = 2500$

Type-I. Formula Method We know that

$(a + b)^2 = a^2 + 2ab + b^2$ i.e. $(a/b)^2 = a^2 / 2ab / b^2$

Ex-1. $(56)^2$

$= (5/6)^2$

$= 5^2 / 2 \times 5 \times 6 / 6^2$

6 3

= 25 / 60 / 36

= 31 / 3 / 6

= 3136

We break number in two parts i.e., 5 & 6 and follow the rule of $(a+b)^2 = a^2 /2ab/ b^2$

CUBE & CUBE ROOT

Learn cubes from 1 to 25.

FRACTIONS

Fraction is known as a fraction in which a is called numerator and b is called denominator.

Types of Fractions:

I. Proper Fraction: If the numerator part of a fraction is less than the denominator then the fraction is called proper fraction and proper fraction is always less than 1.

II. Improper fraction: If the numerator of a fraction is greater than denominator then the fraction is called improper fraction. Improper fraction is always greater than 1.

$\frac{5}{4}, \frac{3}{2}, \frac{7}{5}, \frac{11}{8}$..... etc.

III. Mixed Fraction: Mixed with proper fraction: When a proper fraction is mixed with a whole number known as mixed with proper fraction.

e.g., $8\frac{7}{2}$

VBODMAS RULE

V – Vinculum means bar as (-)

B – Bracket- () {} and then [ ]

O – of

D – Division [÷]

M – Multiplication [×]

A – Addition [+]

S – Subtraction [-]

The word 'VBODMAS' represents the order of calculation i.e., order of signs

B	O	D	M	A	S
Brackets	Orders	Divide	Multiply	Add	Subtract

Example 1: 35 ÷ 7 × 5 =?

Solution:

According to the order of VBODMAS, first we solve division and then multiplication

i.e., 35 ÷ 7 × 5 =?

5 × 5 =?

? = 25

Example 2: 35 ÷ 5 of 7 =?

Solution:

According to the order of VBODMAS, first we solve ‘of’ and then division.

i.e., 35 ÷ 5 of 7 =?

35 ÷ 35 =?

? = 1

Example 3: 48 ÷ 12 of 2 + [3 + 17 × 2] =?

Solution:

48 ÷ 24 + 37 =?

2 + 37 =?

? = 39

Example 4: 2 ÷ 2 ÷ 2 ÷ 2 ÷ 2 ÷ 2 =?

Solution:

2/2 × 2 × 2 × 2 × 2 = ?

? = 1/16