



Aptitude Tips and Tricks

1.Simplification

Definition:

Simplification is the process of replacing a mathematical expression by an equivalent one, that is simpler (usually shorter), for example. Simplification of a fraction to an irreducible fraction.

Rules of Simplification:

- ❖ Learn BODMAS.
- ❖ Use the concept of digital sum.
- ❖ Memorize tables up to 30.
- ❖ Memorize cubes and squares of numbers up to 35.
- ❖ Learn tricks to find squares and cubes of numbers greater than 35.
- ❖ Learn tricks to find cube roots and square roots of large number.
- ❖ Memorize the reciprocals.

BODMAS

V → Vinculum

B → Remove Brackets - in the order (), { }, []

O → Of

D → Division

M → Multiplication

A → Addition

S → Subtraction



Numbers which are given in a decimal format, use a rounded-off value for those numbers. For example, 45.62 can be taken as 46

Example based on BODMAS:

$$152 \times 2^3 + (228 \div 19)^2 = ?$$

Solution:

$$\Rightarrow 15 \times (12) \times 2 \text{ [brackets are solved first and table of 19 and 15 must be on tips]}$$

$$\Rightarrow 120 + 144 \text{ [must know the squares]}$$

$$\Rightarrow 264$$

Finding Square Root:

Above 100:

$$103^2 = 10609$$

Step 1. Add the number to the ones digit:

$$103 + 3 = 106$$

Step 2. Square the ones digit number (if the result is a single digit put a 0 in front of it):

$$3^2 = 09$$

Step 3. Place the result from Step 2 next to the result from Step 1: 10609

Below 100:

$$97^2 = 9409$$

Step 1. Subtract the number from 100: $100 - 97 = 3$

Step 2. Subtract the number (from Step 1) from original number : $97 - 3 = 94$

Step 3. Square the result from Step 1 (if the result is a single digit put a 0 in front of it): $3^2 = 09$

Step 4. Place the result from Step 3 next to the result from Step 2: 9409

**Below 50:**

$$48^2 = 2304$$

Step 1. Subtract the number from 50: $50-48=2$

Step 2. Subtract the result (from Step 1) from 25: $25-2 =23$

Step 3. Square the result from Step 1 if the result is a single digit put a 0 in front of it) : $22 = 04$

Step 4. Place the result from Step 3 next to the result from Step 2: 2304

Above 50:

$$53^2 = 2809$$

Step 1. Add 25 to the ones digit: $25 + 3 = 28$

Step 2. Square the ones digit number (if the result is a single digit put a 0 in front of it) : $3^2 = 09$

Step 3. Place the result from Step 2 next to the result from Step 1 : 2809

Finding Cube Root:

Let us find the cube root of 39304 through a shortcut method involving four steps:

STEP 1: To find the unit place of the cube root always remember the following points:

- If the last digit of a cube root is 8 then the unit digit will be 2.
- If the last digit of a cube root is 2 then the unit digit will be 8.
- If the last digit of a cube root is 3 then the unit digit will be 7.
- If the last digit of a cube root is 7 then the unit digit will be 3.
- If the last digit of a cube root is other than 2, 3, 7 and 8 then put the same number as the unit digit.

Therefore, the unit digit will be 4.



STEP 2: Now, strike off the last 3 digits of the given number.

39304

STEP 3: Now, find the nearest cube of the first 2 digit from the left, i.e., 39.

The nearest cube is 27.

STEP 4: Now, 3 is the cube root of 27.

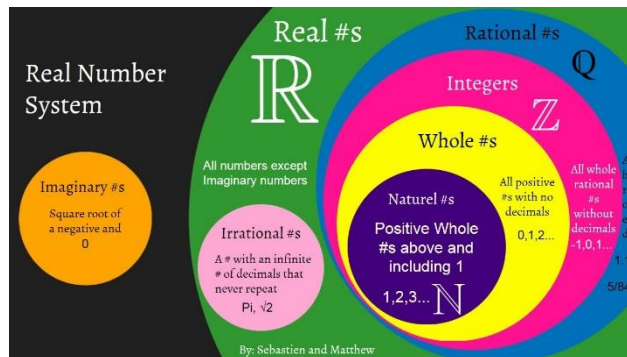
Therefore, the ten's place digit will be 3.

So, the answer will be 34.

2.Number System

Definition :

The number system or the numeral system is the system of naming or representing numbers. There are various types of number systems in maths like binary, decimal, etc.



(1) Natural Numbers: Numbers starting from 1, 2, 3 and so on so forth are counted as Natural numbers. They are **1, 2, 3, 4...**

Exceptions: Zero, negative and decimal numbers are not counted in this list.

(2) Whole numbers: Zero and all other natural numbers are known as natural numbers. They are **0, 1, 2, 3, 4...**