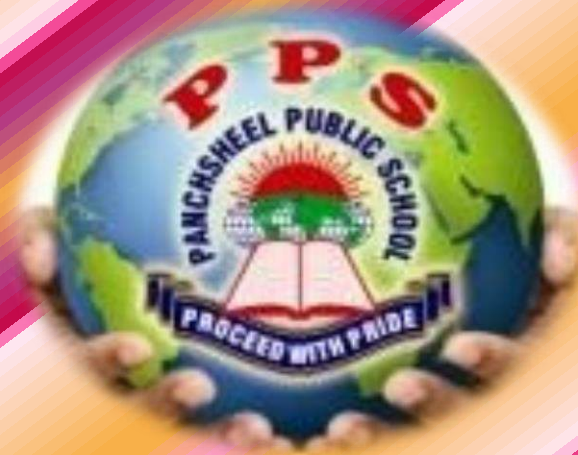


**PANCHSHEEL PUBLIC SCHOOL**  
**SESSION 2024-25**  
**ENTRANCE EXAMINATION**



**CLASS - 6**  
**SYLLABUS**  
**STUDY MATERIAL**  
**SAMPLE PAPER**

# MATHEMATICS

## SYLLABUS



### CLASS - 6

1. Be my multiple, I'll be your factor
2. Visualising solids in daily life
3. Commercial arithmetic( Profit% and Loss%)

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## PANCHSHEEL PUBLIC SCHOOL

10+2 Senior Secondary School (Affiliated & Recognized by CBSE)

Jaitpur, Badarpur, New Delhi-44

SESSION - 2024-25

ENTRANCE EXAM

STUDY MATERIAL AND SAMPLE PAPER

### Topic – Be my Multiple, I'll be your factor

## Factor $\leq$ Multiple

**Factors** and **Multiples** are whole numbers.

**Factor**  $\times$  Whole Number = **Multiple**.

Whole Number  $\times$  **Factor** = **Multiple**.

Skip Counting is reciting **Multiples**.

$1 \times n = n$  means 1 is a **Factor** of every whole number.

$0 \times n = 0$  means every whole number is a **Factor** of 0.

$0 \times n = 0$  means 0 is a **Multiple** of every whole number.

$1 \times n = n$  means every whole number is a **Multiple** of 1.

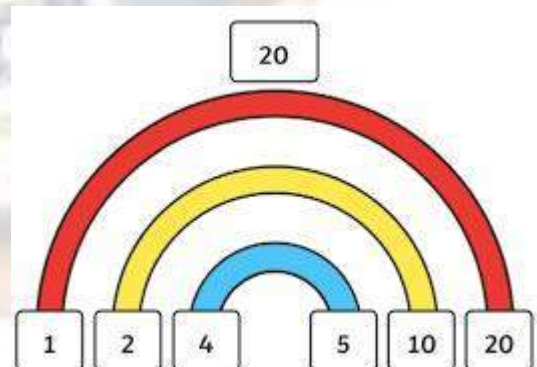
0 is a **Factor** of just one number, 0.

1 is a **Multiple** of just one number, 1.

### Factors:-

When a number is said to be a factor of any other second number, then the first number must divide the second number completely without leaving any remainder. In simple words, if a number (dividend) is exactly divisible by any number (divisor), then the divisor is a factor of that dividend. Every number has a common factor that is one and the number itself.

For example, 4 is a factor of 24, i.e. 4 divides 24 exactly giving 6 as quotient and leaving zero as remainder.



### Multiples of 2



### Multiples:-

A multiple of a number is a number that is the product of a given number and some other natural number. Multiples can be observed in a multiplication table. Multiples of some numbers are as follows:

Multiples of 2 are 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, and so on.

## Properties of Factors and Multiples:-

There are many properties of factors and multiples that will help you to understand this concept properly. Those properties are listed below:

- 1 is the factor of every number.
- 0 is the multiple of every number.
- Factors and multiples are only used and applicable to whole numbers.
- For every number, 1 is the smallest factor and that number itself is the largest factor.
- Every number is a multiple of itself.
- There are an infinite number of multiples and a finite number of factors possible for every number.
- If there are only two factors of a number, i.e 1 and the number itself, that number is known as a prime number in math.

## Difference Between Factors and Multiples:-

The difference between factors and multiples are given here in tabular form. Go through the below table to understand the difference between them.

S.No	Factors	Multiples
1	Factors are defined as the exact divisors of the given number	The multiples are defined as the numbers obtained when multiplied by other numbers
2	The number of factors are finite	The number of multiples are infinite
3	The operation used to find the factors is a division	The operation used to find the multiples is a multiplication
4	The outcome of the factors should be less than or equal to the given number	The outcome of the multiples should be greater than or equal to the given number

**Lowest Common Multiple (LCM):** The least or smallest common multiple of any two or more given natural numbers are termed as LCM.

For example, LCM of 10, 15, and 20 is 60.

**Highest Common Factor (HCF):** The largest or greatest factor common to any two or more given natural numbers is termed as HCF of given numbers. Also known as GCD (Greatest Common Divisor).

For example, HCF of 4, 6 and 8 is 2.

## Topic :- Solid Shapes

When you look around the room in your house, you can see many objects that have different shapes. For example, furniture, books, ball etc. These shapes are called solid shapes. It consists of 3 dimensions, namely length, breadth, and height. Solid shapes are also known as 3D shapes. These solid shapes occupy space and are found in our day-to-day life. We touch, feel, and use them.

### Definition:

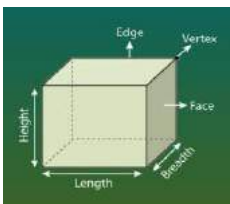
Solid shapes are three-dimensional shapes that have length, breadth, and height as the three dimensions.

### Solid Shapes around us:

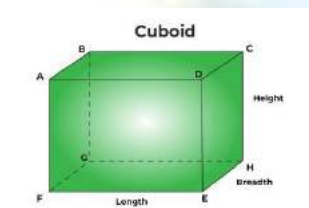
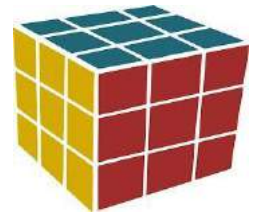
Solid shapes correspond to three-dimensional objects. Look around! Every other three-dimensional object, be it a laptop, cellphone, an ice-cream cone, balls, etc, are examples of solid shapes. These occupy some space, have length, width as well as height.

### Types of solid shapes-

#### Cube:

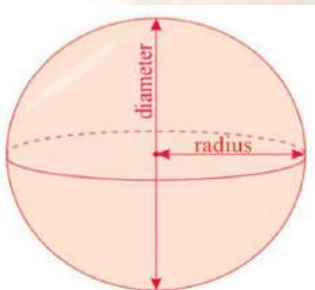


A cube is a three-dimensional object which is formed when six identical squares bind to each other in an enclosed form. A cube has 6 faces, 12 edges, and 8 vertices. In other words, a cuboid whose length, breadth and height are equal is called a cube.



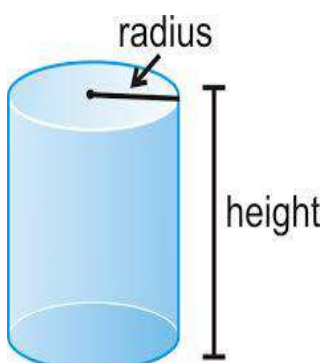
#### Cuboid:

The cuboid shape has a closed three-dimensional structure surrounded by rectangular faces, which are rectangle plane sections. It is one of the most prevalent shapes in our environment, with three dimensions: length, breadth, and height.



#### Sphere:

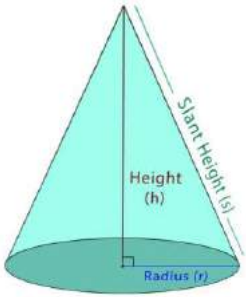
A sphere is a solid shape, absolutely round in shape, defined in three-dimensional space. Every point on the surface is equidistant from the center.



#### Cylinder:

Cylinder is a solid shape defined on a three-dimensional plane. It holds two parallel bases, circular in shape, joined by a curved surface (like a tube), at a fixed distance.



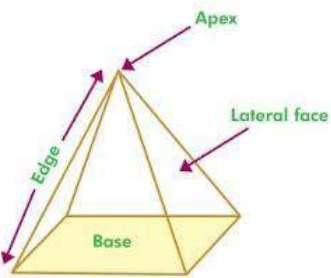


## Cone:

A cone is a distinctive solid shape defined in a three-dimensional space. It has a flat surface and a curved surface, pointing towards the top. It is formed by a set of line segments connected from the circular base to a common point, known as the apex or vertex. Based on how the apex is aligned to the center of the base, a right cone or an oblique cone is formed.



## Pyramid:



A pyramid is a solid shape or a polyhedron with a polygon base and all lateral faces are triangles. Pyramids are typically described by the shape of their bases. A pyramid with a:

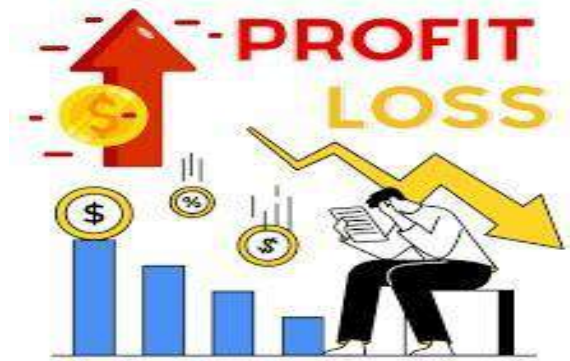
- Triangular base is called a Tetrahedron.
- A quadrilateral base is called a square pyramid.
- Pentagon base is called a pentagonal pyramid.
- Regular hexagon base is called a hexagonal pyramid.



## Topic : - Commercial arithmetic( Profit% and Loss%)

### Profit and Loss Basic Concepts

The majority of business people make money by buying and selling goods. A profit is created when the selling price of a product exceeds its cost or production price. A loss occurs when the selling price of a thing is less than its cost price.



Let us learn profit and loss concepts in maths. It is well explained in terms of cost price and selling price.

**Profit(P)** The amount gained by selling a product for more than its cost price.

**Loss(L)** The amount the seller incurs after selling the product less than its cost price is mentioned as a loss.

**Cost Price (CP)** The amount paid for a product or commodity to purchase is called a cost price. Also, denoted as CP.

**Selling Price (SP)** The amount for which the product is sold is called the Selling Price. It is usually denoted as SP

### Profit and Loss Formulas

Now let us find the profit formula and loss formula.

The profit or gain is equal to the selling price minus the cost price.

Loss is equal to the cost price minus the selling price.

Profit or Gain = Selling price – Cost Price

Loss = Cost Price – Selling Price

The formula for the profit and loss percentage is:

Profit percentage (P%) = (Profit / Cost Price) x 100

Loss percentage (L%) = (Loss / Cost price) x 100

### Profit and Loss Tricks

Profit,  $P = SP - CP$ ;  $SP > CP$

Loss,  $L = CP - SP$ ;  $CP > SP$

$P\% = (P/CP) \times 100$

$L\% = (L/CP) \times 100$

$SP = \{(100 + P\%)/100\} \times CP$

$SP = \{(100 - L\%)/100\} \times CP$

$CP = \{100/(100 + P\%)\} \times SP$

$CP = \{100/(100 - L\%)\} \times SP$

### Points to remember:

- ❖ For profit, the selling price should be more than the cost price
- ❖ For loss, the cost price should be more than the selling price
- ❖ The percentage value for profit and loss is calculated in terms of cost price



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## Q.1 Multiple choice questions: (1 x 5 = 5 marks)

(a) Vijay wants to measure his height, which Measuring unit he will use to find his height?

- (i) Kg (ii) Km (iii) cm



(b) Arun bought a fan for rupees 700 and sold it for rupees 780. Find his profit or loss.

- (i) Profit – rupees 80 (ii) Loss – rupees 80 (iii) Neither profit nor loss

(c) The shape a birthday cap - .....

- (i) Sphere (ii) Cone (iii) Rectangle



(d) A circle has \_\_\_\_\_ sides.

- (i) 4 (ii) 2 (iii) 0

(e) Ronny bought a mirror of rupees 900, and sells at 1000. Find the profit.

- (i) Rs.100 (ii) Rs.200 (iii) Rs. 1000



## Q.2 Fill in the blanks: (1 x 2 = 2 marks)

(a) This  has ..... sides. It is in \_\_\_\_\_ shape

(b) The shape of a  is \_\_\_\_\_

## Q.3 Solve the following: (2 x 4 = 8 marks)

(a) Samita visits the library every fourth day and Ron every sixth day. Find out days on which both meet in the library in the month of April. (2)



(b) John bought an old motor bike for Rs. 5675 and spent Rs. 453 on it s repair. Then he sold it in Rs. 7265, find out the profit he made.

(2)

(c) The student of two classes are supposed to stand in rows having same number of students. There are 48 and 60 students in the classes. How many maximum number of students will stand in each row (2)

(d) John bought a cycle for Rs. 3725. After using it for few months he sold it for a loss of Rs. 589. Find the selling price of the cycle. (2)

