3 dimensional shapes

Three dimensional Shapes

➢ **3D Shapes** are solid objects that have three dimensions.

➢ The three dimensions are

       ❖ length

       ❖ width.

       ❖ Height

Examples

Cube   **Cuboid**   **Sphere**   **Cone**

Polyhedrons

❖ Polyhedrons are 3D shapes.

❖ The polyhedrons are also called the Polyhedra.

❖ Polyhedrons should have straight edges

Examples

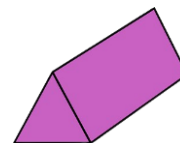**Cube**   **Cuboid**   **Prism**   **Pyramid**

Curved Solids

❖ The **3D shapes** that have **curved surfaces** are called **curved solids.**
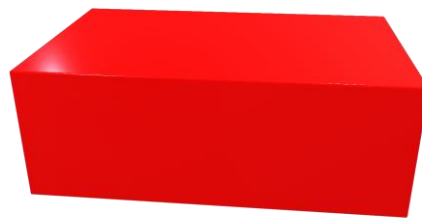
Examples

Sphere	Cone	Cylinder

Three dimensional shapes

Cone	Cuboid	Cube

Prism

Sphere

Cylinder

Pyramid

Properties

There are 3 properties for 3 dimensional shapes. They are

- ➢ Faces
- ➢ Edges
- ➢ Corners or vertices

Faces

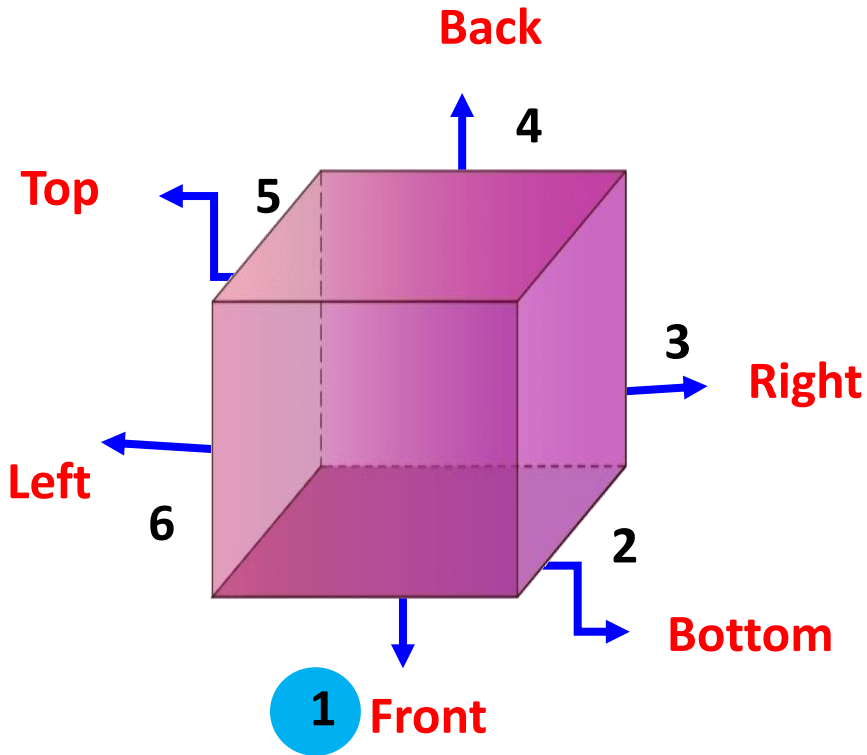Faces are the surfaces on the outside of a shape.

Edges
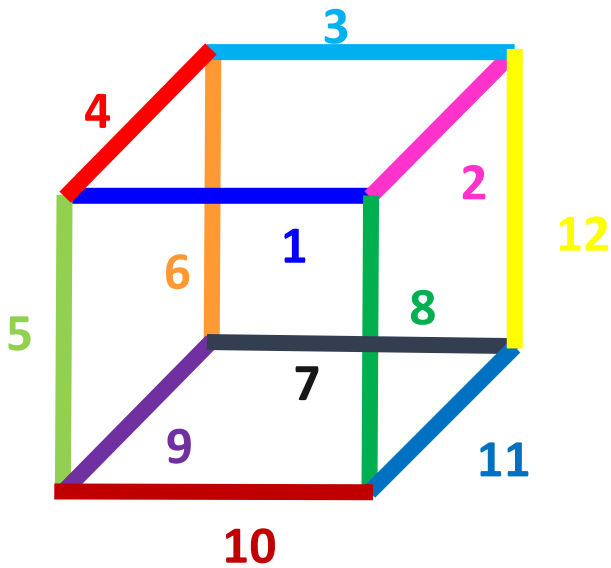
Edges are the lines where two faces meet.

Corners or vertices
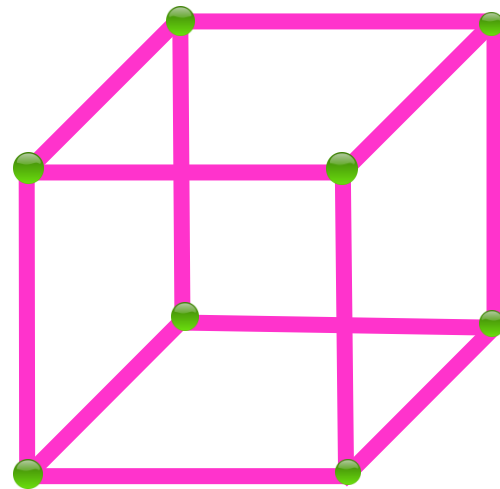
Vertices or corner are where two or more edges meet.

Cube

Back

4

Top

5

3

Right

Left

6

2

Faces — 6

1 Front

Bottom

3

4

2

12
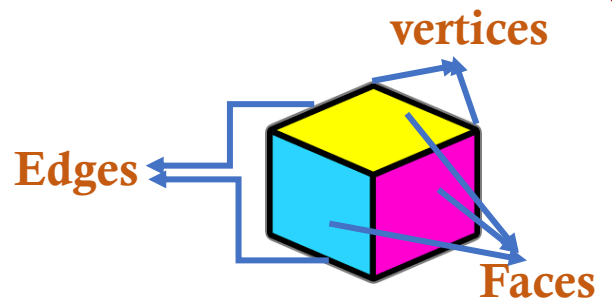
1

6

8

5

7

9

11

10

Edges — 12

Vertices — 8

Cube

Properties/characteristics:

➤ It is a **3-D shape**.

➤ It has **six faces**.

➤ All **sides** are **equal**.
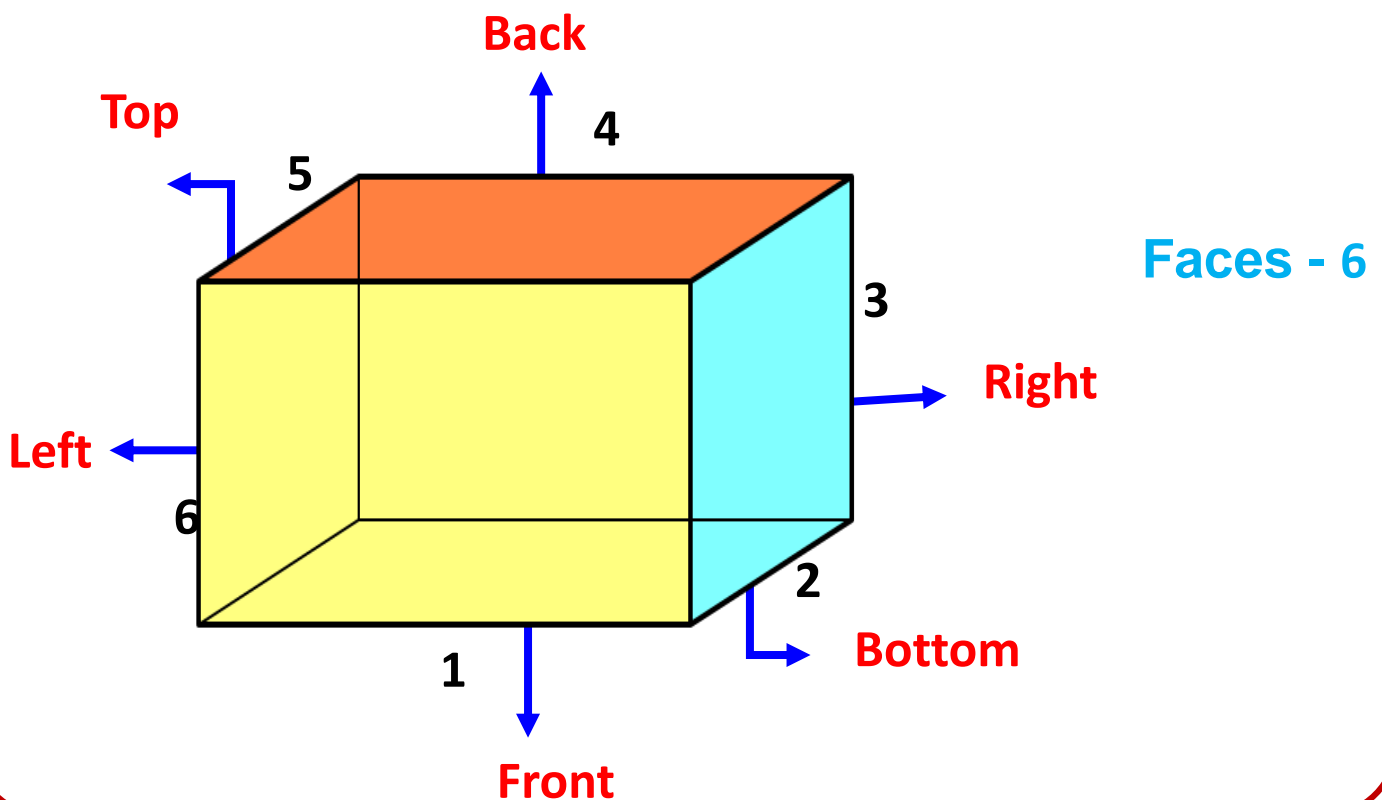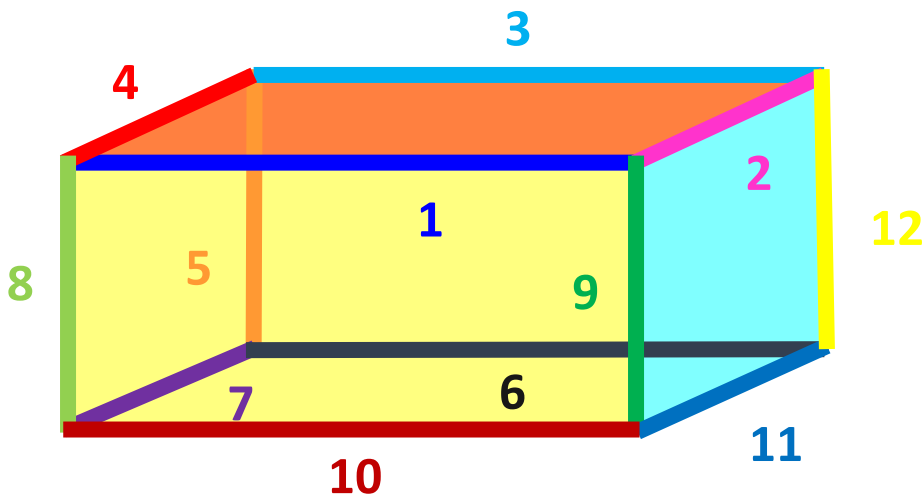
➤ It has **8 vertices** and **12 edges**.

Examples

Dice, Ice cubes , Gift box.

vertices

Edges

Faces

Gift box

Dice

Ice cubes

Cuboid

Back

Top

5

4

Left

6

3

Right

Faces - 6

1

2

Bottom

Front

3
4
8
5
1
2
12
9
7
6
11
10

Edges - 12

Corners - 8
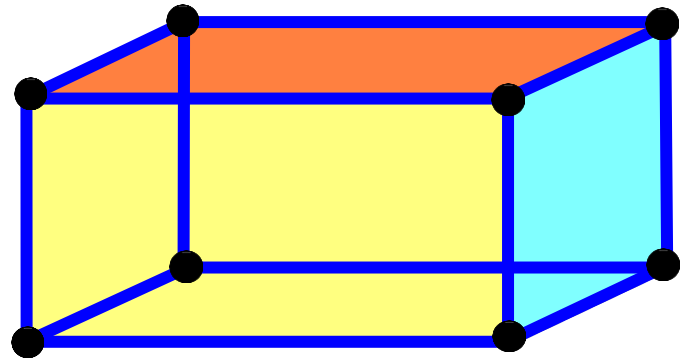
Cuboid

Properties/characteristics:

Edges

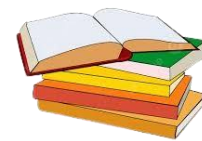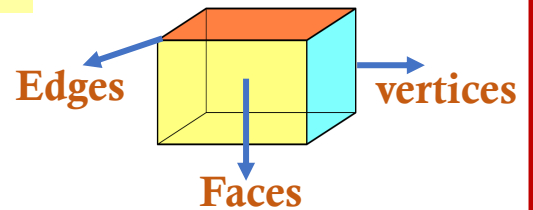vertices

Faces

➢ It is a **3-D shape**.

➢ It has **six faces**.

➢ Its **opposite sides** are **equal**.

➢ It has **8 vertices** and **12 edges**.

Examples

Book

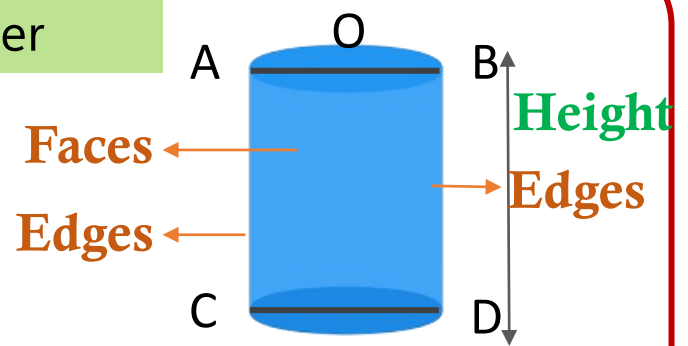**Bricks, Match box , Book.**

Bricks   **Match box**

Cylinder

Properties/characteristics:

➤ It is a **3-D shape**.

➤ **Two bases** lie in **upper** and **lower surfaces** in a cylinder.

➤ It has **3 faces**.

➤ **Height** is the distance between the **two bases**.

➤ It has **2 edges** and **no vertices**
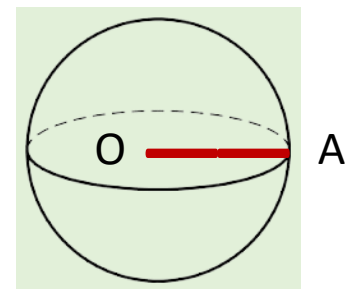
Examples

Straw , cylinder.

Straw   **Cylinder**

In diagram labels: O, A, B, C, D, Faces, Edges, Height, Edges

Sphere

Properties/characteristics:

➤ It is a **3-D shape**.

➤ It has **one surface.**

➤ **All points** on the **surface** are at the **same distance from the centre.**

➤ It has **no vertices** and **edges**.

Examples

Laddu   **Globe**   **Ball**

Laddu , Globe , Ball.

In diagram labels: O, A

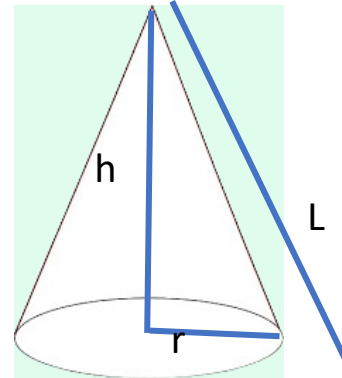## Cone

Properties/characteristics:

➢ It is a **3-D shape**.

➢ **Base** of a **cone** is **circular.**

➢ The distance from the **top of the cone** to the **center of the base** is called as **height**.

➢ The distance from the **apex** to any point lying on the **circumference of base** is called as **slant height**.

➢ The **height** and **slant height** are **not equal.**
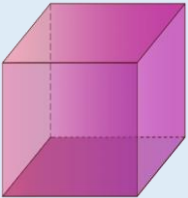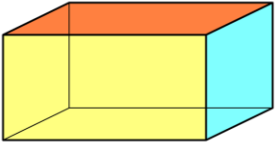
Examples : Cone ice cream, **Party cap**.

Party cap

Cone ice cream

3D Shape Properties

Name of the shapes	Formulas
cube	TSA = $6a^2$ (sq. units) LSA = $4a^2$ (sq. units) Volume = a^3 (cu. units)
cuboid	TSA = 2 (lw + wh + lh) sq. units LSA = 2h(l + w) (sq. units) Volume = a^3 (cu. units)
cone	TSA = πr(l + r) (sq. units) LSA = πrl (sq. units) Volume = (1/3) π r^2h (cu. units)
cylinder	TSA = 2 π r(h+r) (sq. units) Volume = πr^2h (cu. units)
sphere	TSA = 4πr^2 (sq. units) Volume = (4/3)πr^3 (cu. units)