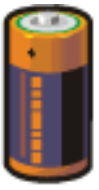
Recognition of Solids

- We see a few shapes in our day- to-day life which are not flat. Some of these shapes are solids.

(Cricket ball : a sphere)

(Brick : a cuboid)

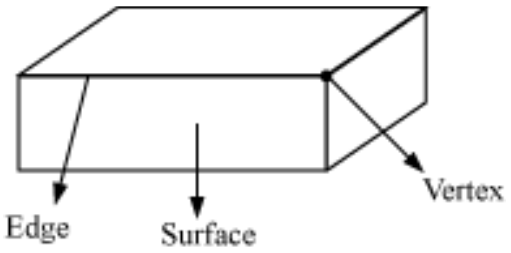
(Ice cream : a cone)

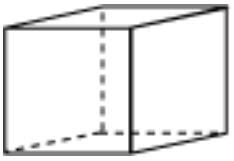
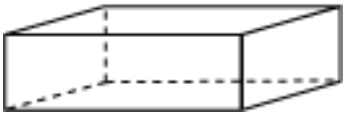
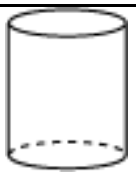
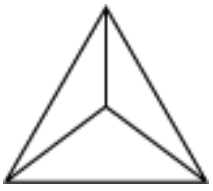
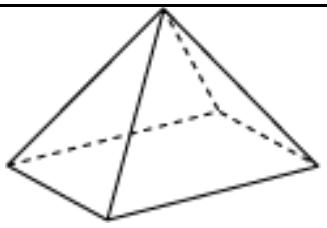


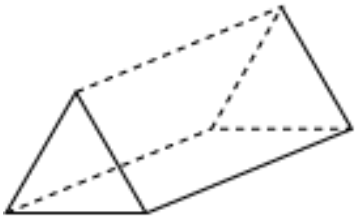
(Battery : a cylinder)

(Die : a cube)

- Each side of a cuboid is flat, called a **flat surface** (or surface). Two faces meet at a line segment called an **edge**. Three edges meet at a point called the **vertex.**



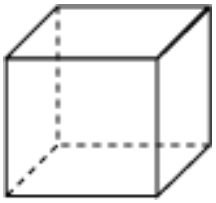
Solid	Figure	Properties
Cube		6 faces 12 edges 8 vertices (corners)
Cuboid		6 faces 12 edges 8 vertices
Cylinder		2 flat faces (circles) 1 curved face
Cone		1 flat surface 1 curved surface 1 vertex
Triangular Pyramid		4 faces 6 edges 4 vertices
Square pyramid		5 faces 8 edges 5 vertices
Triangular prism		5 faces 9 edges

		6 vertices

- For any polyhedron, F + V – E = 2, where F is the number of faces, V is the number of vertices and E is the number of edges.

  This relationship is called Euler's formula.

  Example: Verify Euler's formula for the given solid.

  Solution:

  The given figure is a cube.

  We have

  Number of vertices, V = 8

  Number of edges, E = 12

  Number of faces, F = 6

  Thus, F + V – E = 6 + 8 – 12 = 14 – 12 = 2

  Hence, Euler's formula is verified.