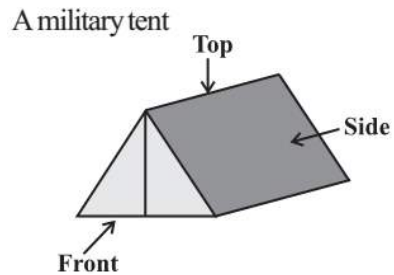


## Visualizing Solid Shapes

- One dimensional shapes have only length: line
- 2 Dimensional or 2-D shapes are plane shapes having length and breadth ; ex triangle, square, circle
- 3-dimensional or 3- D shapes are solid objects that occupy space and have length, breadth and height (depth): cube, cuboid, cone ,sphere
- 3-D objects look differently from different positions, so they can be drawn from different perspectives
- Hence as 3-D object has different views like front view, side view and top view



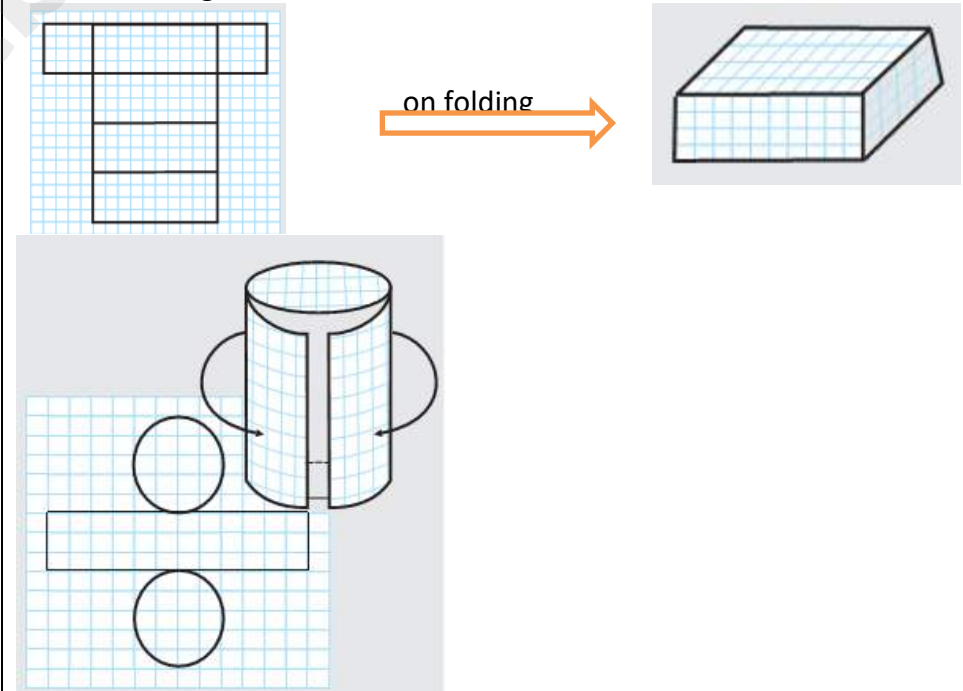
Different Views of a 3-D object

Object	Top view	Front view	Side view

### Map:

- Map depicts only location of object/place in relation to other objects/places
- While drawing a picture, we try to represent it exactly as seen from the perspective, with all fine details but perspective is not important for map
- Map makes use of symbols and the distances mentioned are proportional to the actual distances on the ground.
- A proper scale is chosen to show the reduction in real distances/ dimension proportionately to distances/dimensions on paper
- There is no reference concept in map ; objects that are closer to the observer are of the same size as those that are farther away

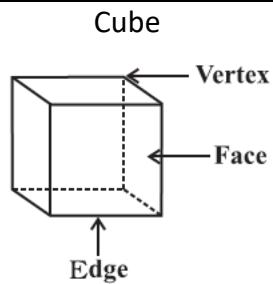
A net is a pattern of two-dimensions that can be folded to make a three dimensional figure



**Polyhedrons:**

- Polyhedrons are 3-D objects or solids made up of polygonal regions called as faces. Faces (F) meet at line segments called as edges (E)
- Edges meet at points called as vertices (V)
- Diagonals connect two vertices that do not lie on the same face.
- Regular polyhedron or platonic solids : faces are made up of regular polygons and same number of faces meet at each vertex  
Ex. Cube, tetrahedron, octahedron
- 2 important members of polyhedron family are pyramids and prisms

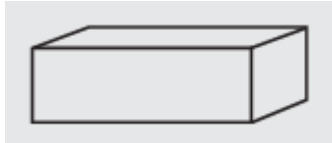
**Examples of polyhedrons**



**Triangular prism**



**Cuboid**

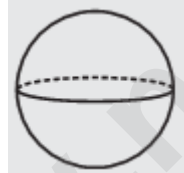


**Examples of non polyhedrons**

**Cone**



**Sphere**

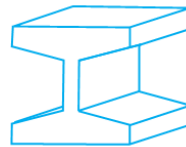
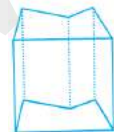


**Cylinder**



- The above also represent convex polyhedrons: all diagonals are in the interior of the polyhedron
- Even if one diagonal is in the exterior, it is a non-convex polyhedron

**Examples of non convex polyhedrons**



**Prism**

- a polyhedron whose base and top are congruent polygons and other faces (lateral faces) are parallelograms in shape
- Prism has 2 bases

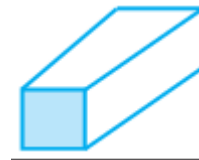
**Pyramid**

- polyhedron whose base is polygon and lateral faces are triangles with a common vertex
- model of a pyramid: join all the corners of a polygon to a point not in its plane
- Pyramid has one base

**Pentagonal prism**



**Square prism**



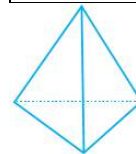
**Pentagonal pyramid**



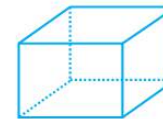
**Triangular pyramid**



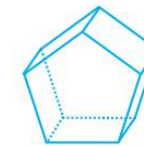
Eulers formula: for polyhedron :  $F + V = E + 2$



(a)



(b)



(c)

S. No	Polyhedron	F	V	F + V	E	F + V - E
(a)	Tetrahedron	4	4	8	6	2
(b)	Cube	6	8	14	12	2
(c)	Pentagonal prism	7	10	17	15	2