Solids

Introduction:

- Solids are three-dimensional (3D) objects that have length, width, and height.
- Unlike flat, two-dimensional shapes, solids take up space and can be touched and held.
- Examples of solids include cubes, cylinders, cones, spheres, pyramids, and cuboid.

Properties of Common Solids:

i. Cube:

- All edges are equal in length.
- All faces are squares.
- Has 6 faces, 12 edges, and 8 vertices (corners).

ii. Cuboid:

- Similar to a cube, but with rectangular faces.
- Has 6 faces (4 rectangular and 2 square faces are possible), 12 edges, and 8 vertices.

iii. Sphere:

- Perfectly round, like a ball.
- No edges, no vertices, only one curved surface.

iv. Cone:

- A flat circular base and a curved surface that meets at a single point (vertex).
- Has 1 edge, 1 curved surface, and 1 vertex.

v. Cylinder:

- Two parallel circular bases connected by a curved surface.
- Has 2 edges and 1 curved surface.
- No vertices.



vi. Pyramid:

- A flat base (can be any polygon) and triangular faces that meet at a single point (vertex).
- Number of faces, edges, and vertices depends on the base shape.

Examples with Solutions:

Example:

Problem: What solid object has 6 equal square faces and 8 vertices?

Solution: This is a cube.

Answer: Cube.

Example:

Problem: Name a solid that has a curved surface and no edges or vertices.

Solution: This is a sphere.

Answer: Sphere.

Example:

Problem: Which solid has two parallel circular bases and no vertices?

Solution: This is a cylinder. **Answer:** Cylinder.

Example:

Problem: What solid object has a flat circular base, one curved surface, and a single vertex?

Solution: This is a cone.

Answer: Cone.

Example:

Problem: Identify the solid with a rectangular base, 12 edges, and 8 vertices.

Solution: This is a cuboid. **Answer:** Cuboid.

Summary Points:

- Solids are 3D objects that have length, width, and height.
- Each type of solid has unique properties, such as the number and shape of faces, edges, and vertices.
- Familiar solids include the cube, cuboid, sphere, cone, cylinder, and pyramid.
- Knowing these properties helps in identifying and differentiating between various solid objects.