



Geometry Journey Video Series

Program #11

**Polyhedrons and Solids of
Revolution**



**Satellite Broadcasting
VHS
and Internet/Intranet Streaming**

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Program Description

Why are some shapes good at supporting for structures that reach into the sky and others the world's favorite for sports? This video answers these questions by explaining the unique properties of each shape. All basic 3D figures are introduced, including the prism, parallelepiped, pyramid, frustum of a pyramid, cylinder, cone, frustum of a cone and sphere.

This program is the #11 episode in the fifteen 15-minute Geometry Journey Series.

Synopsis

This program will cover the following topics:

1. Introduction to Polyhedrons and Solids of Revolution
2. Prism
 - a) Oblique Prism, Right Prism, and Regular Prism
 - b) Oblique Parallelepiped, Right Parallelepiped, Rectangular Parallelepiped, and Cube
3. Pyramid
 - a) Frustum of a Pyramid
4. Right Cylinder
5. Right Cone
 - a) Frustum of a Cone
6. Sphere

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Student Worksheet

Name _____

Please define the following terms.

- 1) Prism
- 2) Parallelepiped
- 3) Pyramid
- 4) Frustum of a Pyramid
- 5) Cylinder
- 6) Cone
- 7) Frustum of a Cone
- 8) Sphere

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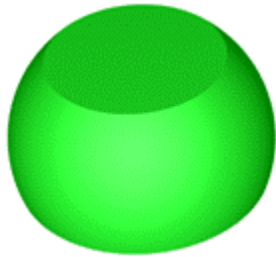
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Discussion Questions

Question: What is the 3D object shown in the figure? A polyhedron, a solid of revolution, or neither?



Front View



Please define the following terms.

Prism: A polyhedron with two parallel, congruent polygons being its bases and all the other faces being parallelograms.

Parallelepiped: A solid shape with six faces such that all the two opposite faces are parallel. In a parallelepiped, all six faces are parallelograms. When the faces are rectangles, it is called a rectangular parallelepiped. When the faces are squares, it is a cube.

Pyramid: A polyhedron whose one face is a polygon and the other faces are triangles with one common vertex.

Frustum of a Pyramid: The portion remaining with the original base when a pyramid is cut through by a plane parallel to its base.

Cylinder: A tubular solid with a circular base. Usually, this term implies a right cylinder that can be formed by rotating a rectangle about one of its sides.

Cone: Often referred to as the right cone. A cone is a solid formed by rotating a right triangle around one of its legs.

Frustum of a Cone: The portion remaining with the original base when a cone is cut through by a plane parallel to its base.

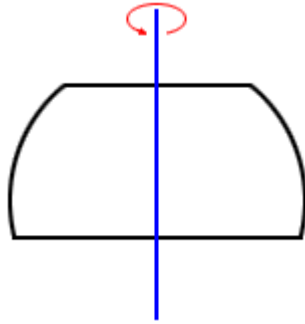
Sphere: A solid formed by turning a circle through a complete revolution about a diameter used as the axis.

Hints to Discussion Questions

Question: What is the 3D object shown in the figure? A polyhedron, a solid of revolution, or neither?



Hint: It is not a polyhedron because not all faces are polygonal faces. Since it can be formed by rotating the 2D shape shown below, it is a solid of revolution.



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