NAME_____

Module 10 **Coordinate Geometry and Spatial Visualization**
Lesson 4 **Three-Dimensional Shapes**

Lesson Notes 10.4

Lesson Objectives

- Identify three-dimensional geometric figures using models (rectangular prisms, cylinders, cones, pyramids, and spheres).
- Use properties of standard three-dimensional shapes to identify, to classify, and to describe them.

Subtopic 1 Polyhedra: Prisms and Pyramids

A _____ is a three-dimensional geometric figure.

A solid is called a polyhedron in which all the surfaces, called faces, are _____.

_____-- *pl* of polyhedron.

The intersections of the faces are the _____.

The points where three or more edges _____ are the vertices.

Polyhedra are classified by the number of _____.

Platonic solids

- _____ regular polyhedrons
- Exactly _____ different ones

A polyhedron with four faces is a _____.

A polyhedron with _____ faces is a hexahedron.

A polyhedron with eight faces is an _____.

A polyhedron with _____ faces is a dodecahedron.

A polyhedron with 20 faces is an _____.

Polyhedra are convex or _____.

A polyhedron is _____ if a line segment that lies entirely inside or on the polyhedron can connect all sets of two points on its surface.

A polyhedron is regular if all its _____ are congruent regular polygons.

A _____ has two congruent parallel faces.

The congruent _____ faces are called bases.

The _____ faces are rectangles or parallelograms.

The altitude of a prism is a _____ segment that joins the planes of the bases.

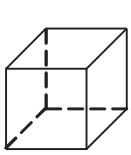
A pyramid has _____ base that can be any polygon.

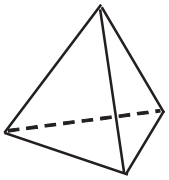
The lateral faces are _____ that meet at a common vertex.

The altitude is the perpendicular segment from the base to the _____.

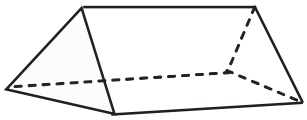
Prisms and pyramids are named by the shapes of their _____.

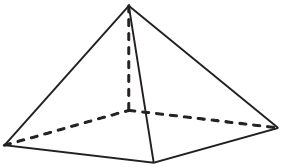
1 How many faces, edges, and vertices does each solid have?

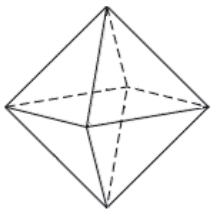




2 Classify each polyhedron.







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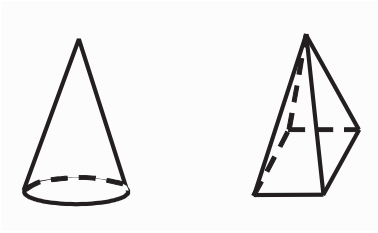
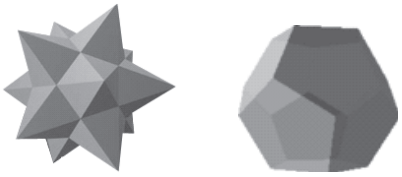
3 Sketch a rectangular prism.

4 Identify which of these figures is the polyhedron.



5 Classify each polyhedron as convex or nonconvex.



Subtopic 2 Spheres, Cylinders, and Cones

A _____ is the set of all points in space that are a given distance from a fixed point called the _____ of the sphere.

A sphere does not have _____ or vertices.

A line segment from the center of the sphere to a point on the sphere is a _____.

A cylinder has two parallel congruent _____ bases.

The bases are connected by a curved _____ surface.

The _____ is a line segment that joins the planes of the bases and is perpendicular to the bases.

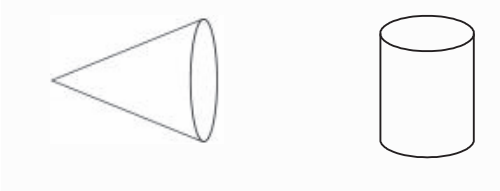
The radius of a _____ is also called the radius of the cylinder.

A _____ has one circular base and a single vertex.

The altitude is the perpendicular segment from the plane of the base to the _____.

The radius of the base is also called the _____ of the cone.

6 Identify each solid.



7 How is a sphere different from a cylinder?

8 Explain how to find the altitude and radius of each solid.