You will need your notebooks today.

8-3 Three-Dimensional Figures and Spatial Reasoning

CONTENT STANDARDS
Essential for understanding
6.G.2

What You'll Learn

To identify three-dimensional figures

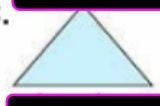
New Vocabulary three-dimensional figure, faces, edge, vertex, prism, cube, pyramid, cylinder, cone, sphere

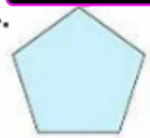
Check Skills You'll Need

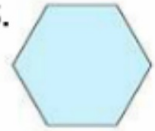
1. **Vocabulary Review** What is the least number of sides a *polygon* must have? [redacted]

Name each polygon.

2.  [redacted]

3.  [redacted]

4.  [redacted]

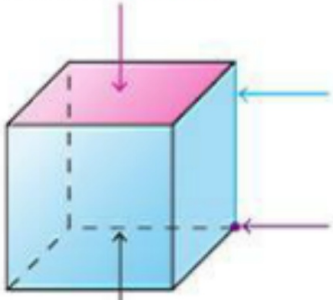
5.  [redacted]

Why Learn This?

Architects use shapes to design buildings. To identify these figures, you need to understand how they differ.

A **three-dimensional figure** is a figure that does not lie in a plane. It has three dimensions: length, width, and height.

The flat surfaces of a three-dimensional figure are called **faces**.



An **edge** is a segment where two faces meet.

A **vertex** is a point where two or more edges meet.

When you draw three-dimensional figures, use dashed lines to indicate "hidden" edges.

A **prism** is a three-dimensional figure with two parallel and congruent faces that are polygons. These faces are called bases. The prism above is a **cube**. All of its faces are congruent.

Vocabulary Tip

Three-dimensional is often abbreviated as 3-D.

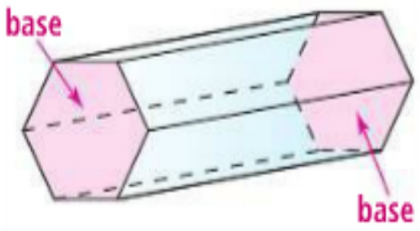
Base Shape	Name of Prism
Triangle	Triangular Prism
Rectangle	Rectangular Prism
Pentagon	Pentagonal Prism
Hexagon	Hexagonal Prism
Heptagon	Heptagonal Prism
Octagon	Octagonal Prism

You name a prism by the shape of its bases.

EXAMPLE 1 Naming Prisms

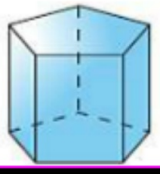
Name the prism shown.

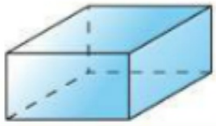
Each base is a hexagon. So the figure is a hexagonal prism.

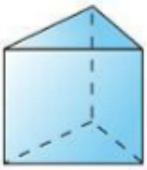


Quick Check

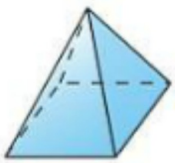
1. Name each prism.

a. 

b. 

c. 

A **pyramid** is a three-dimensional figure with one polygon for a base. All of the other faces are triangles. The faces all meet at one vertex. You name a pyramid by its base.



rectangular pyramid

Some three-dimensional figures do not have polygons for bases.

A **cylinder** has two congruent parallel bases that are circles.

A **cone** has one circular base and one vertex.

A **sphere** has no base.

EXAMPLE Identifying Three-Dimensional Figures

2 **Museum** The American Museum of Natural History in New York City is shown at the right. Name a three-dimensional figure in the photo.

The sphere in the photo is a three-dimensional figure without a base.

Check Your Understanding

Label each figure as a *cylinder*, *cone*, or *sphere*.

3.

[redacted]

4.

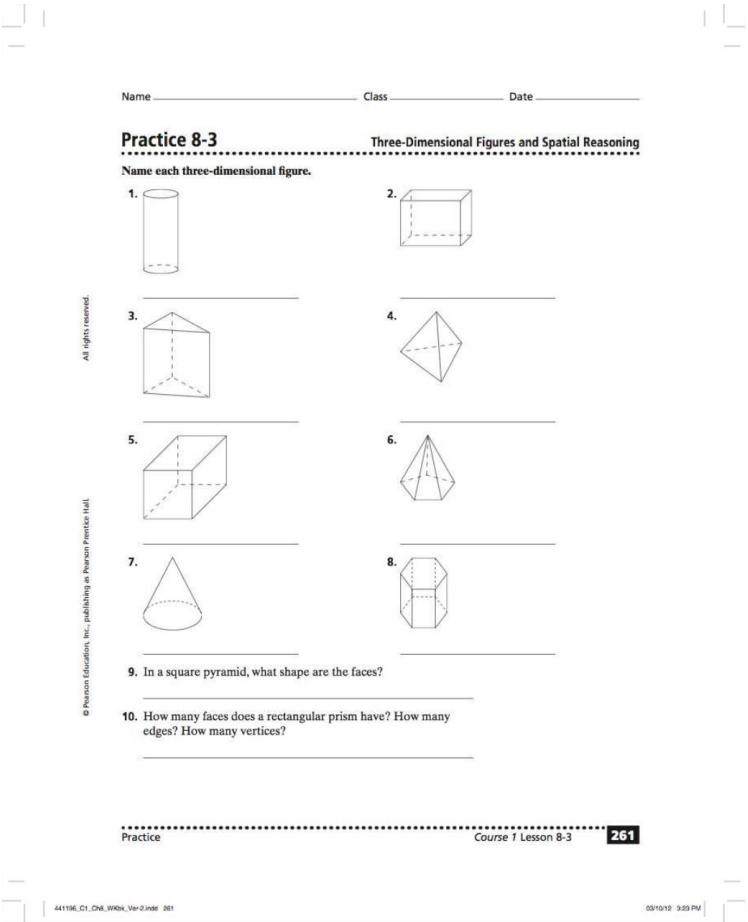
[redacted]

5.

[redacted]

You have a worksheet assignment, due tomorrow.

You have time to begin working on it now.



Name _____ Class _____ Date _____

Practice 8-3 Three-Dimensional Figures and Spatial Reasoning

Name each three-dimensional figure.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

9. In a square pyramid, what shape are the faces?

_____

10. How many faces does a rectangular prism have? How many edges? How many vertices?

_____