

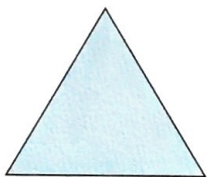
Check Skills You'll Need

1. Vocabulary Review

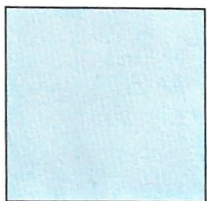
How is a *polygon* different from a circle?

Name and describe the angle measure of each regular polygon.

2.



3.



CONTENT STANDARD

Essential for understanding 8.G.9

Vocabulary Tip

Polyhedron means "many surfaces."

What You'll Learn

To identify solids, parts of solids, and skew line segments

New Vocabulary solids, prism, pyramid, cylinder, cone, polyhedron, skew lines

Why Learn This?

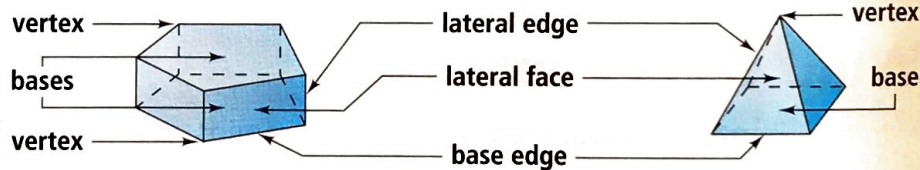
Our world is made up of largely three-dimensional figures, or solids. Artists use three-dimensional figures in sculptures.



Solids are objects that do not lie flat in a plane. They have length, width, and height. Below are some common solids.

A **prism** is a solid with two parallel bases that are congruent polygons. The lateral faces are parallelograms.

A **pyramid** is a solid with exactly one base, which is a polygon. The lateral faces are triangles.

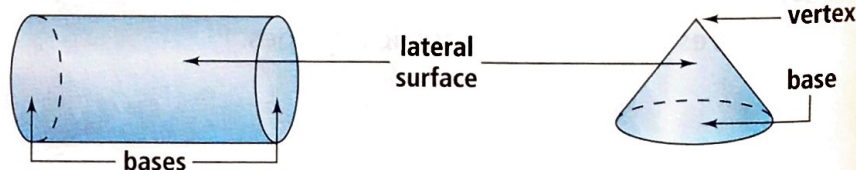


A prism is named for the shape of its bases. The prism above is a pentagonal prism.

A pyramid is named for the shape of its base. The pyramid above is a square pyramid.

A **cylinder** is a solid with two bases that are parallel, congruent circles.

A **cone** is a solid with exactly one circular base and one vertex.

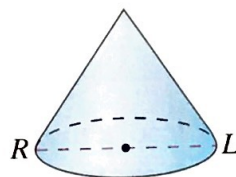


A **polyhedron** is a solid whose faces are polygons. Of the solids above, only prisms and pyramids are polyhedrons.

EXAMPLE Naming Solids and Their Parts

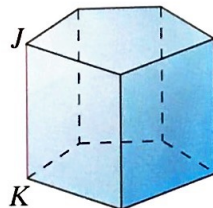
- 1 Refer to the figure at the right. Describe the base, name the figure, and name \overline{RL} .

The only base is a circle. The figure is a cone. \overline{RL} is a diameter.



Quick Check

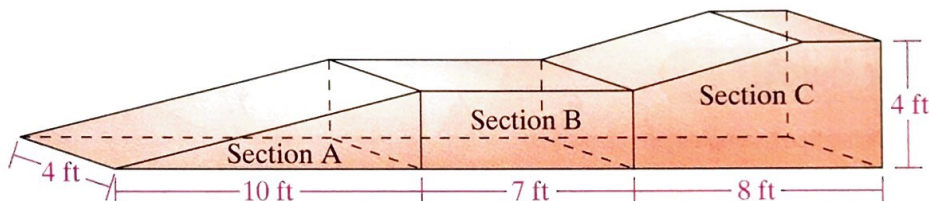
1. Refer to the figure at the right. Name the figure, \overline{JK} , and the points J and K .



Common solids are everywhere. Often, solids form complex structures.

EXAMPLE Recognizing Solids

- 2 **Set Design** A stage crew for the school play constructed the ramp shown. Name the three solids used to construct the ramp.



Section A is a triangular prism. Section B is a rectangular prism. Section C is a pentagonal prism.

Quick Check

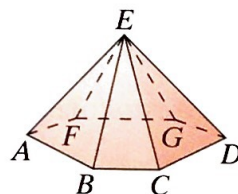
2. Name two solids that can be used to make up Section C.

Skew lines are lines that do not intersect and are not parallel. Unlike parallel or intersecting lines, skew lines do not lie in the same plane.

EXAMPLE Identifying Skew Line Segments

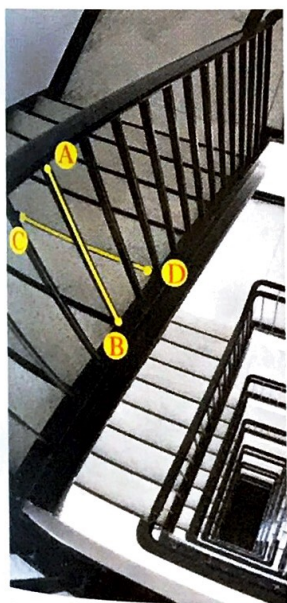
- 3 Name a pair of skew line segments and a pair of parallel line segments in the figure at the right.

\overline{AF} and \overline{ED} are skew. \overline{BC} and \overline{FG} are parallel.



Quick Check

3. **Open-Ended** Name a pair of intersecting line segments in the figure above. Are they skew line segments?

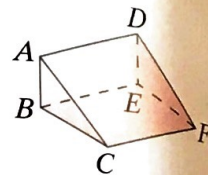


In this staircase, \overline{AB} and \overline{CD} are skew line segments.

Check Your Understanding

- Vocabulary** What is the difference between parallel lines and skew lines?

Use the figure at the right for Exercises 2–4.



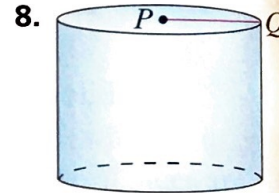
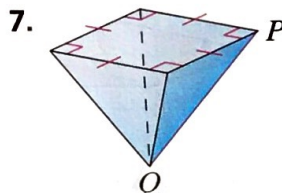
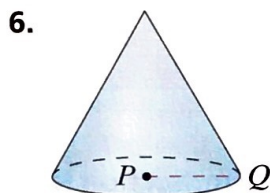
- The bases are two ?.
- The figure is a ? prism.
- \overline{CF} is a (lateral face, lateral edge).
- The three solids that make up the pencil shown below are a hexagonal prism, a cone, and a ?.



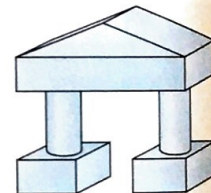
Homework Exercises

For more exercises, see Extra Skills and Word Problems.

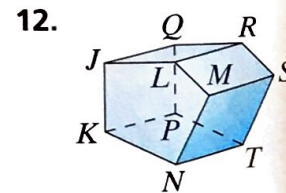
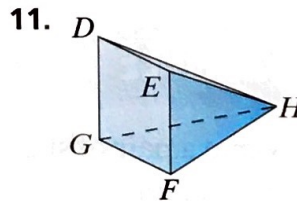
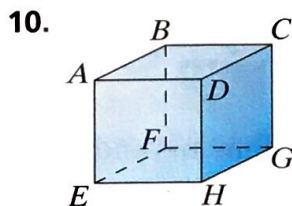
For each figure, describe the base, name the figure, and name \overline{PQ} .



9. **Models** For an art project, you are building a model like the one at the right out of balsa wood. What solids will you use to construct your model?

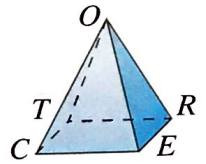


For each figure, name a pair of skew line segments and a pair of parallel line segments.



13. **Guided Problem Solving** A figure has exactly four lateral faces that are triangles. What name best describes this solid?
- Use the strategy *Draw a Picture*. Experiment with different drawings. Do you have a figure with four triangular lateral faces?
 - What is the name of your solid?

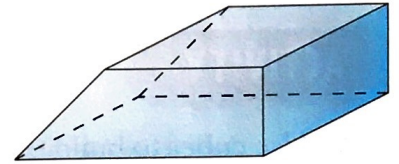
Use the rectangular pyramid at the right. State whether each pair of line segments is *intersecting*, *parallel*, or *skew*.



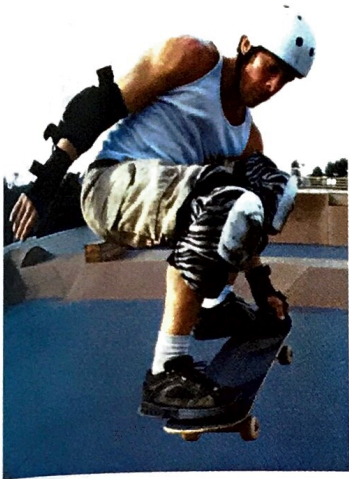
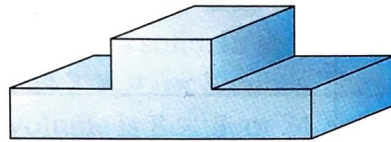
14. \overline{CO} , \overline{CE} 15. \overline{OR} , \overline{CE} 16. \overline{CT} , \overline{ER}

17. **Design** You are asked to help design the skating terrain for a local skate park. Explain which common solids you would choose to make the terrain challenging and fun for all skaters.

18. **Writing in Math** Kenji says the figure at the right is a trapezoidal prism. Esther says it is a triangular prism and rectangular prism combined. Are they both correct? Explain.



19. A figure has three lateral faces that are rectangles. Name the figure.
20. **Challenge** Describe one way the solid below can be made from three different types of prisms.

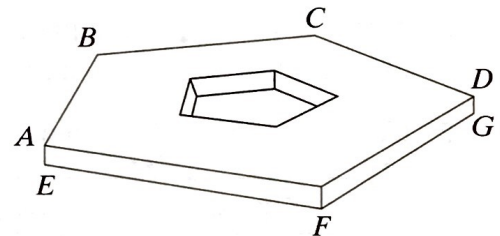


Test Prep and Mixed Review

Practice

Multiple Choice

21. The diagram at the right shows the outline of the Pentagon building in Washington D.C. with some of its vertexes labeled. Which pair of the building's sides are skew line segments?



- (A) AE and DG (C) BC and DG
 (B) EF and FG (D) AB and CD
22. A taxicab avoids traffic by traveling south for 5 km and then turning and traveling 8 km west and finally turning and traveling 1 km north. To the nearest kilometer, how far would the taxicab have traveled if it had taken a straight line between these points.
 (F) 9 km (G) 10 km (H) 11 km (J) 12 km
23. A certain hexagon has five congruent angles. Which of the following could be the measure of these congruent angles?
 (A) 40° (B) 60° (C) 72° (D) 110°

Find the measure of the supplement of each angle.

24. 62° 25. 114° 26. 93° 27. 148°

GO for Help

Exercises	See Lesson
24–27	7-1