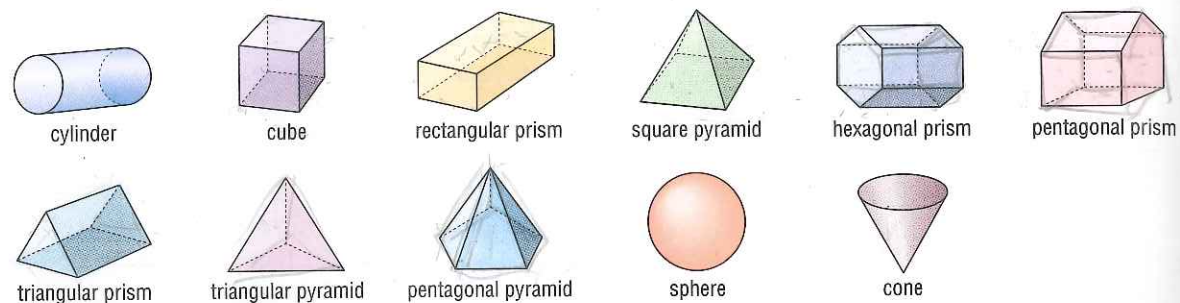


8.1 Three-Dimensional Solids

Activity: Study the Shapes

A set of geometric solids includes many different three-dimensional shapes.



Inquire

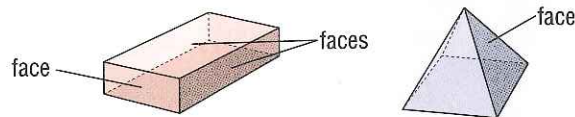
- Sort the solids shown into groups. Share with your classmates the criteria you used for sorting.
- Sort the solids into groups using different criteria. Which solids are grouped together in both of the ways you sorted? Compare your findings with your classmates'.
- In a set of children's building blocks, there are different numbers of each shape. Which shapes should make up the largest number of blocks? the smallest number of blocks? Explain your answers.

Activity: Use the Definition

A **polyhedron** is a three-dimensional figure with faces that are polygons.

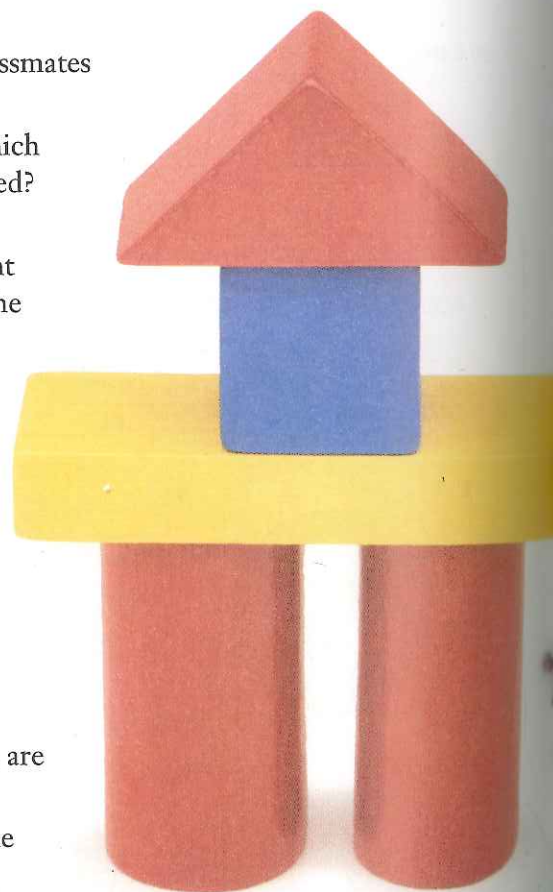
A rectangular prism is an example of a polyhedron.

A square pyramid is also a polyhedron.



Inquire

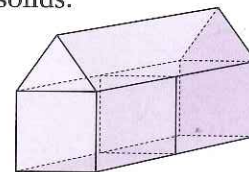
- Name the geometric solids at the top of the page that are not polyhedra. Explain why not.
- List the polyhedra shown at the top of the page. Name the polygons that form the surfaces of each polyhedron and state the number of each polygon needed.
- State how prisms and pyramids are the same. State how they are different. Compare your conclusions with your classmates'.



Practice

Use the solids shown on the opposite page to list the following.

- all the solids with more than 4 flat faces
- all the solids with at least 1 square face
- all the solids with no flat faces
- all the solids with no rectangular or square faces
- all the solids with at least one triangular face
- The model was built using 3 solids. Name the solids.

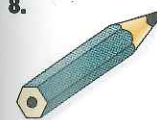


- Sketch a model of a structure built from at least 3 geometric solids. Name the solids you used.

Problems and Applications

Name the geometric solid suggested by each object.

8.



9.



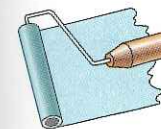
10.



11.



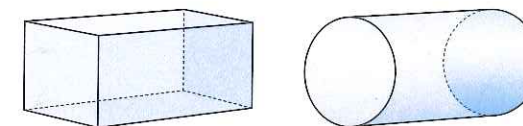
12.



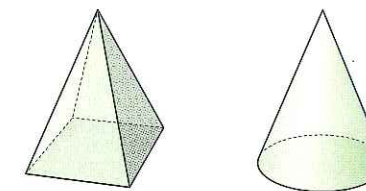
13.



- From the diagrams on the opposite page, describe how a prism is named.
 - Name the faces on an octagonal prism and state how many faces there are of each type.
- From the diagrams on the opposite page, describe how a pyramid is named.
 - Name the faces on a hexagonal pyramid and state how many faces there are of each type.
- Describe how a prism is like a cylinder. Describe how they are different.



- How are a pyramid and a cone alike? How are they different?



- Is it possible for a three-dimensional solid to have 2 rectangular faces and 4 square faces? Explain.
- Name the three-dimensional solids that will roll on a flat surface. Predict the path you think each one will trace. Check your prediction with a classmate, then roll each solid to see if you were correct.

LOGIC POWER

If July 17 falls on a Thursday, on which day of the week will December 31 fall?