Focus on…
After this lesson, you will be able to...
- draw and label top, front, and side views of 3-D objects
- build 3-D objects when given top, front, and side views

Materials
- 20 unit blocks
- masking tape
- isometric dot paper

Literacy Link
To describe a three-dimensional (3-D) object, count its faces, edges, and vertices.

Face: flat or curved surface
Edge: line segment where two faces meet
Vertex: point where three or more edges meet

Sable and Josh are trying to build exactly the same three-dimensional (3-D) object. They each have the same number of blocks, but they cannot see each other’s object.

Using a common vocabulary can help Sable and Josh build the same object.

Explore the Math

How can you describe and build three-dimensional objects?

1. Work with a partner. Create a 3-D object using ten unit blocks. Make sure your partner cannot see your object.

2. Describe your completed object to your partner, and have your partner try to build the same object. What key words did you use that were helpful?

3. Decide which faces will be the front and top of your object. Then determine which faces are the bottom, left side, right side, and back. You may wish to label the faces with tape. Then, describe your object to your partner again. Was it easier to describe this time?

**Reflect on Your Findings**

5. a) Do you need to know all the views to construct an object? If not, which ones would you use and why?

b) Explain why you might need to have only one side view, if the top and front views are also given.

c) Are any other views unnecessary? Are they needed to construct the same object?

**Example 1: Draw and Label Top, Front, and Side Views**

Using blank paper, draw the top, front, and side views of these items. Label each view.

a) Tissue box

![Tissue box image]

b) Compact disk case

![Compact disk case image]

**Solution**

a) top  
   front  
   side (end of the box)

b) top  
   front  
   side
Using blank paper, draw the top, front, and side views of this object.

Example 2: Sketch a Three-Dimensional Object When Given Views

These views were drawn for an object made of ten blocks. Sketch what the object looks like.

Solution

Use isometric dot paper to sketch the object.

Show You Know

An object is created using eight blocks. It has the following top, front, and side views. Sketch what the object looks like on isometric dot paper.

Did You Know?

Architects use top views to draw blueprints for buildings.
Example 3: Predict and Draw the Top, Front, and Side Views After a Rotation

The diagrams show the top, front, and side views of the computer tower.

You want to rotate the computer tower 90° clockwise on its base to fit into your new desk. Predict which view you believe will become the front view after the rotation. Then, draw the top, front, and side views after rotating the tower.

Solution

The original side view will become the new front view after the rotation.

Show You Know

Stand your MathLinks 8 student resource on your desk. Predict what the top, front, and side views will look like if you rotate it 90° clockwise about its spine. Then, draw the top, front, and side views after rotating the book.
Key Ideas

- A minimum of three views are needed to describe a 3-D object.
- Using the top, front, and side views, you can build or draw a 3-D object.

Communicate the Ideas

1. Raina insists that you need to tell her all six views so she can draw your object. Is she correct? Explain why or why not.

2. Are these views correct? Justify your answer.

Check Your Understanding

Practise

For help with #3 and #4, refer to Example 1 on pages 165–166.

3. Sketch and label the top, front, and side views.

a) 

b) Photo Album

c) 

4. Choose the correct top, front, and side view for this object and label each one.

A B C D

E F G
Choose one of the essential buildings that you discussed for your new community on page 163. Draw and label a front, side, and top view.