

3-D Figures

Reporting Category Geometry

Topic Solving problems involving three-dimensional figures

Primary SOL 8.9 The student will construct a three-dimensional model, given the top or bottom, side, and front views.

Materials

- Linking cubes
- 3-D Figures handout (attached)
- 3-D Figure Patterns handout (attached)
- Matching Cards (attached)

Vocabulary

three-dimensional figures (earlier grades)

top view, side view, bottom view, front view (8.9)

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Group students in pairs, and give each pair a set of linking cubes and a copy of the 3-D Figures handout. Have partners use the cubes to build three-dimensional models of the figures shown on the handout. After they have built each model, instruct them to draw the top, side, and front views of each figure. Have partners compare their drawings with those of another pair of students and discuss any differences.
2. Next, give each pair a copy of the 3-D Figure Patterns handout, and have them build three-dimensional models of the figures whose top, side, and front views are shown. Have partners compare their models with those of another student pair and discuss any differences.
3. Finally, give each student pair a set of the attached Matching Cards, and have them match the top, side, and front views to each figure. Then, have them build three-dimensional models of the figures.

Assessment

- **Questions**
 - What characteristics do you identify first when constructing a three-dimensional figure?
 - If you were given only the top and bottom views, would you be able to build the model accurately?
- **Journal/Writing Prompts**
 - Identify some careers that involve working with different views of three-dimensional figures.

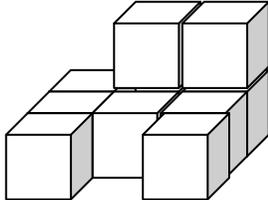
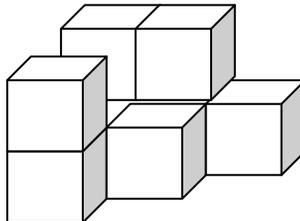
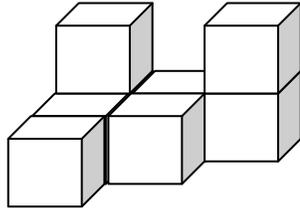
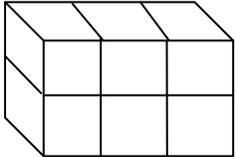
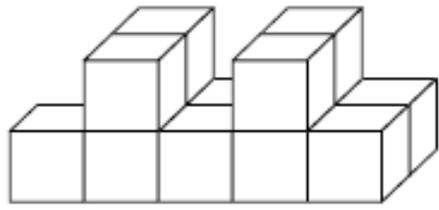
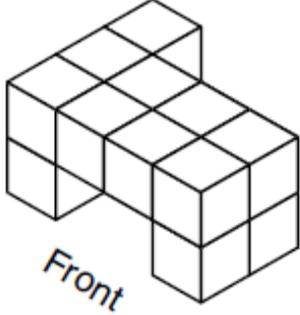
Extensions and Connections (for all students)

- Have students build original three-dimensional models and then draw the figures on isometric dot paper.
- Have each student build the first letter of his/her first name, using linking cubes, and then draw the three different views of it.
- Use computer software programs and Internet sites to demonstrate the different views and rotate three-dimensional figures.

Strategies for Differentiation

- Shade the front, top, and side views of a figure differently. Use the same shading for every figure so students can more readily distinguish the three different views.
- Model one of the figures at the front of the classroom, and have students come to the front to examine the figure in each view and explain how many cubes they can see in each.
- Start with figures that use fewer cubes to model, and then progress to examples that use more cubes.
- Build the three-dimensional models of the figures whose top, side, and front views are shown on the 3-D Figure Patterns handout, and then have students match the models to the views.

3-D Figures

<p>A</p> 	<p>B</p> 
<p>C</p> 	<p>D</p> 
<p>E</p> 	<p>F</p> 

3-D Figure Patterns

A

Top view Side view Front view

B

Top view Front view Right-side view

C

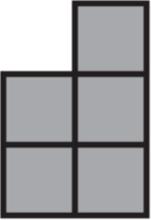
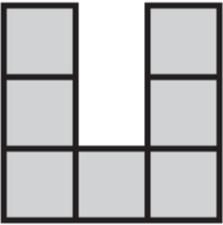
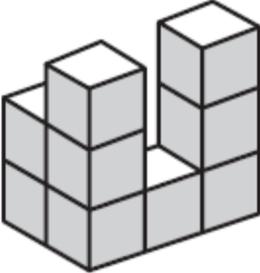
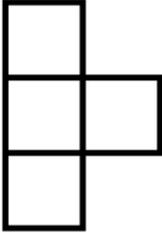
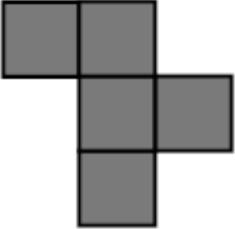
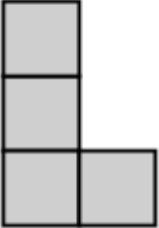
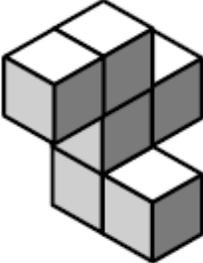
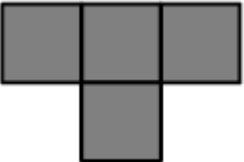
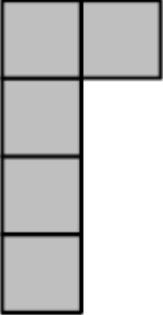
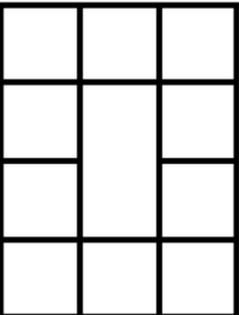
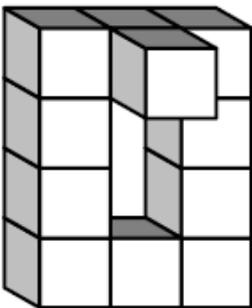
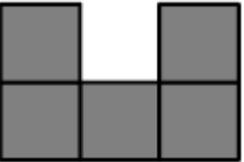
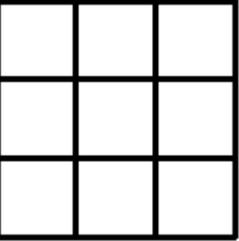
Top view Front view Side view

D

Top view Front view Side view

Matching Cards

Copy cards on cardstock, and cut out.

<p>Top View A</p> 	<p>Side View E</p> 	<p>Front View D</p> 	<p>Figure #1</p> 
<p>Top View C</p> 	<p>Side View D</p> 	<p>Front View A</p> 	<p>Figure #2</p> 
<p>Top View D</p> 	<p>Side View A</p> 	<p>Front View C</p> 	<p>Figure #3</p> 
<p>Top View B</p> 	<p>Side View C</p> 	<p>Front View E</p> 	<p>Figure #4</p> 