

<b>LessonTitle: 3D Perspectives, Blog the Dog, etc.</b>		<b>Geo 1.7</b>
<b>Utah State Core Standard and Indicators</b> Geometry Standard 3.3 Process Standards 1-5		
<b>Summary</b>		
This lesson includes several activities to build students' spatial reasoning. First students use linking cubes to build a dog, given views from top, bottom, front, and side. Second, they individually build a small structure with linking cubes and create an orthographic drawing—they exchange the drawings and try to reproduce the building. Third, they use Building Perspectives by Sunburst to build 3D solutions to the problems given using the software.		
<b>Enduring Understanding</b>	<b>Essential Questions</b>	
Geometry enables us to describe, analyze and understand our physical world. We build visual perspective through geometric modeling and spatial reasoning.	How do you predict three dimensional solids with two dimensional perspective?	
<b>Skill Focus</b>	<b>Vocabulary Focus</b>	
<ul style="list-style-type: none"> <li>Find views of a 3D figure built with cubes.</li> <li>Draw the isometric view of a 3D figure built with cubes.</li> <li>Develop spatial reasoning</li> </ul>		
<b>Assessment</b>		
<b>Materials:</b> Worksheets from sources listed below, linking cubes, isometric dot paper.		
<b>Launch</b>		
<b>Explore</b>		
<b>Summarize</b>		
<b>Apply</b>		

**Directions:** The following activities are essential experiences for students in visualizing, using spatial reasoning and geometric modeling.

1) Use “Building Perspectives” by Sunburst ( 1-800-321-7511) Give students a copy of the building sheet (see associated link) to help them record solutions to the problems.

**There are some puzzles below if you do not have this software.**

2) Have students build Blog the Dog using linking cubes.

3) Have students arrange 8-12 blocks and then draw the three orthographic views (top, right and front) of their stacks. This can be done in groups of 3 or 4 students. Student groups exchange orthographic drawings and build from the drawings.

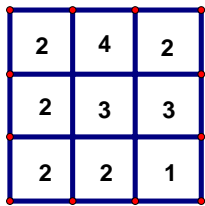
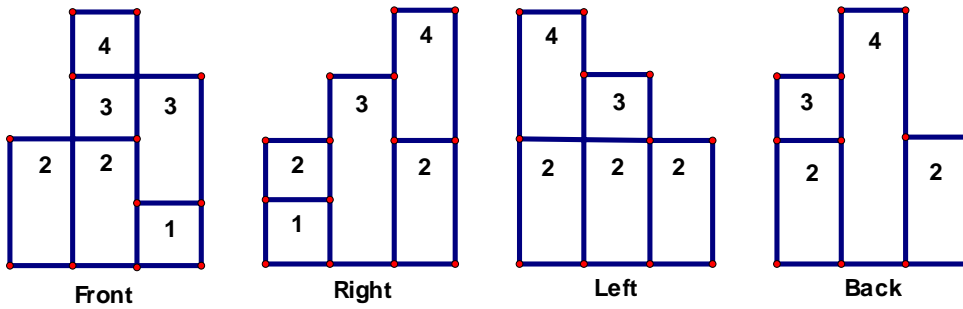
4) Other excellent activities for spatial Reasoning using cubes and isometric Drawings:

- “Isometric Explorations” from NCTM’s Navigating Through Geometry Grades 6-8, pages 65-66 and student pages 113-114
- Isometrics Interactive page: <http://illuminations.nctm.org/mathlets/isometric/index.html>
- See also NCTM i-math investigation: <http://illuminations.nctm.org/imath/6-8/isometric/index.html>
- Access activities from Spatial Visualization by Winter, Lappan, Phillips, Fitzgerald

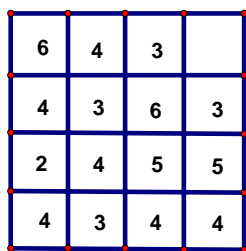
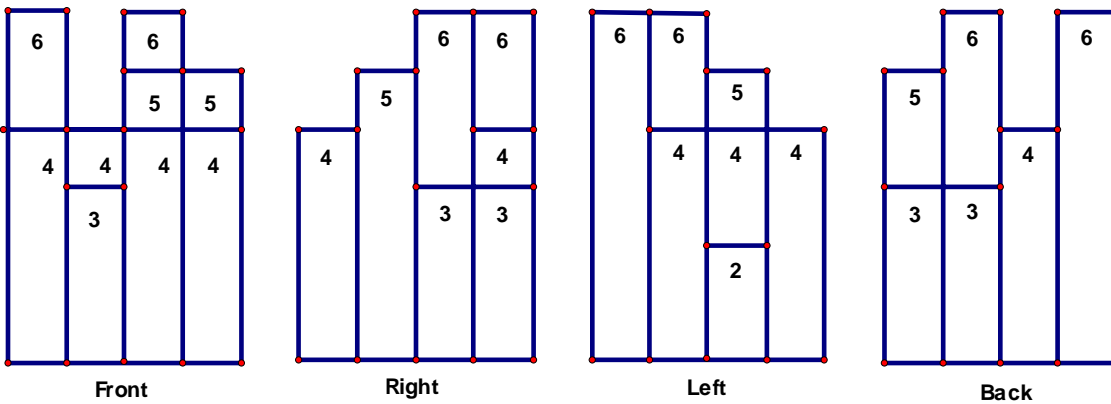
**Geo 1.7 Teacher’s instructions:**

1) Make a copy of the four perspectives. Cut them and give one to each student in the group. Each student uses connecting blocks to build a version of the building based on their view. Then the students join together to come up with their final version. Then they check the solution.

2) Have students build a building. Then using graph paper, they can create the four perspectives for another group. Groups trade puzzles and build the building.



Puzzle 1 solution



Puzzle 2 solution

# Blog the Dog

Build Blog the Dog using linking cubes. Refer to the views below.

