



## *Drexel-SDP GK-12 LESSON*

- Lesson Title and Identifier:

Title: Visualizing Math: Engineering Drawings

Identifier: 2.3

- Module: Math
- Subject Area (Unit): Math
- Grade Level: 6th
- Concept:

Front View

Right View

Top View

Orthographic View

Isometric View

- Objectives:

This exercise will introduce students to the basics of engineering drawings to allow students to experiment with viewing objects from different directions. This will also exercise their measurement skills.

- Keywords: engineering drawing, orthogonal, geometry

- PA Academic Standards:

**Math** 2.3 Measurement and Estimation  
2.9 Geometry

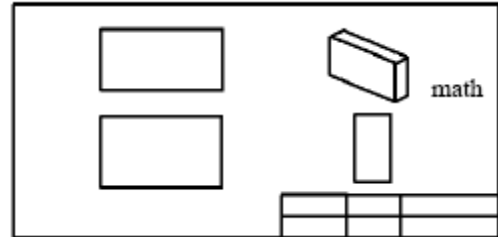
- Setting/Group Size: 30 students
- Duration/Time Required: 1 class period
- Materials List (include safety equipment if applicable)

Chalkboard and student answers

Pencil

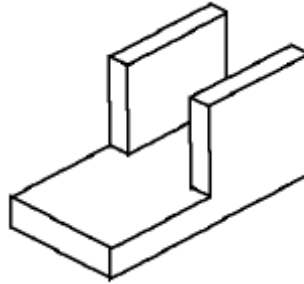
Paper

Clay Models (1 per group)



- **Methods and Procedure:**

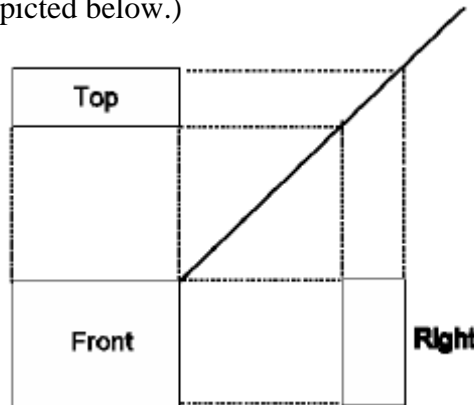
Step 1: Prepare a clay model. Create one for each table. Take these models out after introducing the subject. Below is an example:



Isometric view of model

Step 2: Review the parts of the topographic map. Discuss the profile and top view of mountain topography. (It helps if you have the Foss Landforms Mountain model)

Step 3: Introduce the standard three views used in engineering. (Top, Front, Right) At this point introduce the terms orthogonal and isometric views. (Top, front, and right. They must be aligned to each other. Their alignment is depicted below.)



The three orthogonal views

Step 4: Run through one example, like a box with a protrusion inside. (This is a great place to introduce hidden lines)

Step 5: Bring out the models. Have the students create their own drawings of the models. Remind students that their drawings do not have to all be the same; it depends on their point of view.

- **Assessment:** You will be evaluated on a scale from 0 to 4 on:

\_\_\_\_\_

Participation      Task Completion      Dimension Correctness

- **Authors:** Connie Gomez and Pat Wilkes