SCIED 411 Clinic 1 Lesson Plan  
November 6, 2008

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Grade Level and Topic  
7th Grade  
Topographic Maps – Understanding Scale and Contour Lines

Standards  
PA Academic Standards for Science and Technology (7th Grade)  
3.1.7-D. Explain scale as a way of relating concepts and ideas to one another by some measure.  
• Apply various applications of size and dimensions of scale to scientific, mathematical, and technological applications.  
• Describe scale as a form of ratio and apply to a life situation.

Instructional Objectives  
- Understand the abstract concept of a scale and recognize it on a map  
- Understand contour lines and recognize them on a topographic map  
- Use scale and contour lines to draw profile of Mount Nittany

Content Explanation  
Students will learn where a scale is located on a map; understanding scale is integral to visualizing what the landscape looks like. After locating the scale on topographic maps of the State College area, the students will use rulers to measure the scale and relate it to various places around their school’s location on the map. Once distance is understood, the students will be introduced to height through contour lines. On the maps used, one contour line represents twenty feet (20 ft.) in elevation. Every one hundred feet (100 ft.) in elevation is indicated by a contour index line, which is bolder than the common contour lines. Students will identify on the provided maps steep areas, flat areas, valleys and hills. The lesson will end with the students using their understanding of both scale and contour lines to draw the profile of Mount Nittany.

Administrative Considerations  
- Students not understanding scale or how to use a ruler  
- Maps not photocopying well  
- Broken rulers

Materials and Equipment  
- Photocopies of maps so that students can write on paper  
- 10 rulers with millimeter markings  
- 2 original topographic quadrangle maps of State College area  
- Paper for students to draw Mount Nittany profile
Lesson

**Elicit (1-2 minutes)**
- Ask students if they’ve seen a map before – what kind?

**Engage (1-2 minutes)**
- Have students identify parts of map by pointing to it
  - Scale
  - Compass rose
  - Legend

**Explore (3-4 minutes)**
- Have students use rulers and scale to measure distances on map
- What is the greatest distance between certain locations on the map?

**Explain (1-2 minutes)**
- Correct misconceptions about scale
- Introduce contour lines to measure elevation
- Show how contour index lines help to read topographic maps

**Explore (3-4 minutes)**
- Identify map using contour line indications
- Steepest and flattest parts of map?
- Valley and hill representation?

**Explain (1 minute)**
- Correct misconceptions about contour lines

**Elaborate (1 minute)**
- Introduce strategy of using contour index lines when too steep to differentiate between individual contour lines

**Evaluate (3-5 minutes)**
- Have students draw a profile of Mount Nittany to show understanding in both scale and contour lines

**Extend (1-2 minutes)**
- Invite students to apply lesson on ride home and around school
- Let them take home maps of area surrounding their school