



# Backyard STEM

## Project Area:

Environmental Science

Skill Level: Intermediate

## Learner Outcomes:

- ⇒ Be able to identify topographic map features.
- ⇒ Be able to create contour lines that represent elevation change.

## Science Skills:

Design a model, observe, reflect

Life Skills: Observing, Reasoning

Tags: maps, topography

⇒ Did you know that you can see the earth's surface from a bird's eye view? Check out Google Earth for free on your desktop: <http://www.google.com/earth/>

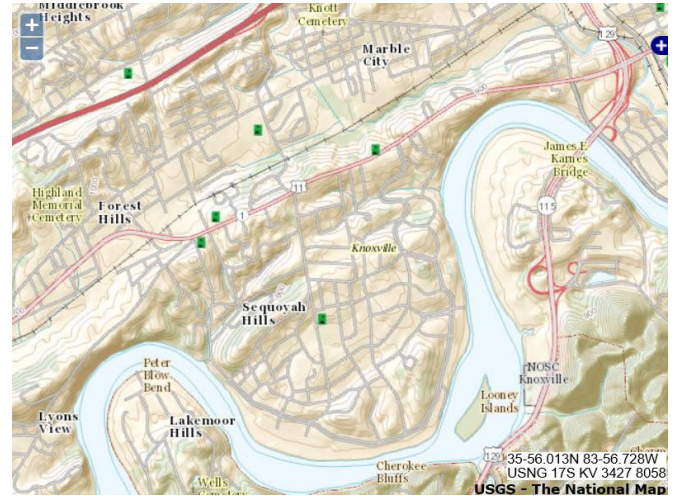
## Making a Mountain Map

### What is topography and how is it shown on a flat map?

Topographic maps are models that represent changes in elevation in the landscape. Equal elevations are depicted with contour lines, which do not ever cross, because there can only be one elevation in a single location.

### Consider these questions:

- ⇒ What is topography?
- ⇒ What does a topographic map show us?
- ⇒ What is a contour line?
- ⇒ What kinds of information do topographic maps provide us?



### Introduce Key Concepts:

Topography is the relief or change in elevation across the land.

Topographic maps are 2-dimensional models of the 3-dimensional landscape with relief. Topographic maps show elevation information using contour lines and points of interest (like roads, streams, lakes, and buildings). Landforms can be identified on a topographic map, such as ridges, valleys, rivers, floodplains, buttes, islands, plains, peaks, peninsulas, mesas, plateaus, etc.). All maps include a scale, which is used to measure relative distance on the map that indicates actual distance in the 3-dimensional landscape.

Contour lines join points on a map with equal elevation. Every contour line eventually connects at the ends (or runs off the map). Contour lines generally do not cross because there is only one elevation value for any given location, unless there is an overhanging ledge. Contour interval is the change in elevation between contour lines. The closer the contour lines are to each other, the steeper the slope of the landscape. The farther apart the contour lines, the flatter the landscape.

### ACTIVITY:

Examine the topographic map provided and answer the following:

- Can you locate your school on this map? Your home?
- What is the name of the nearest creek or river? \_\_\_\_\_
- Identify at least 5 geographic landforms you can find on the map (see next page):  
\_\_\_\_\_
- What is the scale of the map ( or what does one inch on the map represent?)?

1 inch = \_\_\_\_\_ (don't forget the units!)



# Environmental Science

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Environmental Science

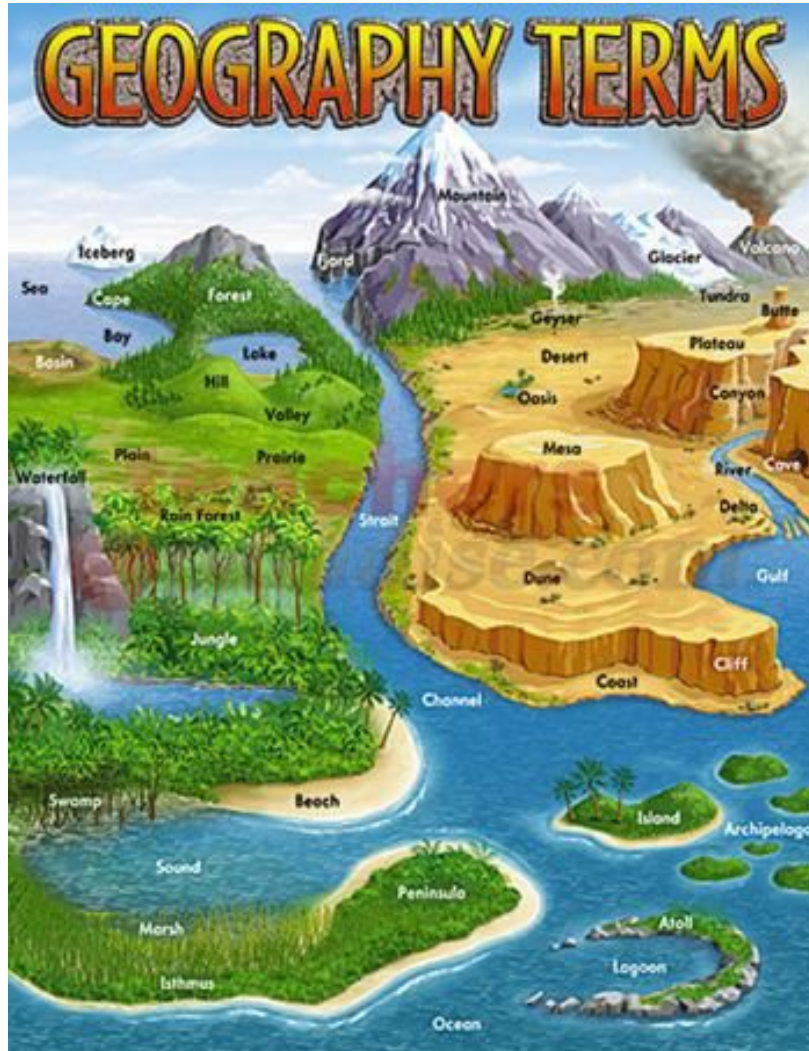
**Skill Level:** Intermediate

Did you know:

- The most common scale on a topographic map is 1:24,000. That means that one inch on the map represents 24,000 inches on earth, or 2,000 feet.
- The continental United States is over 15 million feet wide.
- The United States Geologic Survey has over 200,000 historical topographic maps in it's collection.

## Making a Mountain Map

A graphic that shows the location and general shape of geographic landforms (Source: <http://www.teachersparadise.com/c/chart-geography-terms-17-x-22-p-8967.html>).



Common Tennes-see Landforms:

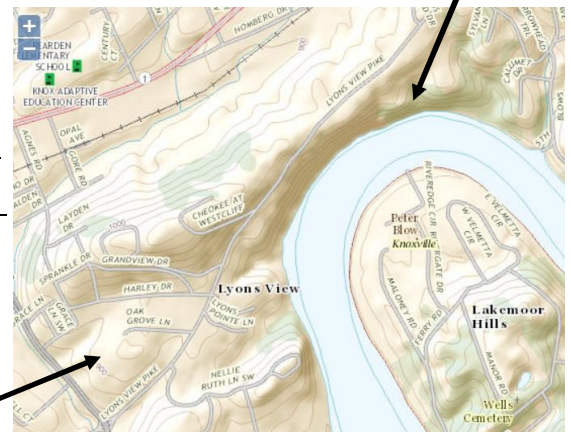
- Plateau
- Valley
- Channel
- River
- Swamp
- Bluff
- Mountain
- Hill
- Ridge
- Saddle
- Plain
- Basin
- Floodplain
- Lake

From the topographic map:

What is the highest elevation? \_\_\_\_\_

What is the lowest elevation? \_\_\_\_\_

On the figure to the right, fill in the boxes with the best description of the topography at the ends of the arrows as either "steep" or "flat."





**Investigate:**  
**Making a Mountain Landscape  
 and Creating it's Topographic  
 Map**

Google Earth:

What can you see from the aerial images? Compare and contrast what you can and cannot see with aerial photos:

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Activity:

Conduct the activity as instructed:

- Construct a simple playdough landscape.
- Create a topographic map of your landscape.
- Share and compare your map with your classmates.

Answer the following questions about your topographic map:

What is the lowest elevation? \_\_\_\_\_

What is the highest elevation? \_\_\_\_\_

How many contour lines are on your map? \_\_\_\_\_

What is the contour interval of your map? \_\_\_\_\_

What landforms did you create in your landscape? \_\_\_\_\_  
 \_\_\_\_\_

**Go Further!**

Find your closest stream on your topographic map again. Trace the blue line upstream to the *headwaters*. Where did the stream start? How far away from your school does the stream originate? Now trace the blue line downstream. How far does the stream go before a *tributary* enters the stream? What stream or body of water does the stream flow into? How far away is that *confluence*? What is the total length of stream?