

# Topographic Maps

## Cognitive Demand:

Interpreting  
Concepts (C)

Science Literacy (D)

Technological Design (T)

## Overview:

In this activity, students will learn about topography, and they will create their own topographic map using play dough.

## Materials:

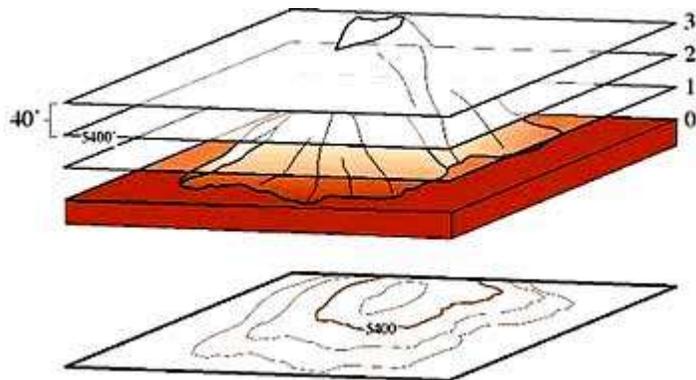
- Can of play dough
- Ruler
- Pencil
- 30 cm piece of thread or fishing line cut
- Sheet of plain white paper

## Additional Resources:

<https://www.mwcd.org/get-to-know-us/the-muskingum-river-watershed>

## **Teacher Background:**

- Mapmakers have invented resourceful ways to show three-dimensional topography in two-dimensional flat surface with the use of topographic maps.
- A topographic map shows elevation change in an area. It is a two-dimensional surface that represents 3-dimensional objects like hills, mountains, and valleys, as shown in the diagram below.



- Contour lines placed on the topographic map connect points of equal elevation. For example, if you were to walk on a contour line painted on the ground around the side of a hill, you would neither go up, or go down, but instead, remain level.
- The contour interval of the topographic map shows the difference in elevation from one contour line to the next. The contour interval is indicated at the bottom of the map. Moderately flat landscapes often are showed with small contour intervals of 10 feet or less. Maps in hilly areas, however, often have larger contour lines of 40 feet or more.
- Topographic maps can be used to determine the size and location of regional watershed systems. Areas of higher elevation, such as ridges or divides, separate watersheds.

# Topographic Maps

## Setting the Stage:

Group students into pairs. Each pair should have the materials listed above. Ask the students what is the difference between a street map, and a topographic map. Show an example of a topographic map. Explain that topographic maps are 2-dimensional surfaces that represent 3-dimensional objects.

## Acquisition of Learning:

1. Using the play dough, have students make a mountain and put it in the middle of their sheet of white paper.
2. Using the ruler and pencil point, have students put small holes in the mountain in a straight line at 1 cm intervals.
3. The students should put an "X" on the paper at the bottom of the line of pencil holes and then follow the steps below:
4. Trace the bottom of the mountain on the paper.
5. Wrap the thread evenly around the mountain at the first centimeter mark and pull both ends to cut through the dough.
6. Place the lower separated layer of play dough off to the side.
7. Place the rest of the mountain top on the white sheet of paper, be sure the holes line up with the "X"
8. Again, trace the mountain on the paper.
9. Wrap the thread evenly around the play dough at the second mark and pull both ends to cut through the play dough.
10. Place the lower separated piece of play dough on top of the first piece that was placed off to the side, aligning them as they were originally.
11. Repeat steps #7-10 until there are no sections left to cut with the thread.

## Closure:

Ask students what is the contour interval of the topographic map they created? (*1 cm*) What is represented when the contour lines are close together? (*steep slope*) What is represented when the contour lines are farther apart? (*flatter areas*)

## Extension:

Have students exchange the topographic maps that they created. Using the maps, ask students to find the correct play dough mountain the map represents.