

Investigating Topographic Maps

Investigation Question: How can a map be used to determine the high and low areas of an area?

Habits of Mind: Self Direction, Critical thinking, Creative thinking, Persistence

Look at the map of Hawaii below.



<http://www.lonelyplanet.com/maps/north-america/usa/hawaii/hawaii---the-big-island/>

Predict: [map_of_hawaii---the-big-island.jpg](http://www.lonelyplanet.com/maps/north-america/usa/hawaii/hawaii---the-big-island/)

• Where is the highest point on the island? _____
 What is the reason for your prediction? _____

• Where is the lowest point on the island? _____
 What is the reason for your prediction? _____

Knowledge Probe

View the keynote on topographic maps.

What differences are there between topographic maps and other maps?

What are the rules of topographic maps?

- _____
- _____
- _____

What other things are important to know about topographic maps

Messing About

Practice constructing a mountain of playdough and cutting slices with fishing line.

Investigation

Materials

- ✓ Container of Play Dough
- ✓ Ruler
- ✓ Wooden stick
- ✓ 30 cm piece of fishing line

Procedure

1. Using the Play Dough, make a mountain and place it in the middle of the paper.
3. Using the ruler and wooden stick, put small holes in the mountain
 - Poke holes 1 cm apart
 - Holes should form a straight line
4. Place an X on your paper at the each end of the line of holes.
5. Trace the bottom of the mountain on the paper.
6. Wrap the fishing line even around the mountain at the lowest centimeter mark. Pull both ends to cut evenly through the dough.
7. Carefully remove the top of the mountain.
8. Take the bottom of the mountain off the page and place it off to the side.

9. Place the rest of the mountain back on the paper, making sure the line of holes line up with the Xs.
 - Center the top of the mountain inside the tracing of the bottom as close to its original position as possible.
10. Trace the new bottom edge of the mountain on your paper.
11. Wrap the fishing line around the mountain at the second centimeter mark and carefully cut the dough again.
12. Place the lower piece of dough on top of the first piece that was cut aligning them as they were originally.
13. Repeat steps 4-11 until there aren't any more sections to cut. You have now created the topographic map of your mountain.

On the Map

1. Determine the interval for the contour lines on your map. Record the interval on the map.
2. Begin with the outermost contour line, label that 0 (sea level)
3. Label each contour line according to the interval you determined in step 1.
4. Draw a horizontal line that passes through the highest point on the map.
5. Label the lines on the profile (side view) to match the interval you determined.
6. Draw a dotted line down to the profile every time a contour line crosses the horizontal line.
7. Place a dot on the side view diagram on the line that matches the elevation of the contour line.

What is the elevation of the highest point on the mountain? _____

Knowledge Probe

Complete the matching exercises on topographic maps <http://ecosystems.psu.edu/youth/sftrc/lesson-plans/earth-sciences/lesson-plan-pdfs/reading-B>

Explanation

Claim: Using the map of Hawaii a student claims that Mount Mauna Kea is the highest point on the island. Do you agree or disagree with this claim? Use evidence from the map to support your decision.
