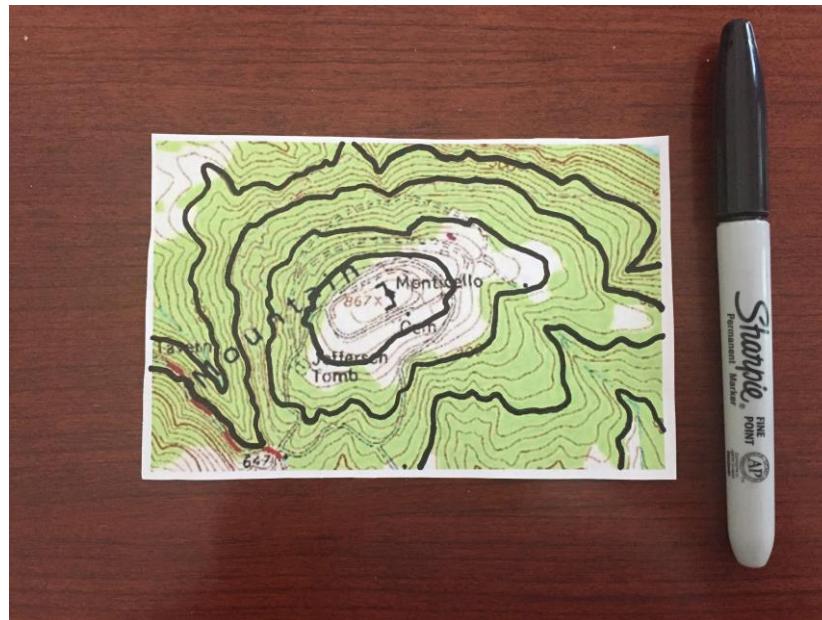


## **Instructions for Creating 3D Mountain Model**

(modified from: [https://online.wr.usgs.gov/outreach/topo\\_instructions.html](https://online.wr.usgs.gov/outreach/topo_instructions.html))

1. You will need to collect clear plastic containers (such as salad trays, pie covers, drink lids (for smaller versions). They must be clear and not opaque.
  - a. In order to construct Monticello (at 100 ft. contour intervals), you will need 5 clear plastic containers. (This means 40 containers for 8 groups)
  - b. In order to construct both Monticello and Montalto (at 100 ft. contour intervals), you need 14 clear plastic containers. (One of them for Montalto (the 400 ft contour interval) will not have any contour lines, but is necessary in order to compare the relative heights of the top mountaintops. Monticello will have contour intervals between 400-800 ft., while Montalto will have contour intervals between 400-1200 ft.)
  - c. In order to construct Montalto (100 ft. contour intervals), you will need 9 containers.
2. The topographic maps of Monticello and Montalto are below. Simply drag the image to enlarge or shrink it to fit to your clear plastic lids.
3. Once you have the correctly sized map, you can use a marker to darken just those contour lines you want to transfer to salad trays (see example below). In picking the topo lines to transfer, remember two things:
  - a. The difference in elevation between adjacent pairs of contour lines should always be the same.
  - b. This difference is called the contour interval – the contour interval for the Monticello/Montalto map is 100 feet.



4. Most mountain models seem to work best if you have 7 or 8 contour lines (equal to 7 or 8 salad trays).

5. Call the photocopy with the darkened contour lines the "master copy." Using scissors, trim the master copy so that it just fits the flat bottom of the inside of a salad tray. Getting the fit as tight as possible will help you put the master copy in the same position in each salad tray, and this will help the contour lines on the salad trays line up properly.
6. Position the master copy in the bottom of a salad tray, with the darkened contour lines against the plastic. Secure with tape so the master copy won't move while you are tracing.
7. Looking through the bottom of the salad tray at the master copy, use a Vis-a-vis or permanent marker (black seems to work best) to trace one contour line onto the salad tray. (as a side note, permanent marker can be "erased" or wiped away if it is traced over with a dry erase marker)
8. Remove the master copy and position it in a second tray. Trace another contour line onto the second salad tray.
9. Continue until you have a different contour line on each salad tray. Add the name of the feature, a scale bar (showing how long a mile is, for example), and a north arrow on the top or bottom salad tray. Label each tray with the elevation of the contour line on that tray. Stack them up and be amazed!

*You can also cut out the map, and trace lines with the plastic container on top of it. Ask students to align the tray at the same spot for each contour interval by marking an X in the middle of the tray and having them line up the X with the same feature each time they trace a line.*

See the images below for visual reference (note that this map does not have the contour lines pre-drawn):

***Topographic map of Monticello and Montalto, with Charlottesville in the upper left (see student handouts)***



***800 ft. interval on the first container.***



*700 ft. interval on the second container.*



*600 ft. contour interval*



*500 ft. contour interval*



*400 ft. contour interval*



*The final product*



*Another version of this activity that involves cutting out each contour interval can be found, with visuals, here: <http://www.raftbayarea.org/ideas/Making%20Mountain%20Models.pdf>*

**Topographic images of Monticello and Montalto  
(should be scaled to the clear plastic containers)**

