

Locate Your Watershed

15 Dry Erase Markers

1 Full Topographic Map Set - A

Mountain View (optional) 1 - NNWW	Milpitas (essential) 2 - NW	Calaveras Reservoir (essential) 3 - NE	Mount Day (optional) 4 - NNEE
Cupertino (optional) 5 - WW	San Jose West (essential) 6 - W	San Jose East (essential) 7 - E	Lick Observatory (optional) 8 - EE
Castle Rock Ridge (essential) 9 - SSWW	Los Gatos (essential) 10 - SW	Santa Teresa Hills (essential) 11 - SE	Morgan Hill (optional) 12 - SSEE

3 Partial Topographic Map Sets – B, C, D

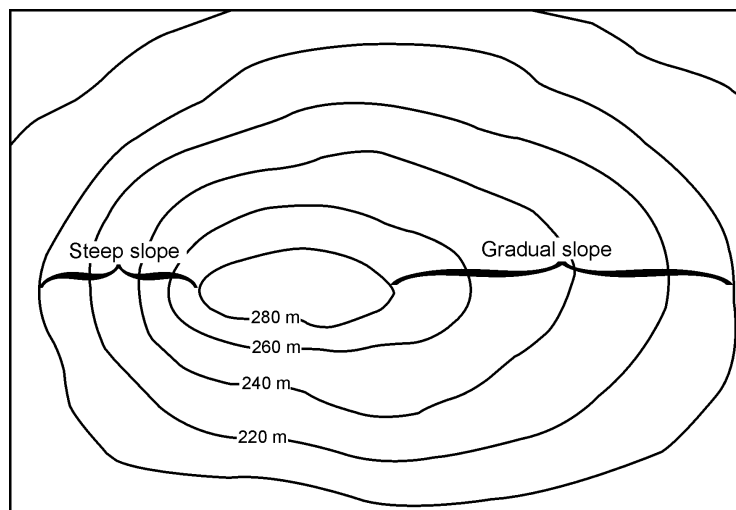
Mountain View (optional) 1 - NNWW	Milpitas (essential) 2 - NW		
Cupertino (optional) 5 - WW	San Jose West (essential) 6 - W	San Jose East (essential) 7 - E	
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Content

Topographic maps show roads, buildings, streams, lakes and buildings like regular, flat (planimetric) maps, but also show elevation. Elevation means height above sea level. Knowing the topography of an area is important for understanding the flow of water and weather patterns which are necessary for building construction and farming. Knowing topography is also important for traveling because the actual distance traveling up and down hills can be much farther than the “as the crow flies” view that planimetric maps show.

Elevation on topographic maps is shown by *contour lines*. These are imaginary lines that join points of equal elevation above sea level. Each successive line is a specific change in elevation. Notice in this diagram that each contour line shows a change of 20 meters in elevation. The closer the lines are to each other, the greater the steepness of the slope.



Procedures

Knuckle Topographic Map Activity

The concept of reading a topographic map can be confusing. Conduct this activity first to help students understand how to read them.

Materials: Pens, blue markers.

1. Hand out a pen to each student.
2. Tell students to make a fist with their non-writing hand and place their hand on the table with the knuckles facing up. Imagine that their hand is a mountain range and their knuckles are the tops of each mountain peak.
3. Use a pen to draw contour circles around the highest points of the mountains keeping the lines at the same height above the table surface. Then draw more contour lines below those, also keeping a constant height above the table. Continue to draw more contour lines, evenly spaced, down their hand all the way to the wrist.
4. Now use a dry erase marker to draw where streams would flow in the canyons in their mountain ranges (in between their fingers).
5. Then tell students to flatten out their hands to see what their topographic map looks like.



6. Discuss what the contour lines mean.

Topographic Map Activity

Pass out maps to your students. These USGS topographic maps show details of the southern San Francisco Bay area. Use as many or as few of the maps as you like. Note the “essential” and “optional” sections of the map sets noted in the diagram below. Suggestions for using maps in the classroom:

- Hand out one map section to each team. Have them share while looking at each map section, then, as a class, put together the entire map.
- Hand out one map section to each student at random. Have them find the other students who have the same map set and put together the entire maps in teams.
- Hand out an entire map to each team. Have them share while looking at each map section, then put together the entire map as a team.

Give students time to explore their maps, talk about what they think different features of the map are (creeks, forest, hills, lakes). Have students try to identify their favorite places on the map. Point out to students a mountain top, a body of water, a steep canyon, and the path of streams.

Pass out dry erase markers and tell students to find the uppermost end of a stream – this will most likely be by a ridge. Tell students to carefully trace the path of water from upper elevations, through valleys, through developed areas, and then to lakes or bays.

Ask students if there are any places where the water seems to disappear and later reappear? Ask students what this may mean (culverts underground). Ask if they notice any pattern to the locations of reservoirs or treatment plants (always before water enters a bay, near the mouth). Challenge students to find the ridgelines or boundaries surrounding one watershed.

Now take each map section and place together on the floor or a table to view the entire south bay. Ask students what they notice now that they can see the other map sections.