



4. What is the longest distance across the lake? Hint: You *could* use a ruler, but that's not the easiest way to do it.

5. What would Crater Lake's lake bottom area look like, if the lake were drained completely? Would the bottom be flat? Would it have mountains?

6. What evidence is there on the map of Crater Lake's **volcanic** origin?

*Mt. St. Helens (1981) topographic map*

7. **Who** produced this map? Of all the topo maps you are using in this lab, this has the most recent date. How come (specifically, why aren't we using the 1950s era map)?

8. What is the longest distance across the **caldera**? Hint: is the scale of this map the same as the previous map? So how does this caldera's size compare to Crater Lake's size?

9. Apart from the obvious 1980 event, how do you know that Mt. St. Helens has a volcanic origin? Hint: You may wish to look at a larger map in the southwest corner of the room.

10. Why didn't the Mt. St. Helens eruption of 1980 affect the upper Cowlitz River valley (where State Route 12 runs)? Hint: you may wish to look at the Mt. Rainier raised relief map as well.

11. What is the *highest* **elevation** on the map? What is the *lowest* elevation on the map? Include **units**. Hint: the highest elevation is typically the peak that the map is named after, but how do you figure out the lowest elevation?

12. What is the **latitude** and **longitude** of the Mt. St. Helens crater? Include **units** and **hemisphere designations**.

13. What is the slope of the inner wall of the **caldera**? What is the slope of the **southern flank** of the mountain? Which is *steeper*? Report slopes as a **percent slope** (calculate this by picking two contour lines on the slope, then find the difference in elevation between the two lines, divide by the lateral distance between the two lines and multiply the result by 100).

### *Geologic Map of Washington*

Geological maps have a different emphasis than topographical maps. Though the topography might lurk in the background of a geological map, it may be hard to figure out exactly where you are on a geological map!

14. Note the column headed "Geologic Units" to the right of the map. By what **two** characteristics are the geologic units divided into different colors?

15. Locate north Seattle. Write the **two-letter** designation of the local geologic unit. What is the apparent dominant **geologic force** that has shaped this area (hint: read the unit description and guess what the second letter of the designation stands for)?

16. Note the large portion of the colored areas on the map that have a “Q” as the first letter of that geologic unit. Give a **reason** that there is so much “Q” area.

17. Using the **geologic timescale** era names (found in chapter 1, or in numerous places around the room), locate the oldest rocks in Washington state. Describe broadly **where** these oldest rocks are found.

18. Note the “Explanation” of symbols at the bottom of the map. A “**contact**” is a line along which two geologic units meet. A “**fault**” is a breakage in the rocks along which movement has occurred.

The Seattle Fault runs along Interstate 90 from Lake Sammamish through downtown Seattle and under Puget Sound, out to the Kitsap Peninsula. Yet the fault is *not* shown on this map. Give a reason this might be so (hint: what’s the date of this map?).

19. Not all the faults shown on the map **active** (in other words, rocks are still slipping along it). **Sketch** a portion of the map that illustrates your answer. Hint: Do some of the faults seem to terminate abruptly when the color of the geologic unit changes? What does this indicate about the “brokenness” of the color without the fault and what does this imply about the fault?

20. As stated in the preface, maps are data. However, there is some room for **interpretation** on any map. In other words, someone has made a reasonable inference from the data and placed it on the map. Which of the maps, topographic or geologic, probably has more interpretation? Explain your choice.