Topographic Map Basics

Geology Mr. Traeger

Name: _____ Period: _____ Date: _____
Partnerôs Name: _____

Purpose
The purpose of this activity is to become acquainted with the basic concepts of topographic maps.

Materials

- pencil and Vis-à-vis pen
- Protractor
- Pasadena Topographic Map
- Chapter 3 in your textbook and page 697 (topo map symbols)
- Metric Ruler
- Navigation Compass

Part A: Introduction to Topographic Maps
Use the Pasadena Topographic Map to answer the following.

1. Find your house on the map. What is the approximate latitude and longitude of your house?						What is the elevation of your house in feet?
Latitude			**Longitude**			
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds	

2. Find La Cañada High School on the map. What is the approximate latitude and longitude of the school?						What is the elevation of the school in feet?
Latitude			**Longitude**			
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds	
3. What is topography?						I want to fly my airplane over La Cañada and wave hello to you. Tell me the elevation of the highest topography in feet so that I donôt crash my plane?

4. What is the definition of scale?	What is the scale on this map?	What is bigger? The scale on this map or the scale on the classroom globe?	
		Scale on Map	Scale on Globe
		Which one is <u>mathematically</u> bigger?	

5. What are all the ñsquigglyò brown lines on the map?	If the brown lines are close together, what does this mean?	If the brown lines are far apart, what does this mean?

6. What are the blue lines or circles on the map?	What is the name of the largest blue line on the map?

7. What is the contour interval for this map?	What does contour interval mean?

8. In what direction does the 210 freeway run?	In what direction does the 134 freeway run?	In what direction does the 2 freeway run?

9. What *type* of highway is the 210?	What *type* of highway is the 134?	What *type* of highway is the 2?

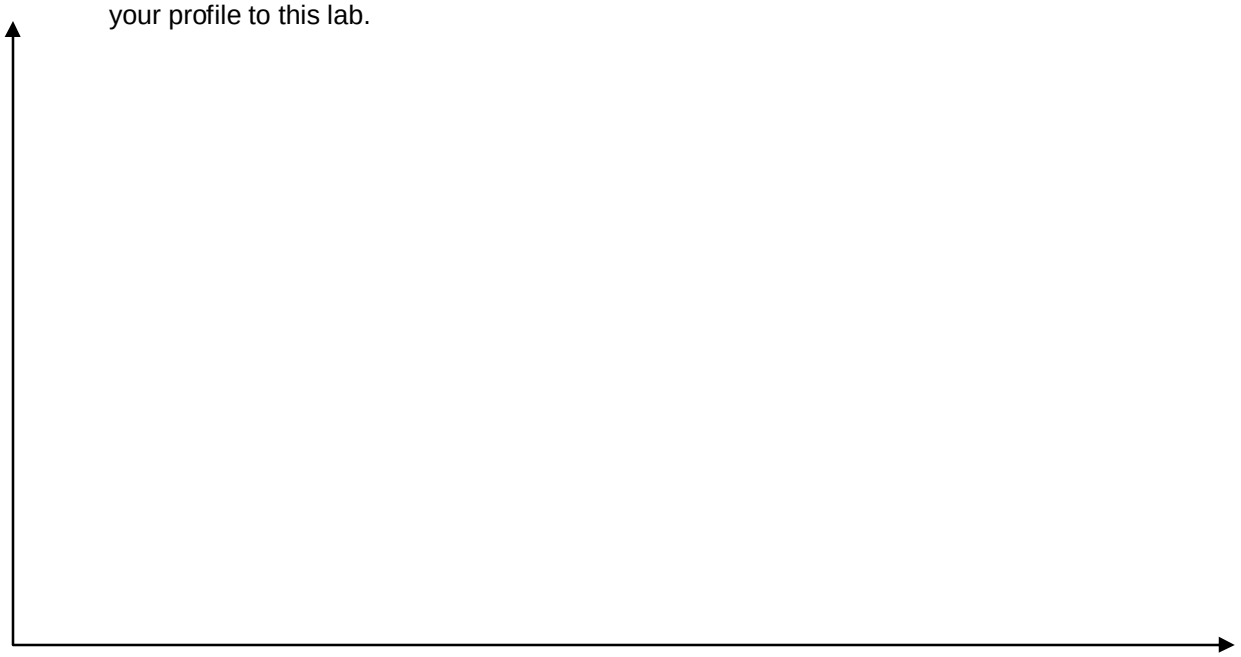
10. What does the green shading on the map indicate?

11. What is the length of Foothill Blvd. from the corner of Oak Grove near the High School to the end of the map in La Crescenta? State your answer in miles and kilometers.

12. What is the average slope (change in y/change in x) in feet per mile from the Jet Propulsion Laboratory to the Rose Bowl? Show your work!

13. What is the average slope from Gould Mesa Campground to the Jet Propulsion Laboratory in feet per mile? Show your work!

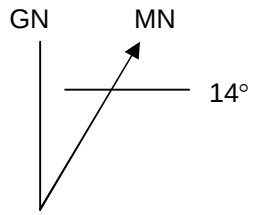
14. Find Rosemont Ave. in La Crescenta. Draw a vertical profile along Rosemont Ave. from Rockdell St. to La Crescenta Ave. How does the slope change from the top of the hill to the bottom of the hill? Calculate the average slope in feet per mile. **Attach** the sheet of paper you used to draw your profile to this lab.



Part B: Map and Compass Skills

1. What is a compass and how does it work?

2. What does this symbol on the map mean? What is the difference between true and magnetic north?



3. **Why** is there a difference between True North and Magnetic North? What's happening inside the planet?

4. How would you use a compass to orient your map to True North? Do it.

5. Go outside to the south part of the hallway outside of room 311 where you can get a view of Flintridge Sacred Heart Academy and the football field. Find the bell tower south of our position and you will have found Sacred Heart. Using your compass, take magnetic bearings to each landmark and record your data below.

Landmark	Magnetic Bearing	Magnetic Declination	True Bearing
Flintridge Sacred Heart Academy			
La Cañada High School Football Field Press Box			

6. Using a protractor and a ruler, draw intersecting lines in the direction of your true bearings on your map. Use a Vis-à-vis wet erase pen for this exercise. Make sure that you orient your protractor to North on the map before doing this.

7. Where do the two lines you drew on the map intersect? Are they anywhere near your current location? If you did your bearings correctly, these lines should intersect at the A building here at the high school. We call this method triangulation, but you only need two landmarks to find your location if you are lost.

8. Erase the lines you drew on your map by using a soft tissue and water.

Conclusion

Do you think that you would be able to guide a backpacking trip through the forest now that you know what you know about topographic maps and orienteering? Why or why not?