

NAME: \_\_\_\_\_ PERIOD: \_\_\_\_\_ DATE: \_\_\_\_\_

LAB PARTNERS: \_\_\_\_\_ LAB #34

## FACTORS AFFECTING WORLDWIDE CLIMATE

### INTRODUCTION

Climate involves an average of weather conditions over a large geographic region over a long period of time. It is affected by many factors such as:

1. Nearness to bodies of water
2. Latitude
3. Mountain ranges
4. Elevation
5. Prevailing winds
6. Ocean currents

Because of the great number of possible combinations of factors for different parts of the world, classification of climates is very complicated.

### OBJECTIVES

You will be able to determine the climate of an imaginary landmass based on an analysis of several climatic factors.

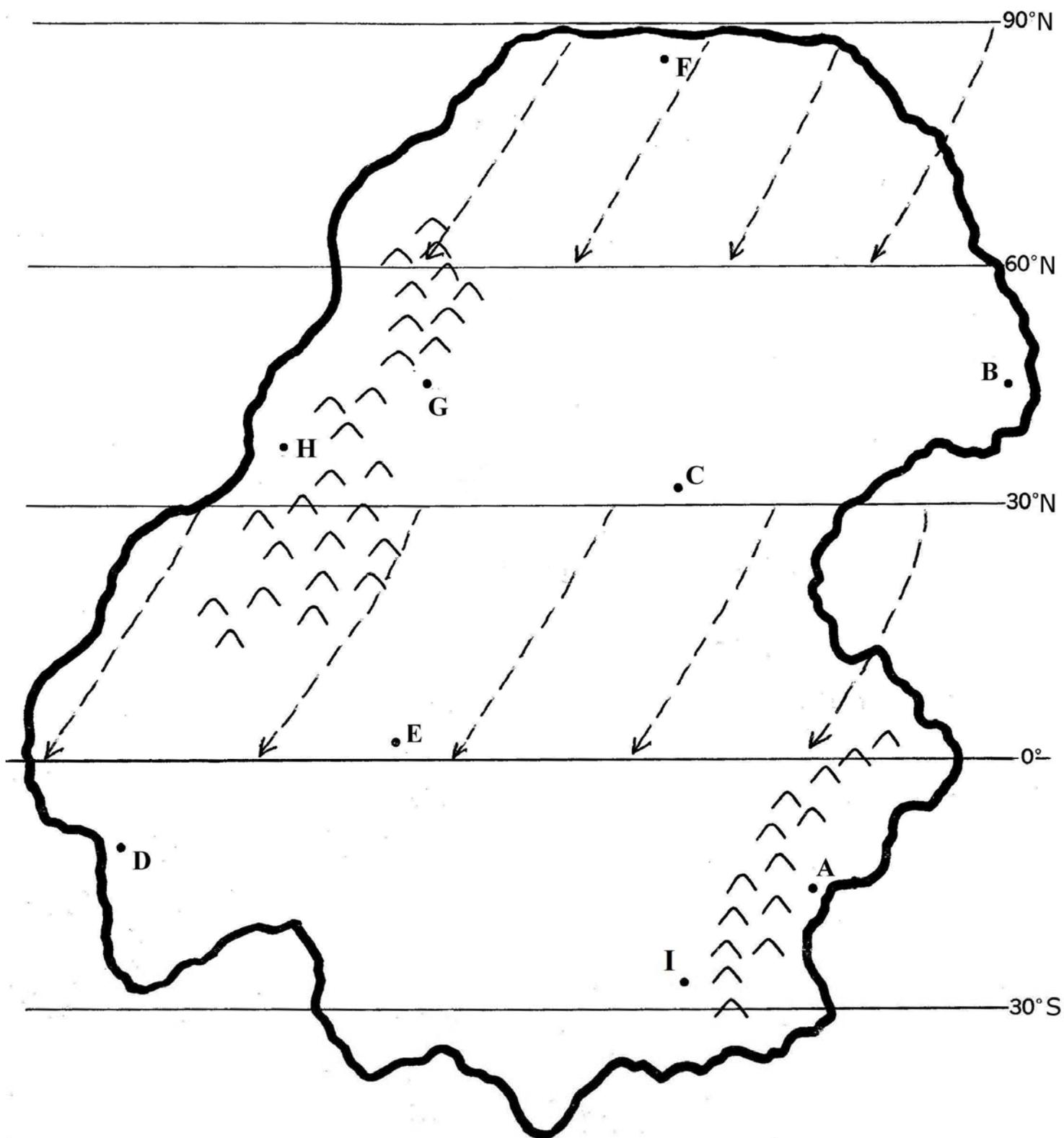
### MATERIALS

Planetary Wind Chart pg. 14 ESRT  
Red, Blue, and Black colored pencils

APPROXIMATE TIME 2 periods

### PROCEDURES

1. On the diagram of the continent provided, the wind pattern for the Northeasterlies (N.E.) has been drawn in for you. Using the Planetary Wind chart on pg. 14 of the ESRT complete the diagram by adding the following wind belts, use black pencil.
  - A. Southwesterlies (S.W.)
  - B. Southeasterlies (S.E.)
  - C. Northwesterlies (N.W.)
2. Warm ocean currents move along the east coast continents away from the equator toward the Polar Regions. Cold ocean currents move along the west coast of continents away from the poles and toward the equator. Using the Surface Ocean Currents Chart on pg. 4 of the ESRT draw in the warm ocean currents (using red pencil) and cold ocean currents (using blue pencil) on the diagram of the continent provided.
3. Answer laboratory questions 1 through 13.



## LABORATORY QUESTIONS

1. How does temperature vary with latitude? \_\_\_\_\_  
\_\_\_\_\_
2. Define "Average Annual Temperature." \_\_\_\_\_  
\_\_\_\_\_
3. Define Temperature Range. \_\_\_\_\_  
\_\_\_\_\_
4. How does elevation affect the climate of a location? \_\_\_\_\_  
\_\_\_\_\_
5. How does the presence of a mountain range affect the climate of a region? \_\_\_\_\_  
\_\_\_\_\_
6. How does the temperature of ocean currents affect climate? \_\_\_\_\_  
\_\_\_\_\_
7. Which lettered location(s) :
  - a. has no winter \_\_\_\_\_
  - b. has a temperate (mid-latitude) climate \_\_\_\_\_
  - c. has a climate influenced by altitude \_\_\_\_\_
  - d. is located on the windward side of a mountain \_\_\_\_\_
  - e. is located on the leeward side of a mountain \_\_\_\_\_
  - f. would be located in a desert \_\_\_\_\_
  - g. is influenced by a warm ocean current \_\_\_\_\_
  - h. is influenced by a cold ocean current \_\_\_\_\_
  - i. has cool summers and long cold winters \_\_\_\_\_
  - j. has a marine climate \_\_\_\_\_
  - k. has a continental climate \_\_\_\_\_
  - l. has a S.E. wind \_\_\_\_\_

8. At which latitudes is the surface air converging and rising? \_\_\_\_\_

At which latitudes is the surface air diverging and sinking? \_\_\_\_\_

9. The climate of most locations near the equator is warm and wet.

a. Explain why the climate is warm. \_\_\_\_\_

\_\_\_\_\_

b. Explain why the climate is wet. \_\_\_\_\_

\_\_\_\_\_

10. Explain the difference in temperature between points B and C \_\_\_\_\_

\_\_\_\_\_

11. How do ocean currents affect the climate location D on the continent? \_\_\_\_\_

\_\_\_\_\_

12. Using the ESRT, name a warm ocean current that affects the east coast of North America.

\_\_\_\_\_

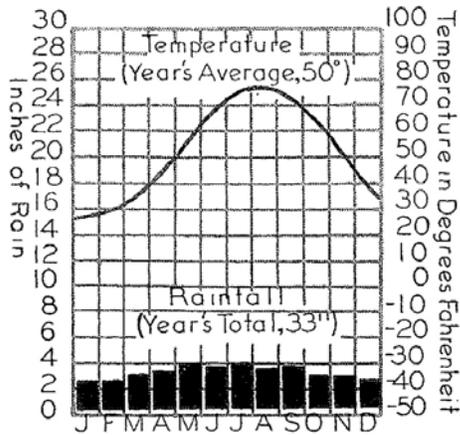
13. Compare the yearly average temperatures between location E and location F. \_\_\_\_\_

\_\_\_\_\_

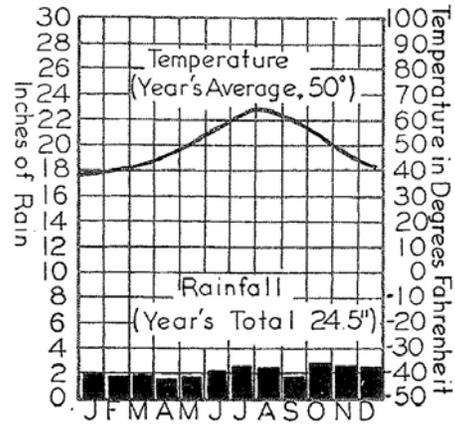
**PART B**

The following graphs represent the two main characteristics of climate precipitation and temperature for several locations on earth.

Location 1



Location 2



14. What is the temperature range for Location 1? \_\_\_\_\_

What is the temperature range for Location 2? \_\_\_\_\_

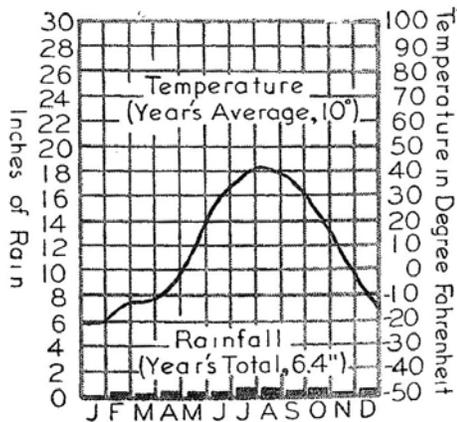
15. If both of these locations were at the same latitude explain one reason why the temperature ranges are different?

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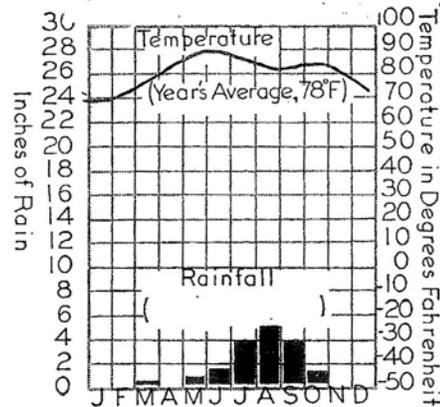


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Location 3



Location 4

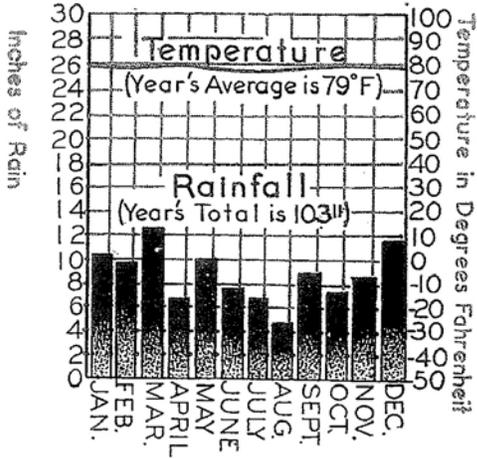


16. Determine the **total average** rainfall for the year at location 4. \_\_\_\_\_

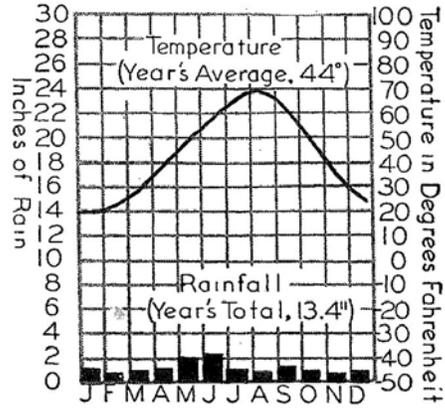
17. Why is the total rainfall so low for the entire year at location 3? \_\_\_\_\_

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Location 5



Location 6



18. Compare and contrast the total average temperature and rainfall for locations 5 & 6.

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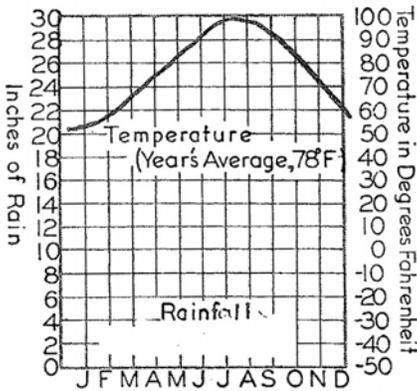
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19. Which location would best represent a tropical rain forest? \_\_\_\_\_

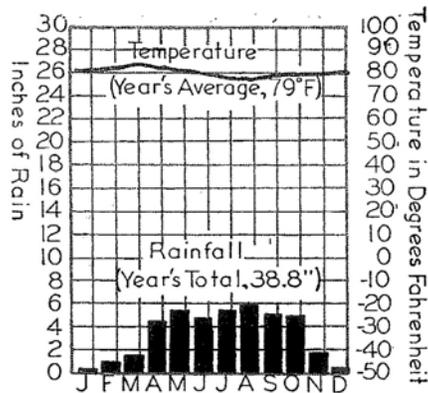
20. Which location would be at the higher latitude? \_\_\_\_\_

How can you tell? \_\_\_\_\_

Location 7



Location 8



21. How do you know that location 7 is in the northern hemisphere? \_\_\_\_\_

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22. If you were planning a vacation to locations 7 & 8 what would you pack for each location and why?

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