Name	Date



### The Weather Map Biggie Lab:

Bringing It All Together!

Now that you have learned about all of the different variables that contribute to daily changes in weather, it is now time to bring it all together by being able to construct, and then read and interpret a weather map. There are several tasks to complete over the course of this lab regarding temperature, atmospheric pressure, local wind patterns, precipitation, air masses, and fronts. Make sure to complete all tasks according to the instructions and then answer the analysis questions that follow. You will have to perform many of these tasks again on a lab test – so make sure <u>YOU</u> know how to do them ...

## **STAGE 1 TASKS**

#### MAP 1 – ISOTHERM MAP

1.	On map 1 you will only be completing one task: drawing isotherms.
	Use a pencil to draw isotherms at a 10°F interval.

\_\_ 2. Shade in the areas between the isotherms using the following colors:

 $70^{\circ}\text{F} - 80^{\circ}\text{F} - \text{red}$   $40^{\circ}\text{F} - 50^{\circ}\text{F} - \text{light blue}$   $60^{\circ}\text{F} - 70^{\circ}\text{F} - \text{orange}$   $30^{\circ}\text{F} - 40^{\circ}\text{F} - \text{dark blue}$   $50^{\circ}\text{F} - 60^{\circ}\text{F} - \text{light green}$   $20^{\circ}\text{F} - 30^{\circ}\text{F} - \text{purple}$ 

#### MAP 2 – SURFACE ANALYSIS MAP

3. In the chart provided below, convert the following "map symbol" pressures to millibars: For example 000 on the map really equals 1000.0 millibars. The standard interval for isobars on a weather map is 4-mb.

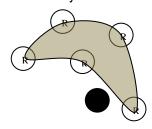
Weather Station	Pressure Conversion in
3-Digit Symbol	Millibars
040	
080	
120	
160	
200	
240	

	draw isobars between points of equal atmospheric  1 of this procedure. When you are done you will have eye" that will run off the map near Florida.
5. Using the correct colors, label the centers of	of high-pressure and low-pressure areas using a capital H and L.
6. Using a regular pencil, extend the wind direct draw a head of an arrow to show the direct	•
For example:	Cherieston
This is a southeast local wind.	This is <u>still</u> a southeast local wind, but your arrow also now shows the direction the wind is

7. The symbol "R" inside the station model circle indicates rain. The symbol "F" inside the station model circle indicates fog (it's just a different way to show present weather ...).

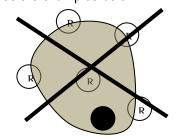
Using a green colored pencil, draw a line connecting all the stations with an "R" to enclose the area where precipitation is occurring. Then, VERY LIGHTLY shade in the area where precipitation is occurring (did I mention that you should do this VERY LIGHTLY?). See the examples below:

blowing toward.



#### **CORRECT!**

all the stations with an "R" are connected and create an enclosed area where precipitation is occurring



#### **INCORRECT!**

a station with 100% cloud cover but no indication of precipitation was included within the shaded area

# STOP HERE! YOU HAVE COMPLETED THE TASKS IN STAGE 1 OF THIS LABORATORY PROCEED TO SUMMARY QUESTIONS 1-12

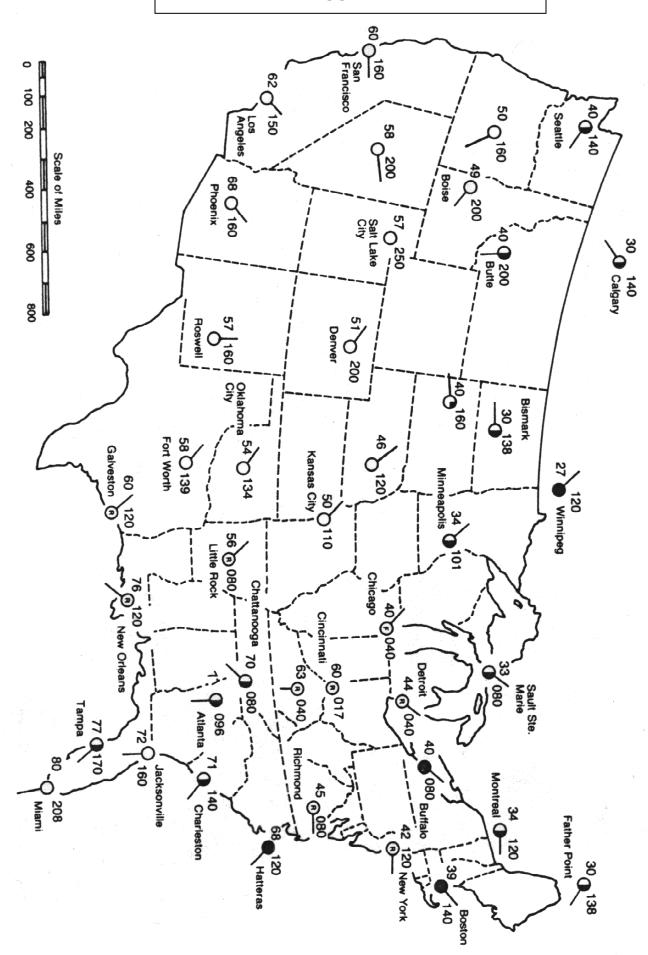
# **STAGE 2 TASKS**

	_ 8. On the map, label the location of the continental polar and maritime tropical air masses using the appropriate letter symbols and using appropriate colors.
	9. The lines drawn on the map from Galveston to Cincinnati and then Cincinnati to Hatteras on the eastern side of the U.S. represent the position of two weather fronts. One of the lines represents the position of a cold front, and the other represents the position of a warm front.
	Using the information on the map (and your NOTES!), correctly draw in the cold front and the warm front symbols on the proper line and in the appropriate color.
	STAGE 1 SUMMARY QUESTIONS
1.	Calculate the <u>temperature gradient</u> between Galveston and Kansas City. (Write formula, substitute data, solve with units, and round to nearest hundredths place)
2.	Calculate the <u>temperature gradient</u> between Cincinnati and Chicago.
	(Write formula, substitute data, solve with units, and round to nearest hundredths place)
3.	Over which city is the low pressure center located?
4.	Over which city is the high pressure center located?
5.	What is the highest pressure on the map (convert to millibars)?
c	What is the lowest pressure on the man (convert to millibers)?
٥.	What is the lowest pressure on the map (convert to millibars)?

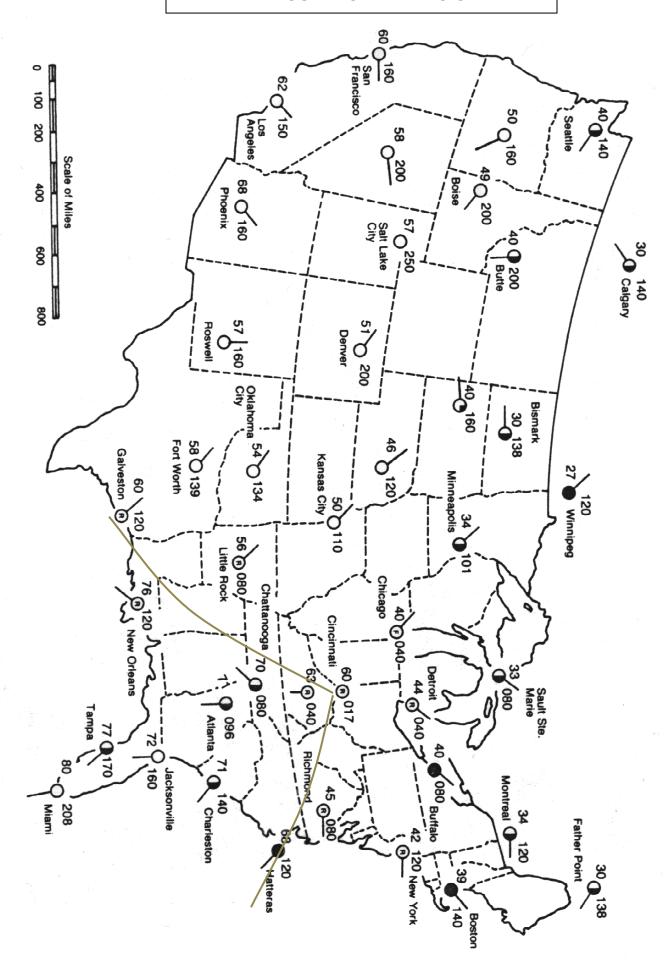
**You must convert the 3-digit pressure numbers to millibars before substituting into the formula**  (Write formula, substitute data, solve with units, and round to nearest thousandths place)
8. Calculate the <u>pressure gradient</u> between Atlanta and New Orleans.  **You must convert the 3-digit pressure numbers to millibars before substituting into the formula (Write formula, substitute data, solve with units, and round to nearest thousandths place)
9. a. Look at the local winds near the high-pressure center. What do you notice about all the winds surrounding the "H"?
b. In the space to the right, draw a sketch of the correct surface pattern of winds around a high-pressure center.
10. a. Look at the local winds near the low-pressure center. What do you notice about all the winds surrounding the "L"?
b. In the space to the right, draw a sketch of the correct surface pattern of winds around a low-pressure center.
11. Name four cities that are experiencing a northwest wind.
12. Name two cities that are experiencing a southwest wind.

# **STAGE 2 – SUMMARY QUESTIONS**

13.	What is the source region of the maritime tropical air mass on the map?
14.	What is the source region of the continental polar air mass on the map?
15.	Which pressure center are the fronts closest to?
16.	Name two cities that are presently experiencing heavy precipitation and will see temperatures decrease in the next few hours.
17.	Name a city that is most likely experiencing a steady drizzle and will see temperatures increase in the next few hours.



Weather Data Map



Weather Data Map