

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**CHALLENGE!**

## 11.3 Weather Maps

**READ**

You have learned how the Sun heats Earth and how the heating of land is different than the heating of water. In this skill sheet, you will analyze the national weather forecast and make inferences as to what causes differences in weather across the nation. To complete this skill sheet, you will need a national weather forecast from a daily newspaper and a map of North America from an atlas.

**PRACTICE**

### Analyzing temperature

Study the national weather forecast from a daily newspaper. Locate the list of the temperature and sky cover in cities around the country. Also, locate the weather map showing sunny regions, the temperature, high- and low-pressure regions, and fronts. Record the high and low temperatures for cities in the table below. Then find the difference between the two temperature readings. Sky cover and pressure will be filled in later.

City	High	Low	Temp difference	Sky cover	Pressure
Seattle, Washington					
Los Angeles, California					
Las Vegas, Nevada					
Phoenix, Arizona					
Atlanta, Georgia					
Tampa, Florida					
San Francisco, California					
Oklahoma City, Oklahoma					
New Orleans, Louisiana					
Kansas City, Kansas					
Tucson, Arizona					
Denver, Colorado					
Dallas, Texas					
Houston, Texas					
Minneapolis, Minnesota					
Memphis, Tennessee					
Chicago, Illinois					
Miami, Florida					
New York, New York					
Baltimore, Maryland					



**What causes the wide variety of temperature conditions across the map?**

Use the table on the first page to respond to the following questions. It will also be helpful for you to study a map of the United States that includes the Pacific and Atlantic Oceans and details about major topographical features.

1. Give examples of differences in the cities' high temperatures due to latitude. For example, Dallas, Texas is in a lower latitude than Seattle, Washington. Explain why these differences exist.
2. Give examples of differences in the cities' high temperatures due to geographical features such as the Pacific Ocean, the Rocky Mountains, the Great Lakes, or the Atlantic Ocean. Explain why geography influences temperatures.
3. Fill in the table for the sky cover for each city. How does the sky cover affect the temperatures of cities near the same latitude? Why do you think this is?

**What does atmospheric pressure tell us about the weather?**

4. On your weather map, over which states are areas of high pressure centered? Over which states are low-pressure areas centered?
5. In the sixth column of the table (the heading is Pressure), record whether you think each city is in a region of high pressure, low pressure, or in-between.
6. What kind of cloud cover or weather is associated with high-pressure regions? Look at the sky cover for the cities in the high-pressure regions. What do you think the humidity is like in these regions?
7. What kind of cloud cover or weather is associated with low-pressure regions? Look at the sky cover for the cities in the low-pressure regions. What do you think the humidity is like in these regions?
8. Locate the fronts shown on the weather map. The flags on the fronts tell us the direction of the wind. The cold fronts are symbolized by triangular flags, the warm fronts by semicircular flags. Are fronts associated with high- or low-pressure regions?
9. What type of weather is associated with a warm front? What type of weather is associated with a cold front?
10. Based on what you have learned so far about low- and high-pressure regions, let's investigate the effect they have on the wind. High-pressure regions tend to push air toward low-pressure regions. Do you think the air in a low-pressure region tends to sink or rise? Does the air in a high-pressure region sink or rise?
11. Based on those conclusions, how do you think low-pressure regions contribute to the formation of rainstorms?
12. Precipitation occurs when warm, moist air is cooled to a certain temperature called the dew point. At the dew point temperature water in the air condenses into droplets of water called "dew" and soon these droplets fall out of the sky as precipitation. Why would a low-pressure region be a good place for a volume of air to reach the dew point temperature?