Mapping Isotherms and Isobars

Part I: Pre-Lab questions

(1) When you look at a weather map, what do the colors red and blue usually represent?

(2) On a weather map, what does a big $H$ mean? What about a big $L$?

(3) Does air (wind) tend to flow from high to low, or low to high? Why?

(4) Isotherms and isobars are both types of contour lines. What is the difference between the two?

Part II: Isotherm map

A. Find the lowest temperature on the Isotherm Map.
B. Go to the nearest 10° F increment.
C. Draw isotherms at a 10° interval. Label each line.
D. Lightly shade in your map using the color key.
E. Answer the following questions:

<table>
<thead>
<tr>
<th>Color Key:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 70 – 80° → RED</td>
</tr>
<tr>
<td>• 60 – 70° → ORANGE</td>
</tr>
<tr>
<td>• 50 – 60° → YELLOW</td>
</tr>
<tr>
<td>• 40 – 50° → GREEN</td>
</tr>
<tr>
<td>• 30 – 40° → LIGHT BLUE</td>
</tr>
<tr>
<td>• 20 – 30° → DARK BLUE</td>
</tr>
<tr>
<td>• Less than 20° → PURPLE</td>
</tr>
</tbody>
</table>

1) Based on the isotherm map, in what direction would you head from Pennsylvania state to find warmer temperatures?

2) What should people in Pennsylvania expect to happen to their temperature over the next two days or so? Explain how you know.
Part III: Isobar map

A. Find the lowest pressure on the Isobar Map.
B. Draw the 992 mb isobar around the lowest pressure.
C. Complete isobars in increments of 4 mb up to the 1028 mb isobar. Label each line.
D. Label the low pressure center with an “L” and the high pressure center with an “H”.
E. Draw the direction the winds will flow around each of the two pressure centers.
F. Answer the following questions:

3) In what part of the US is the high pressure center located? _______________________

4) In what part of the US is the low pressure center located? _______________________

5) In general, air tends to move (toward / away from) a high pressure system. ________

6) Look at the diagrams on p. 538 – 539 in your textbook. Now, draw arrows to show how wind moves around a high vs. a low pressure zone (in the N. Hemisphere).

   H

   L

7) In the center of a _________ pressure zone, air tends to rise. In the center of a _________ pressure zone, air tends to sink.

8) A _________ pressure system is likely to result in cloud formation and precipitation. A _________ pressure system usually results in dry conditions, and fair weather.

9) Read about the formation of hurricanes on p. 575 – 576. Where and how do hurricanes form?

10) Is a hurricane a high or low pressure system? How can you tell?