

Pressure Activity
scaffolding activity

Introduction:

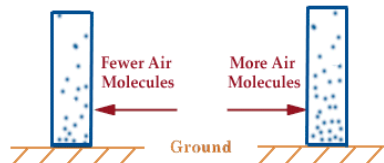
Though you may not realize it, the air has weight. All the air molecules in the atmosphere exert a force, or pressure, on our bodies. Atmospheric pressure is the force exerted by the weight of the air above an object or surface. Variations in pressure generate winds, which play a significant role in day to day weather conditions. The purpose of this activity is to introduce characteristics of pressure, high and low pressure centers, and a brief analysis of an idealized pressure field. Key words throughout this activity link directly to helper resources that provide useful information for answering the questions.

Characteristics of Pressure:

- 1) What are the different [units of pressure](#)? Which unit is used most by meteorologists?
- 2) Circle the correct response in the following sentence: Pressure (increases / decreases) [with height](#). Please explain why pressure changes this way with height.

High and Low Pressure Centers:

- 3) Draw the symbol that represents a [high pressure center](#) on a weather map. Do the same for a [low pressure center](#).
- 4) Pictured below are two imaginary columns of air molecules exerting pressure on the surfaces below them. The left column contains fewer air molecules than the right column.

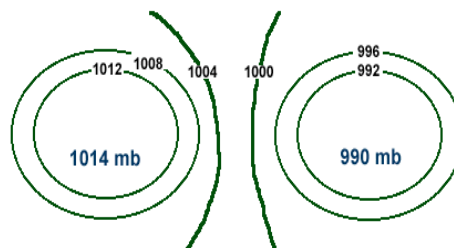


Which column is more representative of the atmosphere above a [high pressure center](#)? Which one is more likely to be found over a [low pressure](#)? Using the correct symbols for labeling high and low pressure centers (see question #3), mark your answers beneath the appropriate columns in the diagram above. You may label the diagram in one of two ways; 1) by printing out a copy of this activity and marking your answers directly onto the printout or 2) by saving the image into your favorite graphics software and modifying the image using that graphics package.

Analysis of a Pressure Field:

5) The diagram below is an idealized pressure field resembling those commonly found on surface weather maps. The numbers along each contour indicate the pressure value in millibars for that particular contour. Use the diagram below to answer the following questions.

- What are the green [contours](#)? What do they represent?



- Label the diagram above to indicate the positions of the [high](#) and [low](#) pressure centers. Please use the correct symbols (see question #3). You may label the diagram in one of two ways; 1) by printing out a copy of this activity and marking your answers directly onto the printout or 2) by saving the image into your favorite graphics software and modifying the image using that graphics package.
- Draw an arrow (on the diagram above) to indicate the direction in which the [pressure gradient force](#) is pointing.

Interpreting Surface Observation Symbols:
scaffolding activity

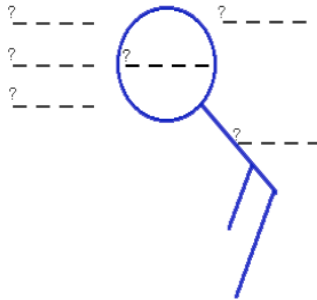
Interpreting Surface Observation Symbols scaffolding activity

Introduction:

Routine surface meteorological observations are represented on weather maps by a standard notation of symbols and numbers. In order to correctly interpret the data, it is important to understand what types of data the different numbers and symbols represent. This skill is not only important for reporting weather conditions for a given station, but also for determining the positions of significant meteorological features like fronts, cyclones and anticyclones. The purpose of this activity is to introduce these reporting symbols and how to extract information about temperature, dew point temperature, wind speed and direction, cloud cover, pressure and current weather. Key words throughout this activity link directly to helper resources that provide useful information for answering the questions.

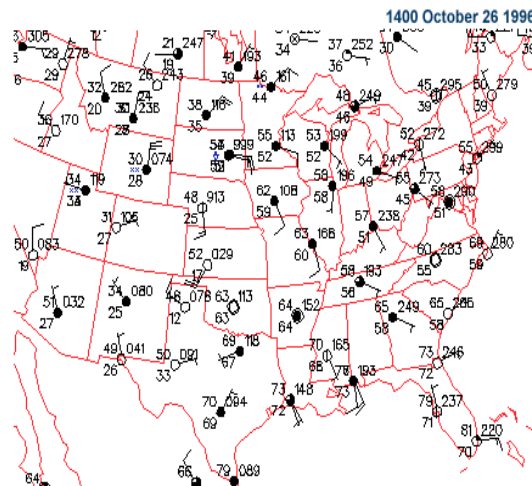
Components of the Observation Symbol:

1) Fill in the blanks of the diagram to indicate what type of [meteorological data](#) is represented by each location. You may label the diagram in one of two ways; 1) by printing out a copy of this activity and marking your answers directly onto the printout or 2) by saving the image into your favorite graphics software and modifying the image using that graphics package.



Reporting on Weather Conditions:

Use the map of surface observations to answer the following questions.



- 2) What is the [temperature](#) in Des Moines, Iowa?
- 3) What is the [dew point temperature](#) in Phoenix, Arizona?
- 4) What is the [pressure](#) in Dallas, Texas?
- 5) What is the report of [cloud cover](#) in Chicago, Illinois?
- 6) What is the report of [current weather](#) (weather symbol) in Casper, Wyoming?