Pressure 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 are shown in bold print.

**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.

![Diagram of air columns](image)

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 center**? 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.
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 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).

Draw an arrow (on the diagram above) to indicate the direction in which the pressure gradient force is pointing.