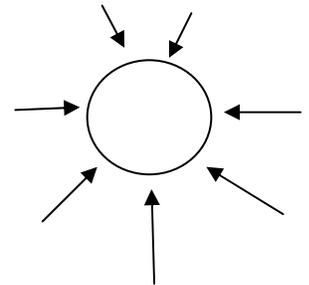


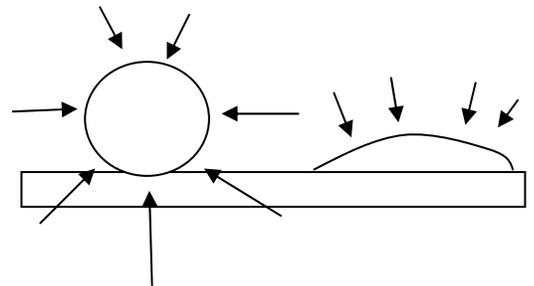
1. Explain what causes air pressure. **The weight of the air above us.**
2. Where is there stronger air pressure, at low places or high places? Explain why. **Lower places. There is more air sitting on top of low places.**
3. What is the force of air pressure at sea level? **14.7psi**
4. What does “sea level” mean? **Zero elevation; the elevation of the ocean’s surface. All elevations are measured relative to the ocean’s surface.**

5. Draw a bubble under water. Use arrows to help explain why the bubble moves upward. **Pressure is stronger at lower elevations, so the pressure pushing the bubble up from below is stronger than the pressure pushing down from above. (see diagram)**
6. Use a drawing to show why a suction cup sticks to a table, but a bowling ball does not. **Pressure pushes the bowling ball from every side. There is no air beneath the suction cup, so air only pushes downward on the suction cup.**



7. **If you release a helium balloon and let it fly up into the sky, what will happen to the balloon’s volume? Why? Volume increases, because there is less pressure up there. The balloon will be squeezed less, so it will expand.**

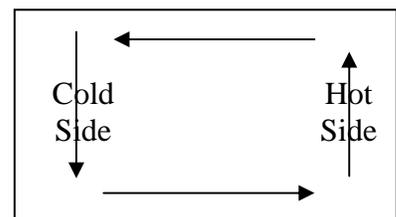
8. What happens to water when it “condenses?” **Water turns from a gas to a liquid.**
9. What can you do to make water condense? **Cool it down.**
10. What happens to water when it “evaporates?” **Water turns from a liquid to a gas.**
11. What can you do to make water evaporate? **Heat it up.**



12. Suppose you see a cloud, and the temperature is not below freezing. When you see the cloud, are you seeing a solid, liquid, or gas? Explain how you know? **You can’t see a gas. If you can see it, the water has to be a liquid or solid. If it is not freezing, the water must be a liquid.**
13. If you want to cause a cloud to disappear, what do you need to do to the cloud’s temperature? Why? **You need to heat it up. Heating the cloud will evaporate the liquid water droplets (turn it into a gas).**
14. If a cloud is disappearing, is water in the cloud evaporating or condensing? **Evaporating**
15. Suppose you have some air. If you heat up that air, what happens to its mass, volume, and density? **Mass stays the same; volume increases; density decreases.**
16. If you cool down some air, what happens to its mass, volume, and density? **Mass stays the same; volume decreases; density increases.**

17. **If you heat up some air, will it rise or sink? Explain why. Rise. Heating air makes it less dense. Less dense things float.**

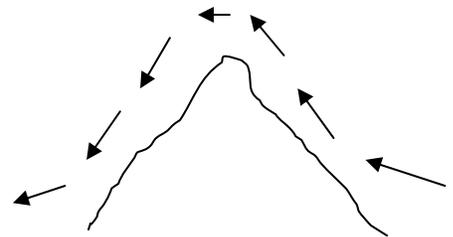
18. **The picture on the right shows a room with a cold side and a hot side. Use arrows to draw the circulation pattern that will develop due to the temperature difference.**



19. What happens to the temperature of air when the air is squeezed (compressed)? **Air heats up. Temperature increases.**

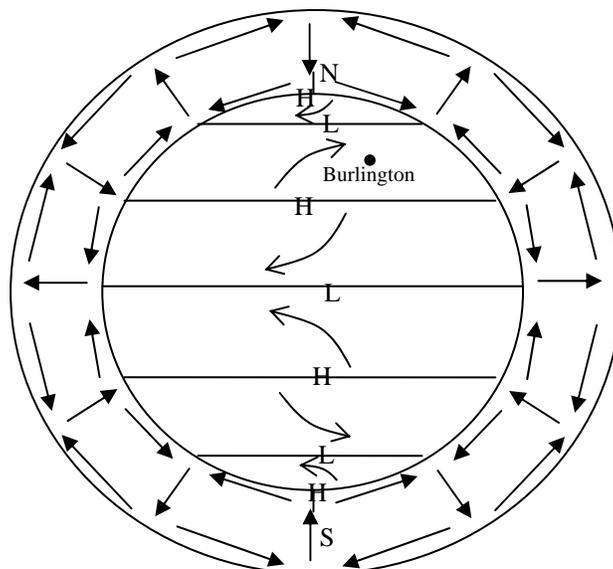
20. Suppose some air is **rising**. As the air rises...
- ...what will happen to its pressure? **decrease**
 - ...what will happen to its temperature? **decrease**
 - ...what will happen to water in the air (freeze, melt, evaporate, or condense)? **condense**
 - ...is it more likely to become clearer or cloudier? **cloudier**
21. Choose either the equator or the poles and describe how air moves in that location. Then explain why. **At the poles, air sinks. Air is cold at the poles, and cold air sinks. At the equator, air rises. Air is hot at the equator. Hot air rises.**
22. Choose either the equator or the poles, and describe the type of weather you find there (wet or dry). Explain why that type of weather exists in that location. **The poles have dry weather, because the air sinks at the poles, and sinking air is dry. The equator has wet weather, because air rises at the equator, and rising air is wet.**
23. Rising air = **low** pressure = **wet/cloudy** weather.
24. Sinking air = **high** pressure = **dry/sunny** weather.
25. Winds blow from **high** pressure to **low** pressure.
26. In the Northern Hemisphere, winds curve **clockwise**.
27. In the Southern Hemisphere, winds curve **counter-clockwise**.

28. Air is traveling over the mountain on the right. Which side of the mountain is **cloudier**? Why? **The right side of the mountain is cloudier, because the air is rising on the right side. Rising air is cloudy and wet.**



The diagram below shows the Earth and its surrounding atmosphere. On the diagram...

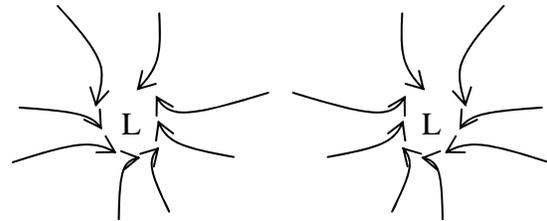
- Use arrows to show the circulation pattern within Earth's atmosphere.
- Label the Earth's High (H) and Low (L) pressure belts.
- Draw the Earth's prevailing winds.
- Place a dot at Burlington's latitude, and label it "Burlington."



33. What is the weather like at 30° latitude? How can you tell this from the diagram above? **It's dry. The air sinks at 30°, and sinking air is dry.**
34. Are the Earth's poles dry or wet? Briefly explain why. **Dry. Air sinks at the poles. Sinking air is dry.**
35. Where are the world's major rainforests located? Briefly explain why. **Equator. Air rises at the equator. Rising air is wet.**

36. Why do the Earth's prevailing winds curve? **Because the Earth spins, causing the Coriolis Effect.**

37. Draw two diagrams. The first should show how a Northern Hemisphere tornado forms around an area of low pressure. The second should show how a Southern Hemisphere tornado forms around low pressure.



Northern Hemisphere

Southern Hemisphere

38. The most deadly aspect of a hurricane is "storm surge." What is storm surge, and how is it caused by a hurricane?

The low pressure of a hurricane "sucks" the ocean upward, creating a mound of water. [The hurricane's winds also push water into a pile.]

39. As hurricane or tornado approaches, are your ears more likely to pop outward or inward? Explain why. **Your ears pop outward. The pressure in a storm is low, so the low pressure outside your ears will be weaker than the pressure inside your ears.**