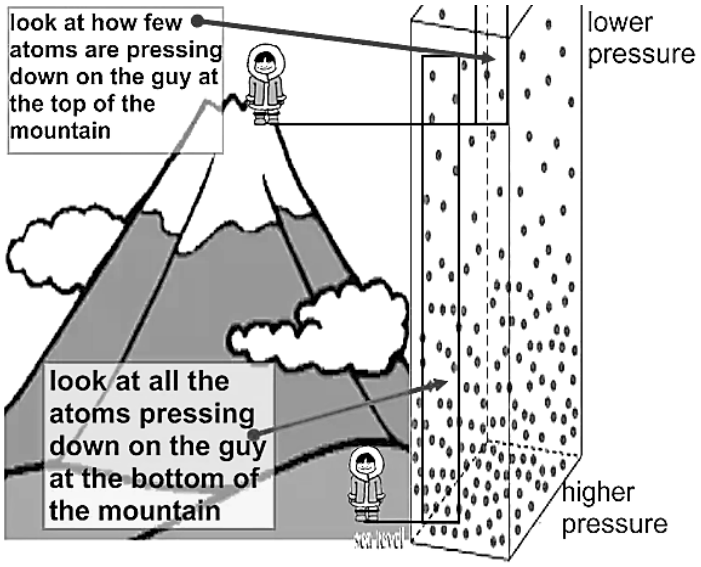
Name: _____ Air Pressure

Differences in Air Pressure

Air pressure isn't always the same. It's different at different places and can change from time to time.

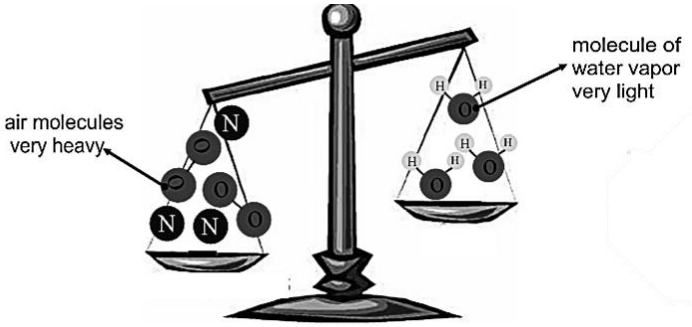
Air pressure changes with *altitude* (height). It is greatest at sea level and decreases (becomes less) the higher up you go.

Air pressure is greatest at sea level because the air there is densest. At sea level, the air molecules are squeezed tightly together by the weight of all the air above pressing down. So, there are more of them zooming about and banging into things.



At greater heights, the air is less dense. The higher up you go, the less air there is above weighing down, so the air molecules aren't forced so close together. Because the molecules are more spread out, they bang into things less often.

Air pressure changes with the amount of water vapor in the air (*humidity*). When there's water vapor in the air, the oxygen and nitrogen molecules in the air spread out to make room for the molecules of water vapor.



Water vapor is a light gas; its molecules weigh less than the molecules of oxygen and nitrogen that have been displaced. This makes the air less dense and lowers the pressure.

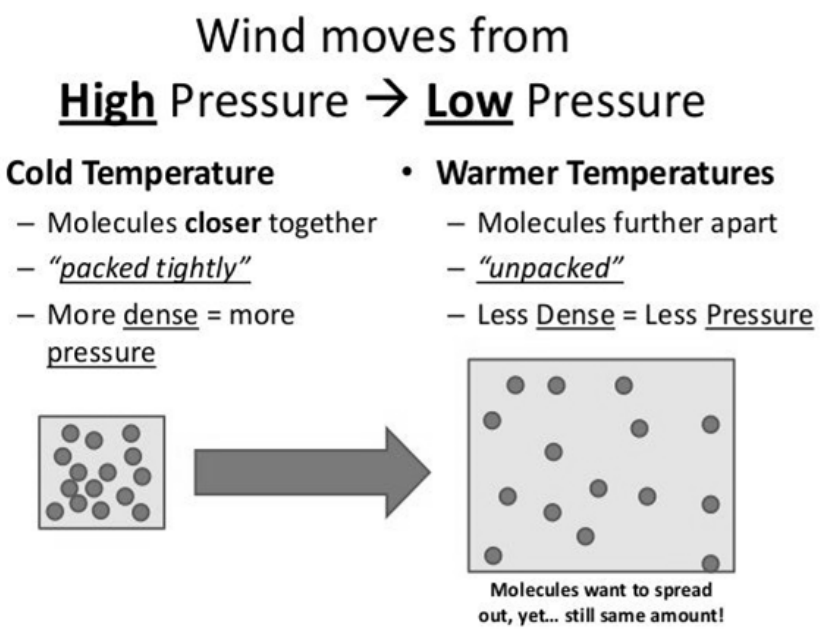
Air pressure can also change with the *temperature*.

As air gets warmer, it expands (spreads out). This expansion causes the density of the air to decrease and lowers the pressure. When air gets colder, it shrinks. This shrinking causes the air to become denser and increases the pressure.

Name: _____ Air Pressure

The sun does not heat the earth evenly, and this uneven heating causes air pressure to be different at different places on the globe. Areas near the equator, which are hot, generally have low air pressure, and areas near the North and South Poles, which are cold, have high air pressure.

Air molecules are constantly moving about. Whenever possible, they'll move from dense (crowded) areas of high pressure to less dense areas of low pressure. This movement of air is what we call ***wind***.



Bill Nye on Wind: https://www.youtube.com/watch?v=uBqohRu2RRk

energy wind sun earth air up faster rises spinning sinks

1. _____ is the movement of air. It is caused by the rotation of the _____the uneven heating of the earth's surface by the_____.

2. _____ from the Sun heats the land, and the land warms the _____ over the land. The molecules of the warmed air move _____ and spread farther apart. This means that they don't weigh as much for the space they take up, so cold air can push them _____ and take their place.

3. Air _____ over the north and south poles, flows over the cities, gets heated over the warm land, and _____. Once it cools off, it sinks again.

4. But wind doesn't just blow in one direction. This is because the earth is spinning and starts the wind _____ so that it comes from all different directions.