Kinetic Theory Of Matter

Parts Of The Theory

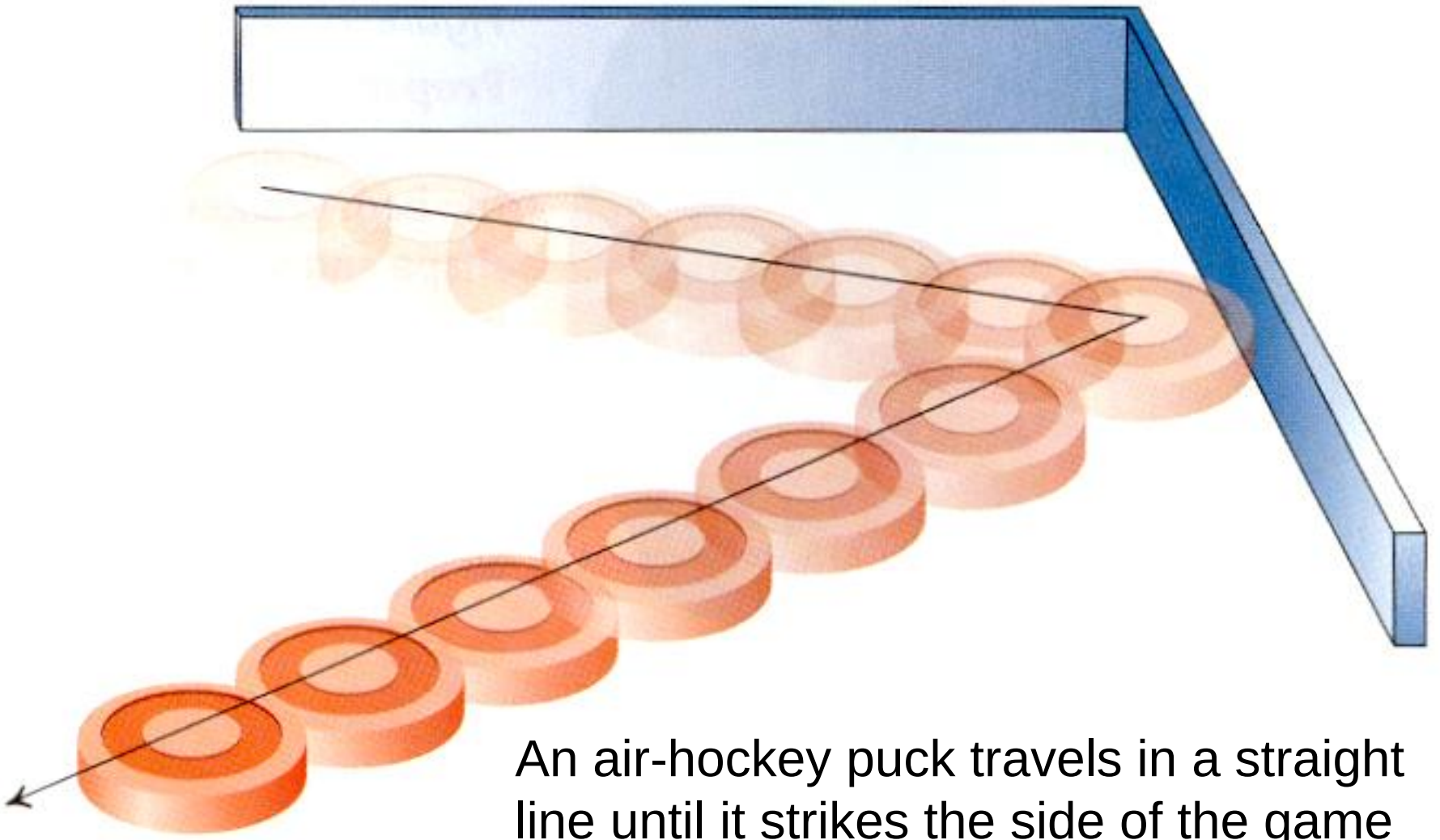
1. All **matter** is made up of extremely small **particles**.
2. Between the particles is empty **space**.

Parts Of The Theory

3. Particles are in **constant** random **motion**.

4. Motion suggests **energy**.

Modeling the Motion of a Particle



An air-hockey puck travels in a straight line until it strikes the side of the game board. Then, it rebounds in a straight line in a new direction.

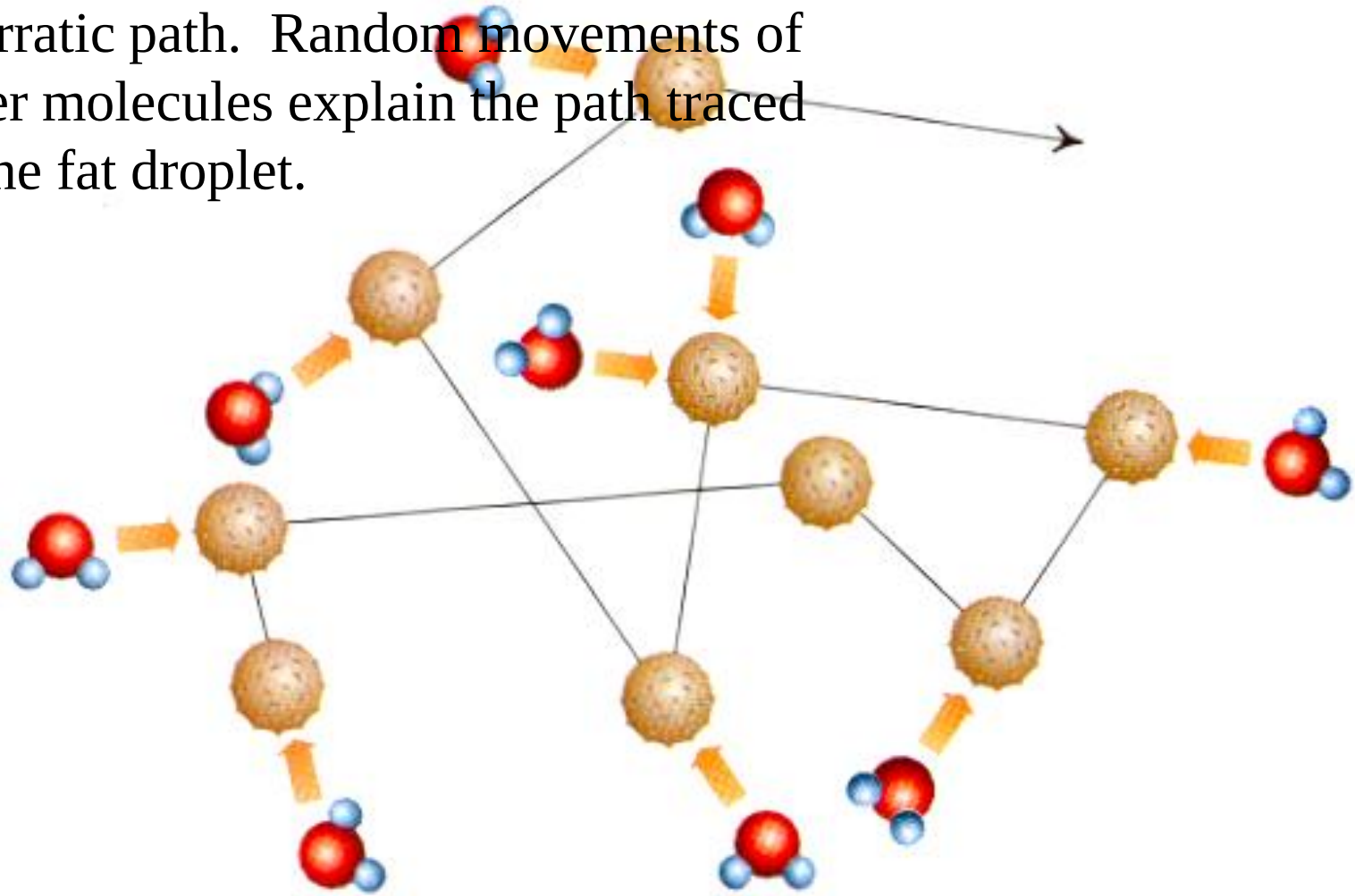
The energy an object has because of its particle **motion** is **kinetic** energy.

Temperature is a measure of the average kinetic energy (speed) of the particles in an object.

The **units** for temperature are ^{o}F, ^{o}C, ^{o}K. The temperature at which the **motion** of particles ceases is known as **absolute** zero.

Brownian motion is the random movement of very small particles suspended in a fluid that results from collisions with molecules.

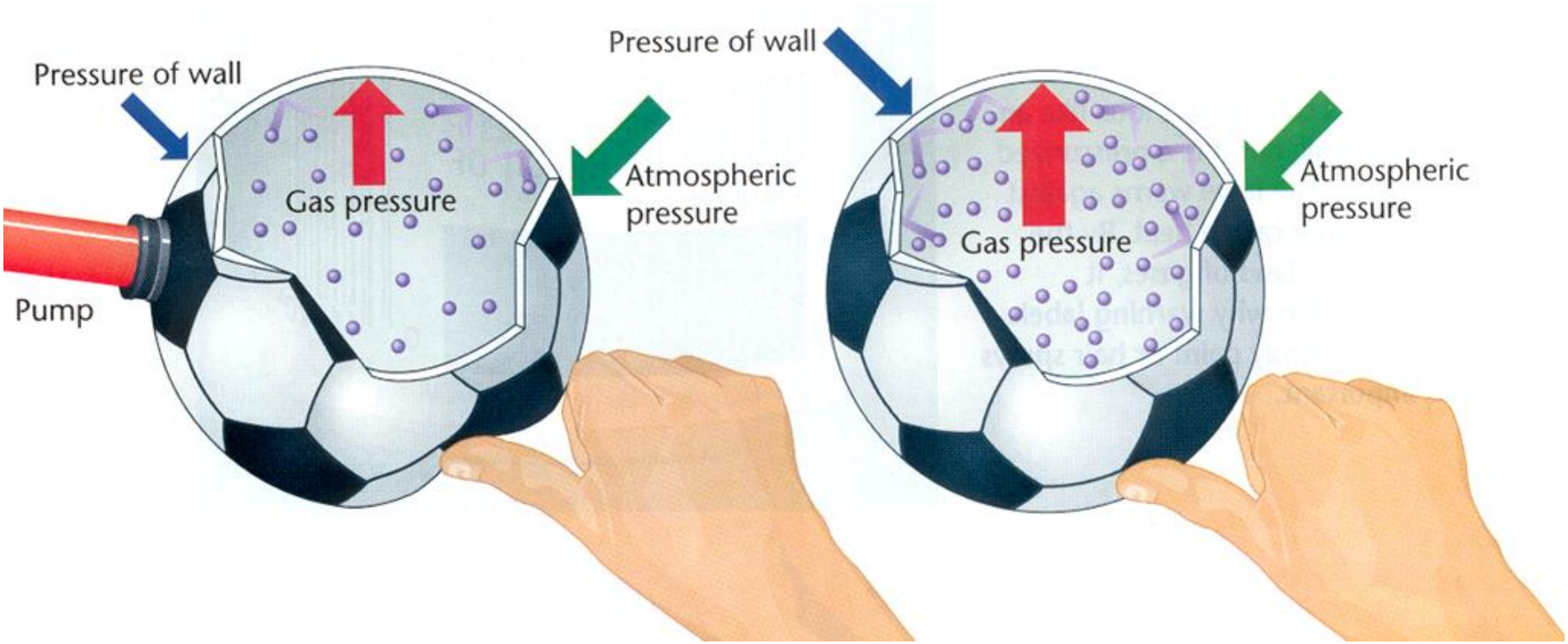
As viewed under a microscope, a fat droplet in milk suspended in water traces an erratic path. Random movements of water molecules explain the path traced by the fat droplet.



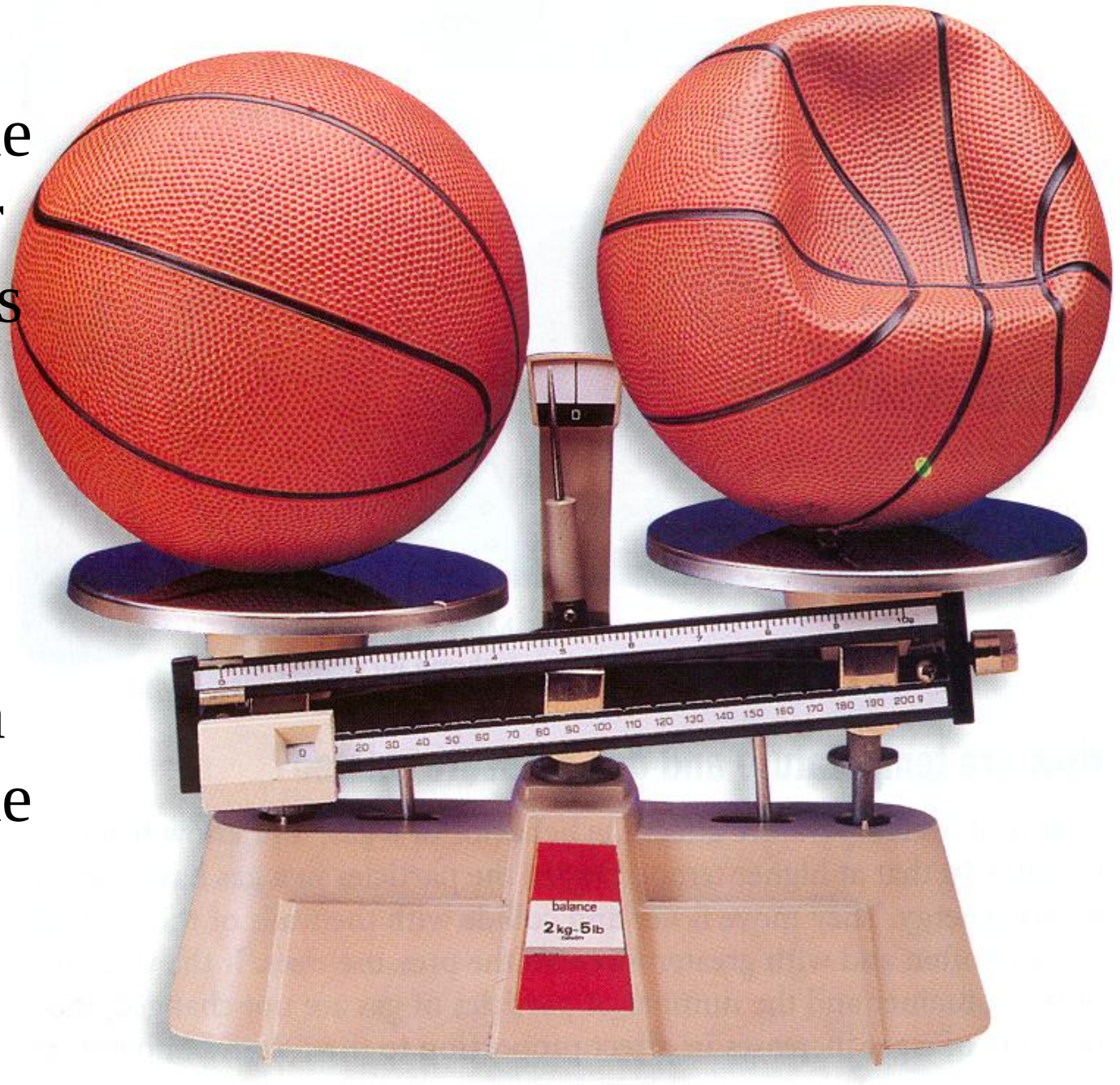
Diffusion is the ability of one substance to penetrate into a mass of particles of another substance.

The **Pressure** of a gas in a closed container, can be explained by the movement of molecules and their collisions with wall of the container.

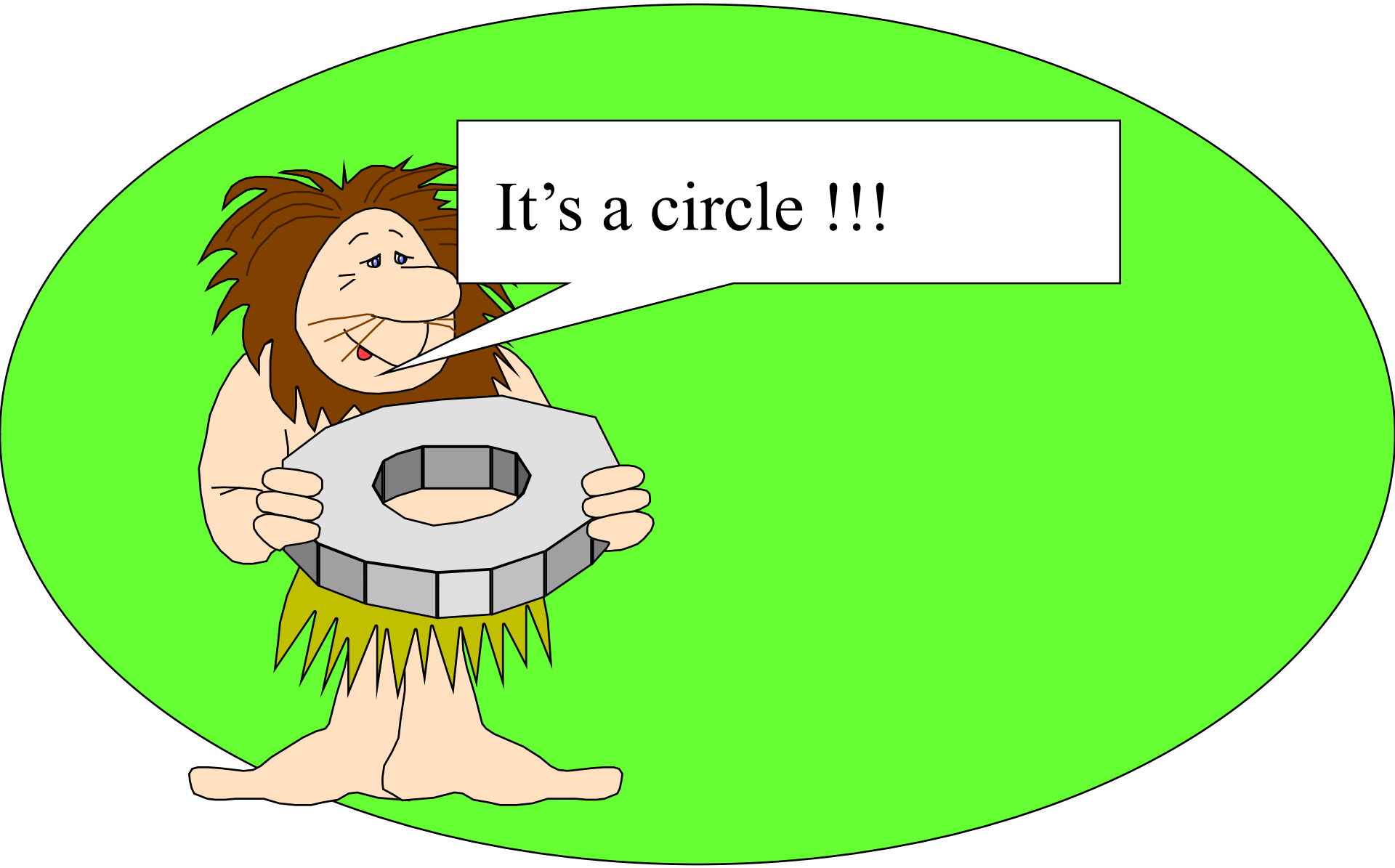
Pumping more air into the flattened ball increases the number of molecules inside. As a result, molecules strike the inner wall of the ball more often and the pressure increases.



The mass of the ball on the left is greater because it has more air inside and, therefore, is at a higher pressure than the ball on the right.

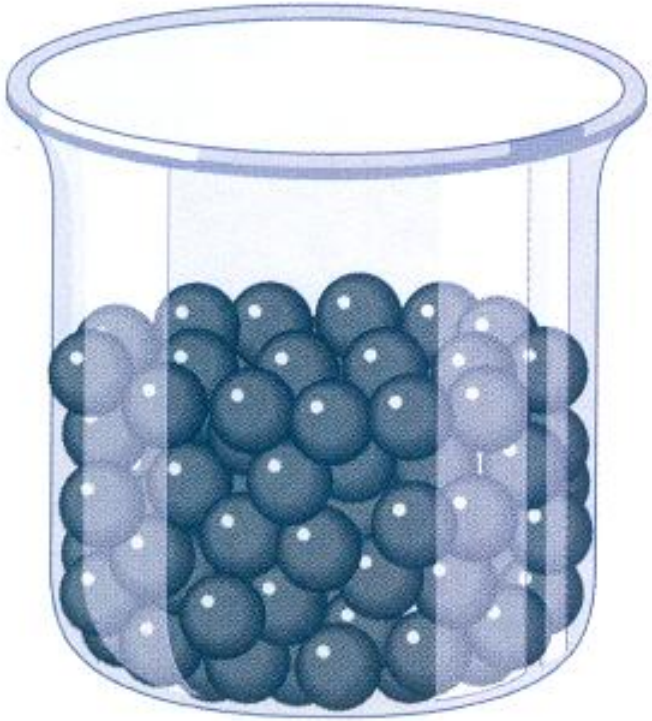


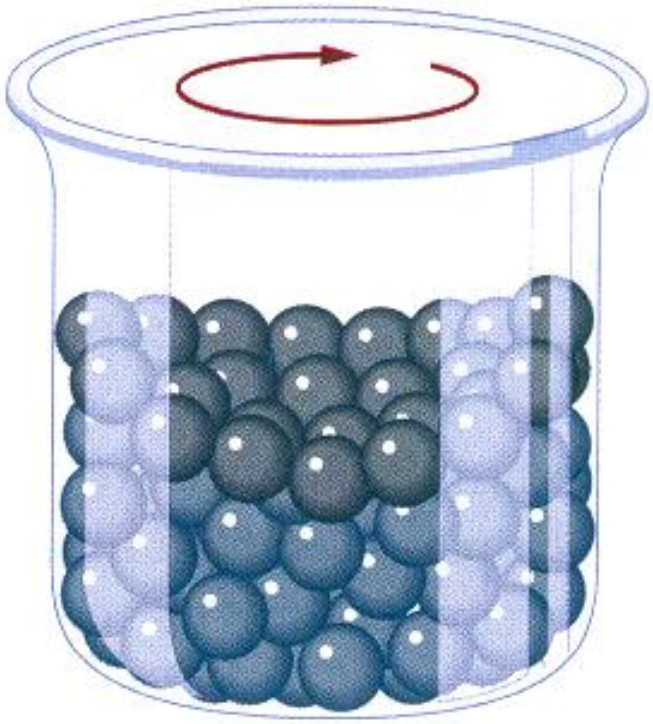
Grouping



Modeling Liquids

Magnetized marbles spread out evenly to fill the bottom of their container. The volume they occupy cannot be reduced. ▼





▲ When the container is swirled, the marbles flow with a swirling motion.

When the container is tipped, the magnetized marbles flow onto the table. ▼