

Physical Properties and Changes Notes

1. **Matter** – anything that has mass and takes up space
2. **Physical Property** – any characteristic of matter that can be observed or measured without changing the identity of the matter
3. **Physical Change** – a change that makes the physical properties change, but not the identity
4. **Physical Properties:**
 - a. **Color and Shape** – plastic bottle may be orange or blue, but it is still plastic; whole watermelon may be cut up into smaller pieces, but it is still watermelon
 - b. **Length** – measure objects using ruler, tape measure, meter stick
 1. Example: length of a loaf of bread
 - c. **Mass** – amount of matter in an object
 1. Example: different mass in detergent boxes, but it is still detergent
 - d. **Volume** – amount of space an object takes up
 1. Example: amount of juice in a glass or carton, still juice
 - e. **Density** – amount of mass in a given volume
 1. Bowling ball and soccer ball – same volume, different mass
 2. Formula - mass divided volume equals density ($m/v = D$)
 - f. **States of Matter**
 1. Water can change from a solid (ice) to a liquid (water) to a gas (vapor)
 2. Solid – particles of a solid vibrate or move in a fixed position; gives it definite shape and volume
 3. Liquid – particles move much faster and have enough energy to slide past one another; takes the shape of the container
 4. Gas – particles are moving so fast, they have enough energy to move freely away from other particles; will spread out and fill container or escape
 5. Plasma – extremely hot, electrically charged gaseous material; makes up 99% of visible matter in universe but it is rare on Earth; found in fluorescent bulbs, laboratories, and lightning
 - g. **Melting Point** – temperature at which a solid becomes a liquid
 1. Example: water melts at 0°C
 - h. **Boiling Point** – temperature at which a liquid becomes a gas
 1. Example: water boils at 100°C
 - i. **Metallic Properties**
 1. Luster - shiny appearance
 2. Malleability – ability to be hammered, rolled, or pressed into thin sheets
 3. Ductility – ability to be drawn into thin wires
 4. Magnetism – ability to attract a magnet

