

Chemistry Chapter 1 Notes

Matter and its Characteristics

- I. Everything around us is made of matter.
 - i. Anything that has mass and volume.
 - ii. If we can measure both properties, then the substance is made of matter
- II. Mass vs Weight
 - i. Mass and weight are often used interchangeably
 - ii. Weight however is effected by how much the force of gravity is pushing down on the substance or object.

Solar System Planets	Gravity Constant
Mercury	3.7 m/s ²
Venus	8.87 m/s ²
Earth	9.8 m/s ²
Mars	3.711 m/s ²
Jupiter	24.79 m/s
Saturn	10.44 m/s ²
Neptune	11.15 m/s ²
Uranus	8.69 m/s ²

Note Check Imagine we can travel to any planet in the solar system, on which planet(s) would we have more weight? On which planets would we have more mass?

Scientific Methods

- III. Scientific Discoveries depend on observations
 - i. Qualitative---reflect color, shape, size, or some physical characteristic
 - ii. Quantitative – numerical data

IV. Investigations begin with a hypothesis for a particular problem or phenomenon

i. Simple and testable prediction

V. Experiments test a hypothesis

i. Independent variable- the variable the experimenter changes

ii. Dependent variable- the variable that responds to the change made by the experimenter

iii. Control-some experiments require a comparison between conditions. The control or control group allows experimenters to see if their change did or did not support the original hypothesis

iv. Conclusions- based on the data collected during an experiment. Created by analyzing and making inferences about data gathered in the experiment.

Note Check A scientist is trying to figure out the relationship between solubility (ability to dissolve) and temperature. He sets up 3 different trials for his experiment in which he dissolves 3 grams of sugar in water at varying temperatures.

A. State a possible hypothesis for this experiment

B. What is the independent variable, what is the dependent variable?