

UNIT 1: Introductions to Physical Science STUDY GUIDE

Unit 1 VOCABULARY:

Unit 1 Lesson:	WORD	DEFINITION
2	theory	
2	Universal law	
3	Ampere	
3	Candela	
3	kelvin	
3	kilogram	
3	model	
3	second	
3	SI	
3	spectroscope	
3	theory	

Unit 1 Lesson 1: Intro to Physical Science

- Physical science is the study of energy and matter
- All of the material and content discussed in class will come directly from the Online School (OLS).

Unit 1 Lesson 2: Physical Systems

- Science is a way of learning and knowing about the world.
- Scientific explanations about the world are based on observations and experiments that other scientists can verify.
- **A System:** a group of things that interact with one another; work together to perform a single task.
 - Any group of interacting elements can be a system.
- **Examples of systems:**
 - As small as two atoms colliding
 - As large as the entire universe
 - As complex as earth and all that it contains.
- Scientists use a **model** to analyze and understand a system.

- A **scientific model** is often a representation that is simpler than the real system
- **Two Types of Systems:**
 - **1. Closed System:** nothing goes in or out that affects the system
 - Example: Bathtub of water considered closed system if no water goes in or out (plugged)
 - **2. Open System:** something coming in from the outside or something leaves the system affects it.
 - Example: If the drain didn't close in the bathtub; water would run out; open system
- **How Science Works:**
 - New knowledge causes scientists to rethink their theories and models
 - Theories and models are modified if a change is necessary in light of new knowledge.
- **Universal Law:** principle that is in effect everywhere at all times.
 - Example: Gravity
- **Theory:** an explanation to account for observations of many types; it is then used to make predictions that can be tested with further observations.

Unit 1 Lesson 3: Measurement and the International System
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- **Mass:** the amount of material something has in it.
 - Example: Golf ball has more mass than a ping-pong ball
- **Measurement:** is the comparison of a quantity to a standard unit
 - Without the comparison to a standard unit, it is not considered a measurement.
- **SI:** international system of units; specifies the metric system of physical quantities

- **Basic Units in SI:**

quantity	unit (abbreviation)
distance	meter (m)
mass	kilogram (kg)
time	second (s)
electrical current	ampere (A)
temperature	kelvin (K)
light intensity	candela (cd)
amount of substance	mole (mol)

- **Candela:** SI unit for luminosity (the intensity of the light that it gives out)
- **Kelvin:** the SI unit of temperature
- **Ampere:** the SI unit of electrical current flow
- **Mole:** an SI unit of the amount of a substance
- Standard systems of measurement are important because scientist want to share measurement data that they can understand

Unit 1 Lesson 4 LAB: Measured Steps
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- Scientists found that in order to describe objects consistently, they needed to use the same units.
- Meter stick is the easiest device to use for measuring large objects
- Ruler stick is the most useful device for measuring small objects
- The most reliable data is gathered by using standardized units.

Unit 1 Lesson 5 LAB: Density

- All matter has mass and takes up space.
- When we want to know how much space a substance actually takes up, we need to measure its volume.
- What is DENSITY?
 - A measure of the mass of a material within a given space.
- Density = mass / volume

