

UNIT 1 REVIEW

- 1) AN **OBSERVATION** always involves the use of the **senses**. **Instruments** may extend the senses.
- 2) AN **INFERENCE** is an **interpretation** or conclusion based on observations. Inferences usually involve what happened in the past. Any statement about the future **MUST** be an inference.
- 3) **CLASSIFICATION** is the grouping of items based on common characteristics. We classify things to make them easier to study and to understand.
- 4) **MEASUREMENT**:
 - A) **Mass**: The amount of matter in an object. The basic unit of mass is the gram.
 - B) **Volume**: The amount of space occupied by an object. The basis units of volume are the **cm³** and **ml**. They are equal.
- 5) **DENSITY**: Amount of **mass per unit of volume**. You **MUST** be able to solve for any value (m, d, or v) in the density formula.
 - a) Density is expressed in **g/cm³** or **g/ml**
 - b) Cut an object into many pieces and the density of each piece remains the same.
 - c) Compress an object (reduce its volume) and the density increases.
 - d) When an object expands (increases in volume) its density decreases.
HOT = EXPANDS = LESS DENSE = RISE
 - e) **The density of water is 1 g/cm³ (1 g/ml) at 3.98°C**
 - f) Water reaches maximum density at 4°C (really 3.98°C)
- 6) **You MUST be able to calculate percent error (deviation)** using the formula on your ESRT
- 7) **PHASES of MATTER**:
 - a) Solid (usually most dense)
 - b) Liquid
 - c) Gas or vapor (least dense)
- 8) **CHANGES are EVENTS**; All can be described in terms of "**time and space (distance)**".

All changes require time and all require something to move a distance through space.

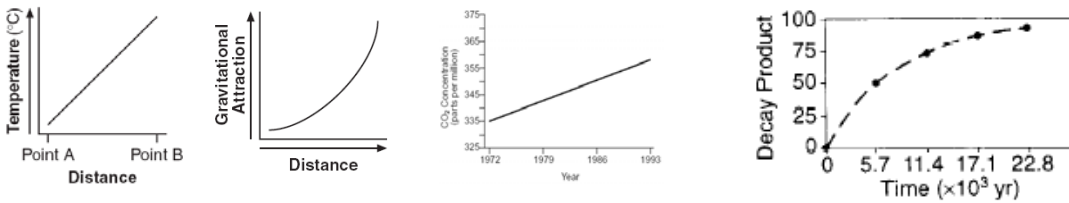
 - a) **Rate** of change varies greatly. Some are fast (earthquakes). Some are slow (evolution).
 - b) Changes may be **cyclic**; repeating again and again. Cyclic changes like the phases of the moon are **predictable**.
 - 1) Predictions are most accurate when data is gathered over a long period of time.
 - c) Changes may be **non-cyclic**; these are **one time events** such as meteorite impacts which are usually not predictable.
 - d) All changes involve a **flow of energy**. **Energy is exchanged at an interface**. An **interface is a boundary** between two different materials (land and water, air and land).
 - c) The "**law of conservation of energy**" states that "Energy cannot be created nor destroyed but one kind of energy can be changed into another."
Example: Sunlight falls on your face. It is changed from light to heat. You feel the warmth of the sun.
Example: A rock rolls down a hill. Potential energy stored in the rock is converted to kinetic energy as the rock gathers speed.

9) GRAPHS;

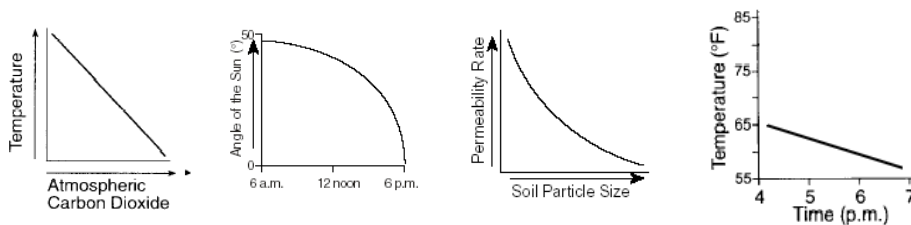
- > Express relationships between 2 variables, dependent and independent.
- > Y axis = dependent variable, X axis is the independent variable. Time is always independent.

The relationship may be DIRECT (two variables increase or decrease together)

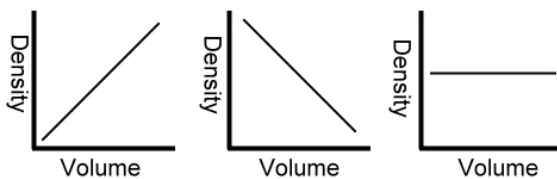
a) Direct relationships: All of these graphs below show a direct relationship. Both values increase or both decrease. The line moves up and away from the origin.



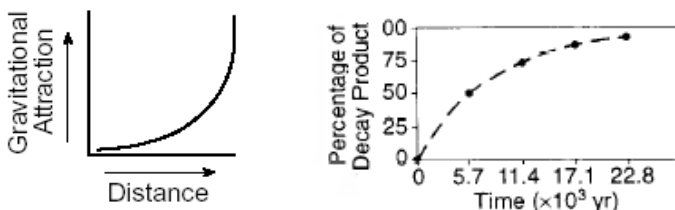
b) Inverse relationships: All the graphs below show an inverse relationship. As one value increases the other decreases.



Rate (of change): The amount of change per unit of time. $\text{RATE} = \text{SLOPE} = \text{GRADIENT}$. If the graph line is straight, the rate is constant (see graphs below)



If the line is curved the rate is changing. If the curve gets steeper the rate is increasing. If the curve is getting less steep the rate is decreasing. (see graphs below)



Getting steeper.
Rate increasing.

Getting less steep.
Rate decreasing.