

Unit 1- KINETIC THEORY

Kinetic Theory states that _____.

Kinetic refers to _____

•3 Principles of Kinetic Theory

1.

2.

3.

States of Matter

SOLIDS

•Particles are _____

•Particles _____ but _____ much

•_____ shape and _____ volume (because particles are packed closely and do not move)

•Most solids are _____

•Crystals are made of _____ (repeating patterns)

•The _____ reflects the arrangement of the particles within the solid

Amorphous Solid:

•A solid with _____ (not a crystal)

•A solid that _____

•Examples: _____

Allotropes:

•Solids that _____

•2 or more _____ element in the same physical state (have different properties)

•Example: _____

LIQUIDS

•Particles are _____

•Particles _____ through a container

• _____ shape but do have a _____ volume

•Flow from one _____

Viscosity – _____

•Honey – _____

•Water – _____

GASES

•Particles are _____ apart

•Particles _____

• _____ shape and _____ volume

PLASMA

•Particles are _____ apart

•Particles _____ fast

•Only exists _____

•When particles collide, they break apart into _____

•Occurs naturally on the _____

BOSE-EINSTEIN CONDENSATE

•Particles _____ together

•Particles _____

•Only found at _____ temperatures

GASES AND PRESSURE

•Gas pressure is the _____

• _____ and _____ of collisions

•NO _____ present, NO _____ =NO _____ = vacuum

•Atmospheric Pressure is caused by a **mixture** of gases (i.e. the air)

•Standard Pressure is _____ at sea level

•As you go ABOVE sea level, _____

•As you go _____ sea level, pressure is greater

TEMPERATURE

•Temperature is the measure of the _____ of the particles.

Units for Temperature-->

PHASE CHANGES

•**Melting**-

Substance _____ - **physical change**

•**Freezing**- _____

•Substance releases energy- _____

•Melting and freezing occur at the same temperature! HOW?????

•**Vaporization**: changing from a liquid to a gas- absorbs energy

•Boiling and evaporation-

•Evaporation -

•Boiling-

•**Condensation**- _____ - release energy

•**Sublimation** - _____ - absorb nergy

•**Deposition**- _____ - release energy

ENTROPY-

•Systems tend to go from a state of order (low entropy) to a state of maximum disorder (high entropy)

•Entropy of a gas is _____ than that of a liquid; entropy of a liquid is _____ than that of a _____

•Solids= _____ entropy; _____=high entropy

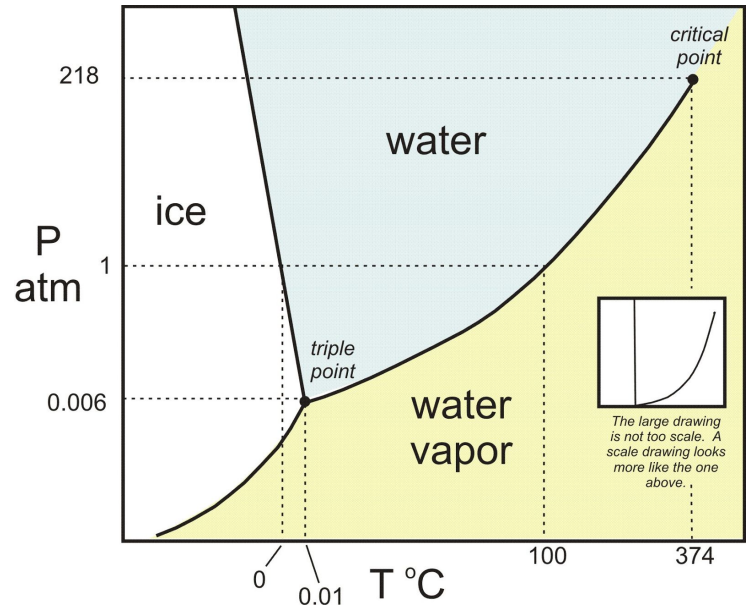
•Entropy tends to _____ when temperature _____

PHASE DIAGRAMS

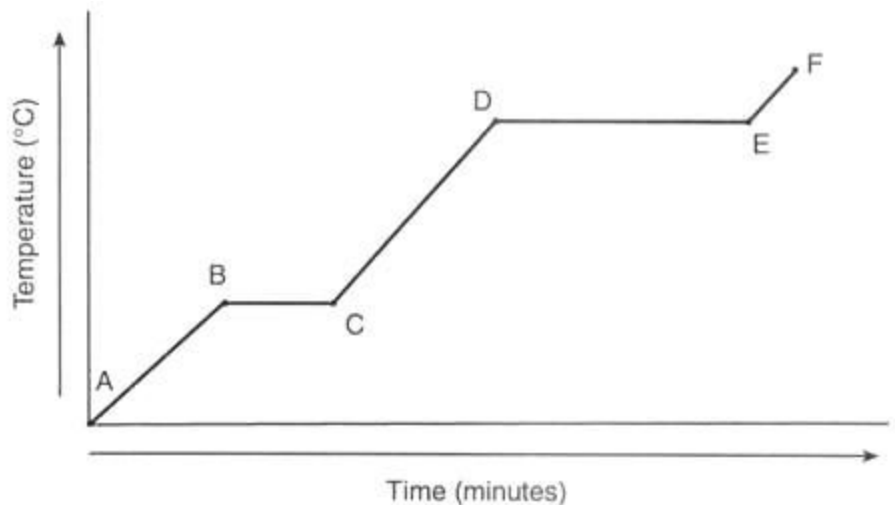
•A diagram showing the _____

Explanation of Phase Diagram:

- X axis-Temperature ($^{\circ}\text{C}$)
- Y axis- Pressure (kPa)
- Line AB – line of sublimation
- Line BD – boiling point line
- Line BC – melting point line
- Point B – triple point (all 3 states of matter exist at the same time)
- T_m – melting point at standard pressure
- T_b – boiling point at standard pressure



- Energy Diagrams (also referred to as Heating Curves)
- Graphically describes the enthalpy (the heat content of a system at constant pressure) changes that take place during phase changes
- X axis is Energy (Heat supplied)
- Y axis is Temperature



•Constructing Energy Diagrams

- Step 1: Determine/Identify the melting and boiling points for the specified substance
- Step 2: Draw x and y axis (energy vs temp)
- Step 3: Draw horizontal lines at phase changes and connect with diagonal lines

Draw the energy diagram for 10 grams of water as it goes from -25°C to 140°C