**Unit 2 Matter and Energy Study Guide**

**Vocabulary to know**

Solid

Liquid

Gas

Pure Substance

Mixture

Element

Compound

Homogeneous

Heterogeneous

Emulsion

Suspension

Aerosol

Smoke

Physical property

Chemical property

Physical change

Chemical change

Intensive property

Extensive property

Melting

Freezing

Evaporation

Boiling

Condensation

Deposition

Sublimation

Filter

Decant

Centrifugation

Distillation

Chromatography

Kelvin

Celsius

Temperature

Pressure

STP

Energy

Heat

Exothermic

Endothermic

Kinetic Energy

Potential Energy

Thermal Energy

Electromagnetic Energy

Sound Energy

Electrical Energy

Gravitational P.E.

Electrical P.E. (Voltage)

Chemical P.E.

Nuclear P.E.

Heat Capacity

Specific heat capacity

Phase Diagram

Triple point

Critical point

Normal melting point

Normal boiling point

Supercritical fluid

Boyle’s Law

Charles’ Law

Gay-Lussac’s Law

Avogadro’s Law

Combined Gas Law

 **Memory items**

 Memorize the symbols for elements with Z ≤ 36 and a few others that are common: Zr, Ag, Sn, Sb, I, Xe, Ba, W, Pt, Au, Hg, Pb, Rn, U, Pu

 KMT 5 principles

 Descriptions of the states of matter

 Standard Temperature and Pressure (STP)

 Names corresponding to each gas law equation

**Skills**

Classify matter as Solid, Liquid, Gas

Classify matter as Pure substance/Mixture

Classify matter as Element or Compound

Classify matter as Homogeneous or Heterogeneous

Classify properties as Physical/Chemical and Intensive/Extensive

Classify changes as Physical/Chemical (5 ways to ID a chemical change)

Label the symbol or name of common elements

Convert pressure units

Convert temperature units

Read and label a phase diagram (states, points, phase changes)

Solve simple gas law problems including gas diagrams

Use Q = mc∆T to perform heat capacity calculations

**Other Review Resources**

Class powerpoints (posted online)

Homework worksheets

Personal Class notes

Review worksheet (Hint: The test looks VERY much like the Review worksheet – just like Unit 1)

After school and/or lunch or during study hall, meeting with teacher

**Unit 2 Test Description: 80 pt test**

|  |
| --- |
| 18 x 1 pts Classifications |
| 8 x 1 pts | Vocabulary Fill in the blank (Given a word bank from above) |
| 4 x 1 pts | Element symbols memory |
| 14 pts | 3 Short answer questions about STP, KMT and States of Matter |
| 10 pts | 5 Phase diagram questions |
| 6 pts | 4 Temperature/Pressure Unit conversions |
| 2 x 5 pts | Gas law problems |
| 2 x 5 pts | Heat calculation problems |

There will be two parallel versions of the test per class. You will not be allowed to sit next to someone with the same version. Testing folders will be set in front of each student to create a personal space. BEWARE: YOU WILL NOT BE ALLOWED TO USE YOUR PHONE AS A CALCULATOR AND THERE ARE LIMITED CALCULATORS AVAILABLE TO BORROW. **BRING YOUR OWN CALCULATOR.** You will be asked to place your phone in your backpack at your feet, in a box on the front bench or in the cell phone bag. There shall be nothing on the tables beside the test, your calculator, the vocabulary word bank and a writing implement.

**Provided on the Test:** **Word bank of vocabulary words**

$$P\_{1}V\_{1}=P\_{2}V\_{2}$$

 1 atm = 760.0 mm Hg = 760.0 torr = 29.92 in. Hg = 14.69 psi = 101.3 kPa

$$Q=mc∆T$$

|  |  |
| --- | --- |
|  **Substance** |  **c in J/g K** |
|  Aluminum | 0.900 |
|  Bismuth | 0.123 |
|  Copper | 0.386 |
|  Brass | 0.380 |
|  Gold | 0.126 |
|  Lead | 0.128 |
|  Iron | 0.406 |
|  Silver | 0.233 |
|  Tungsten | 0.134 |
|  Zinc | 0.387 |
|  Mercury | 0.140 |
|  Alcohol(ethyl) | 2.4 |
|  **Water** | **4.186** |
|  Ice (-10 C) | 2.05 |
|  Granite | 0.790 |
|  Glass | 0.84 |