

## Physical Science Semester 1 Final Review

### Unit 1 Experimental Design

Vocab: hypothesis, bar graph, circle graph, line graph, accuracy, precision, scientific theory, scientific law, slope, bias, dependent variable, independent variable, constant, control, qualitative data, quantitative data.

- List the steps of the scientific method in order
- Define a hypothesis and the format for writing a scientific hypothesis
- Label, title and graph data
- Define the parts of experimental design
- Be able to identify the parts of an experiment (variables etc)
- Explain the difference between qualitative and quantitative data and know examples
- Know the three major types of graphs and when to use each.
- Be able to label/title a graph, graph the data and find the slope.
- Give examples of a positive, negative and constant slope.
- Explain how the independent and dependent variables are graphed.
- What is bias? What steps do scientists take to try to eliminate bias
- What is the difference between a scientific theory and a scientific law? Provide examples of each.
- Explain the difference between accuracy and precision. Provide examples.

### Unit 2 Measurement

- Define the following types of measurements: length, time, volume liquid and solid, mass, density
- Identify the SI units for each type of measurement
- Identify the method or equation for measuring each type of measurement
- Convert within the metric system
- Convert between Imperial Units & the metric system
- Be able to calculate density
- Be able to change numbers in and out of scientific notation.
- Convert between F, C and K.

### Unit 3- CH 1 (in book)

Vocab: atom, mass, volume, matter, Weight, newton, kilogram, liter, element, compound, mixture, solution, suspension, homogenous mixture, heterogeneous mixture.

- Know the difference between matter and mass and how they are affected by changes in gravity.
- Know the relationship between atoms, elements, and compounds.
- List the 3 states of matter and the characteristics and examples of each.
- Compare and Contrast a suspension and a solution. Give an example of each.

#### Unit 4- CH 2 (in book)

Vocab: Law of conservation of mass, physical property, physical change, chemical change, chemical property, condensation, freezing, melting, evaporation, sublimation, phase change, heat of vaporization, heat of fusion, vaporization, boiling, temperature, kinetic theory

- Explain the significance of the law of conservation of mass when doing an experiment.
- Explain the difference between a physical change and a chemical change. Give examples of each.
- Be able to label a blank phase change graph, know what the flat (constant) lines mean.
- Explain the relationship between heat added, temperature, motion of atoms and phase.
- Compare and contrast the two types of vaporization.
- List some examples of physical properties, chemical properties, physical changes, chemical changes.
- What does kinetic theory state?
- Describe the processes/tests that can be used to help identify an unknown liquid or solid.

#### Unit 5- CH 3

Vocab: energy, potential energy, law of conservation of energy, kinetic energy, mechanical energy, chemical energy, sound energy, thermal energy, nuclear energy, nuclear fusion, fission, gravitational potential energy, Electrical energy, Electromagnetic energy, compression(spring/elastic)energy, renewable, nonrenewable, fossil fuel

- List examples of each type of energy.
- Explain the law of conservation of energy.
- Compare and contrast the two types of nuclear energy
- Know examples of renewable and nonrenewable energy sources.

#### Unit 6- CH 4

Vocab: thermal expansion, specific heat, insulator, conductor, temperature, thermal energy, convection, conduction, radiation, radiant energy, convection current.

- Explain thermal expansion and give examples of it working
- What is specific heat? What does it mean that what has a high specific heat?
- What is the difference between an insulator and a conductor? Provide examples of each.
- Know how specific heat changes how a substance changes temperature.
- What direction does thermal energy flow?
- What are the three ways thermal energy can be transferred? List the characteristics/substance they work for. Provide examples of each.
- Explain the process of convection and how it related to density.
- Be able to calculate the thermal energy change using the  $m(t_f - t_i)C$  equation.
- How does mass affect the change in temperature of the same substance (ie. 50ml vs 100ml of water)
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#### Unit 7-CH 10

Vocab: position, motion, speed, velocity, distance, displacement, acceleration

- Know the triangles for speed, velocity, acceleration and how to use them to solve math problems. Know the units for each.
- Know the equation for slope, what it means on a distance-time or velocity-time graph and how to calculate it.
- Compare and contrast distance and displacement.
- Compare and contrast speed and velocity.
- Know the 4 types of motion and how to draw a motion (dot) diagram for each.

You will be give the equations you may need on the final. You will be allowed to use a calculator. I will also give you the acronym- King henry Died By Drinking Chocolate Milk.