Unit 2 – Matter, Energy, Uncertainty in Measurements – Learning Targets

	Beginning	Progressing	Mastered	
1	☐	☐	☐	I can recognize and describe the characteristics of the four basic states of matter (solid, liquid, gas, plasma).
2	☐	☐	☐	I can distinguish and explain the difference between an atom and an element, a molecule and a compound.
3	☐	☐	☐	I can explain how subatomic particles make up atoms, and how atoms bond together to make molecules.
4	☐	☐	☐	I can classify matter as an element, a pure compound, a homogeneous or heterogeneous mixture including suspension, colloid, or solution.
5	☐	☐	☐	I can differentiate between and give examples of physical and chemical properties of substances.
6	☐	☐	☐	I can differentiate between and give examples of physical and chemical changes.
7	☐	☐	☐	I can measure/calculate the density of a substance from its mass and volume.
8	☐	☐	☐	I can re-arrange the density equation to find the mass or volume of a substance.
9	☐	☐	☐	I can define energy and work, define & differentiate kinetic from potential energy in a chemical situation.
10	☐	☐	☐	I can define the Joule, calorie, and kilocalorie (Calorie) and convert among them.
11	☐	☐	☐	I can explain and apply the combined law of conservation of mass and energy.
12	☐	☐	☐	I can define, distinguish between, and give examples of exothermic and endothermic reactions.
13	☐	☐	☐	I can define and give an example of the activation energy of a reaction.
14	☐	☐	☐	I can define and distinguish between heat and temperature.
15	☐	☐	☐	I can define critical points on the Celsius & Kelvin scales, including the freezing and boiling points of water.
16	☐	☐	☐	I can convert between ^{o}C and Kelvin temperatures.
17	☐	☐	☐	I can define calorimetry and solve calorimetry problems involving the heating/cooling of a single mass.
18	☐	☐	☐	I can solve calorimetry problems involving the heating/cooling of two masses at different temperatures that come into contact with one another.
19	☐	☐	☐	I can correctly use the terms *uncertainty, accuracy, precision, error, mistake, magnitude of error, and % error.*
20	☐	☐	☐	I can recognize and explain the difference between an error and a mistake.
21	☐	☐	☐	I can recognize and explain the difference between the accuracy and precision of measurements.
22	☐	☐	☐	I can determine the number of significant figures (sig. figs.) in any measurement.

23☐ ☐ ☐ I can re-write a measurement so it has a specified number of sig. figs.

24☐ ☐ ☐ I can keep the correct number of sig. figs. in my result when doing math that involves measurements.

25☐ ☐ ☐ I can calculate the *magnitude of error* for a measurement.

26☐ ☐ ☐ I can calculate the *% error* for my final result in a lab procedure.