Unit Summary Table

Investigation	Description	Conclusions
Signs of Chemical Reactions	Students observe several examples of chemical reactions and physical changes and create pamphlets or a PSA on how to know if a chemical reaction has occurred.	The signs that a chemical reaction have occurred include: gas production, color change, temperature change, odor, and the formation of a solid (precipitate). Physical changes do not affect the chemical makeup or identity of a substance.
Molecular Motion and Phases of Matter	Students design and conduct an experiment to show the movement of molecules at different temperatures-they observe the dispersion of food coloring at several different temperatures, and use it to construct diagrams of the molecular motion in solids, liquids, and gases.	The particles in a solid are very close together but still moving slightly. The particles in a liquid are further apart and moving around past one another, but are still in contact. In a gas, the particles are moving a lot and are very far apart.
Density, Sinking, and Floating	Students watch a video clip about the layers of the Earth, then construct an explanation for a density column experiment. They test their hypotheses by determining the relative density of several unknown objects and liquids.	Substances that have a higher density will sink in substances with a lower density. Substances with a lower density will float in substances with a higher density. This applies to solids, but also to liquids and gases.
Elements, Compounds, and Molecular Structure	Students construct models for compounds using marshmallows and toothpicks.	Chemical formulas represent the actual atoms of elements that compounds are made of. Subscripts tell you the ratio of atoms of each element in a compound.
Conservation of Mass and Balancing Chemical Equations	Students watch a video clip demonstrating the conservation of mass. Then students use their previously constructed models to simulate common chemical reactions.	In a chemical reaction, the number of atoms of each element is the same before and after the reaction-mass is conserved.

Types of Chemical Reactions	Students research and investigate several types of chemical reactions, then use their knowledge to correctly identify several examples of chemical reactions, and match them to the appropriate chemical equation.	Acid-base neutralization reactions involve an acid and a base. Example: baking soda and vinegar Exothermic reactions release heat to their surroundings. Example: steel wool and vinegar Endothermic reactions absorb heat. Example: Barium hydroxide and ammonium chloride Combustion reactions require oxygen and a fuel source and are exothermic. Example: burning a candle