PS-1 MATTER, MEASUREMENTS, INQUIRY & TECHNOLOGY – Qualitatively and quantitatively describe matter

TS-1.1 Scientific method & inquiry- The process of science is investigation, which can be defined as a set of practices that allows for identifying and controlling variables

1.1.1 Distinguish between qualitative & quantitative observations and interpretations.
1.1.2 Formulate a testable hypothesis based on observations, interpretations, prior evidence, and/or scientific models.
1.1.3 Design and conduct a controlled experiment that tests a hypothesis which outlines the independent (experimental), dependent & controlled variables
1.1.4 Determine procedures & equipment used to safely conduct controlled experiments.
1.1.5 Determine appropriate data collection procedures for a controlled experiment–
1.1.6 Process data which best shows the relationship between the independent vs. dependent variables from a controlled experiment.
1.1.7 Formulate conclusions of a controlled experiment based on analyzing and interpreting data
1.1.8 Evaluate the design of a controlled experiment by identifying sources of error.
1.1.9 Discuss how accepted scientific hypotheses can become scientific theories and/or laws
1.1.10 Discuss the role of scientific research in society & how it contributes to knowledge

TS-1.2 Classification & Properties of Matter - Matter can be classified as different forms by physical and chemical properties/changes

1.2.1 Explain how physical & chemical properties are used to describe and/or differentiate the forms of matter
Key Ideas: intensive & extensive physical properties, signs of a chemical change
1.2.2 Explain how specific signs can be used as indicators of physical or chemical changes.
1.2.3 Use a model to distinguish between mixtures, compounds & elements based on physical & chemical properties.
Key Ideas: diatomic elements
1.2.4 Differentiate homogeneous and heterogeneous mixtures based on composition
1.2.5 Differentiate the two pure substances (compounds and elements) based on chemical changes

TS-1.3 Scientific measurements, Conversions & Dimensional Analysis- Science communicates the understanding of the physical world through mathematical models.

1.3.1 Differentiate between the accuracy and precision of scientific measurements
1.3.2 Explain how significant figures are used to represent the level of accuracy of a scientific measurement
1.3.3 Solve mathematical calculations using appropriate significant figures as part of the answer
1.3.4 Represent scientific measures in scientific notation
1.3.5 Identify the SI units of measure
Key Ideas: mole & molar mass
1.3.6 Use metric system prefixes to represent the magnitudes of a measure
1.3.7 Represent measures in various units by using measure conversions
1.3.8 Solve mathematical problems using dimensional analysis
1.3.9 Assess outcomes by calculating percent errors