Eighth Grade Science

Scientific Method, Weights & Measurements

1-1-1 actively engages in asking and evaluating research questions.
1-1-2 actively engages in investigations, including developing questions, gathering and analyzing data, and designing and conducting research.
1-1-3 actively engages in using technological tools and mathematics in their own scientific investigations.
1-1-4 actively engages in conducting an inquiry, formulating and revising his or her scientific explanations and models (physical, conceptual, or mathematical) using logic and evidence, and recognizing that potential alternative explanations and models should be considered.
1-1-5 actively engages in communicating and defending the design, results, and conclusion of his/her investigation
5-1-1 understands technology is the application of scientific knowledge for functional purposes.
5-1-2 understands creativity, imagination, and a broad scientific knowledge base are required to produce useful results.
5-1-3 understands science advances new technologies. New technologies open new areas for scientific inquiry.
6-1-1 understands some chemical and physical hazards and accidents can be avoided through safety education
7-1-1 demonstrates an understanding of science as both vocation and avocation.
7-1-2 explains how science uses peer review, replication of methods, and norms of honesty.
7-1-3 recognizes the universality of basic science concepts and the influence of personal and cultural beliefs that embed science in society.
7-1-4 recognizes that society helps create the ways of thinking (mindsets) required for scientific advances, both toward training scientists and educating a populace to utilize benefits of science (e.g., standards of hygiene, attitudes toward forces of nature, etc.).
7-1-5 understands there are many issues which involve morals, ethics, values or spiritual beliefs that go beyond what science can explain, but for which solid scientific literacy is useful.
7-1-6 recognizes society's role in supporting topics of research & determining institutions where research is conducted.
7-2-1 understands scientific knowledge describes and explains the physical world in terms of matter, energy, and forces. Scientific knowledge is provisional and is subject to change as new evidence becomes available.
7-2-2 understands scientific knowledge begins with empirical observations, which are the data (also called facts or evidence) upon which further scientific knowledge is built.
7-2-3 understands scientific knowledge consists of hypotheses, inferences, laws, and theories
7-2-4 understands a testable hypothesis or inference must be subject to confirmation by empirical evidence
7-3-1 demonstrates an understanding of the history of science.

7-3-2 demonstrates a knowledge that scientific method historically proceeded from an inductive approach rather than a deductive approach.

Chemistry Unit 1

2A-2-1 understands chemists use kinetic and potential energy to explain the physical and chemical properties of matter on earth that may exist in any of these three states: solids, liquids, and gases.

1-1-1,2,3,4,5, 5-1-1,2,3, 6-5-1, 7-1-1,2,3,4,5,6, 7-2-1,2,3,4, 7-3-1 & 2 Ongoing

Chemistry Unit 2

2A-1-1 understands atoms, the fundamental organizational unit of matter, are composed of subatomic particles. Chemists are primarily interested in the protons, electrons, and neutrons found in the atom.

2A-1-2 understands isotopes are atoms with the same atomic number (same number of protons) but different numbers of neutrons. The nuclei of some atoms are radioactive isotopes that spontaneously decay, releasing radioactive energy.

2A-2-2 understands the periodic table lists elements according to increasing atomic number. This table organizes physical and chemical trends by groups, periods, and sub-categories.

2A-2-3 understands chemical bonds result when valence electrons are transferred or shared between atoms. Breaking a chemical bond requires energy. Formation of a chemical bond releases energy. Ionic compounds result from atoms transferring electrons. Molecular compounds result from atoms sharing electrons.

2B-3-1 There are four fundamental forces in nature: strong nuclear force, weak nuclear force, electromagnetic force, and gravitational force.

Physics Unit 1

2B-1-1 understands Newton's Laws and the variables of time, position, velocity, and acceleration can be used to describe the position and motion of particles.

2B-1-2 understands physicists use conversation laws to analyze motion of objects.

Astronomy Unit 1

4-3-1 understands gravitational attraction of objects in the solar system keeps solar system objects in orbit.

4-3-3 understands the relative sizes and distances of objects in the solar system.

4-3-4 understands the Sun, Earth, and other objects in the solar system formed from a nebular cloud of dust and gas.

Astronomy Unit 2

4-3-2 understands the relationship between the Earth, Moon, and Sun explains seasons, tides, and moon phases.

Physics Unit 2

2B-3-6 The student understands basic electrostatics and circuits.

Astronomy Unit 4

4-4-2 understands the current scientific explanation of the origin and structure of the universe.