

EIGHTH GRADE SCIENCE MONITORING SHEET

- ____ **Tri. S.8.1** The student will plan and conduct investigations in which
- ____ S.8.1.a. chemicals and equipment are used safely
 - ____ S.8.1.b. length, mass, volume, density, temperature, weight, and force are accurately measured and reported using metric units (SI – International System of Units)
 - ____ S.8.1.c. conversions are made among metric units, applying appropriate prefixes
 - ____ S.8.1.d. triple beam and electronic balances, thermometers, metric rulers, graduated cylinders, and spring scales are used to gather data
 - ____ S.8.1.e. numbers are expressed in scientific notation where appropriate
 - ____ S.8.1.f. research skills are utilized using a variety of resources
 - ____ S.8.1.g. independent and dependent variables, constants, controls, and repeated trials are identified
 - ____ S.8.1.h. data tables showing the independent and dependent variables, derived quantities, and the number of trials are constructed and interpreted
 - ____ S.8.1.i. data tables for descriptive statistics showing specific measures of central tendency, the range of the data set, and the number of repeated trials are constructed and interpreted
 - ____ S.8.1.j. frequency distributions, scatter grams, line plots, and histograms are constructed and interpreted
 - ____ S.8.1.k. valid conclusions are made after analyzing data;
 - ____ S.8.1.l. research methods are used to investigate practical problems and questions
 - ____ S.8.1.m. experimental results are presented in appropriate written form
 - ____ S.8.1.n. models and simulations are constructed and used to illustrate and explain phenomena
 - ____ S.8.1.o. an understanding of the nature of science is developed and current applications of physical science are used to reinforce concepts
- ____ **Tri. S.8.2** The student will investigate and identify the characteristics of matter
- ____ S.8.2.a. solid, liquids, gas, plasma
 - ____ S.8.2.b. elements, compounds, and mixtures (solutions, suspensions, and colloids)
 - ____ S.8.2.c. organic and inorganic
 - ____ S.8.2.d. acids, bases, and salts
 - ____ S.8.2.e. physical properties: shape, density, color, odor, boiling point, melting point, solubility, and miscibility
 - ____ S.8.2.f. chemical properties: acidity, basicity, pH, combustibility, reactivity

- ____ **Tri. S.8.3** The student will investigate and explain the history of atomic theory and the structures of the atom
- ____ S.8.3.a. the historical development of atomic theory (including Dalton, Thomson, Rutherford, and Bohr)
 - ____ S.8.3.b. Bohr model and electron cloud model (modern model of the atom)
 - ____ S.8.3.c. nucleus, proton, neutrons, electrons
 - ____ S.8.3.d. ions
 - ____ S.8.4.e. isotopes

- ____ **Tri. S.8.4** The student will obtain and explain information from the Periodic Table of Elements
- ____ S.8.4.a. symbol, atomic number and atomic mass
 - ____ S.8.4.b. metals, non-metals, metalloids, and noble gases
 - ____ S.8.4.c. chemical families (groups) and periods
 - ____ S.8.4.d. oxidation number
 - ____ S.8.4.e. synthetic elements

- ____ **Tri. S.8.5** The student will analyze the Periodic Table of Elements and will develop correct inferences regarding elements and binary compounds
- ____ S.8.5.a. formation of compounds through ionic and covalent bonding
 - ____ S.8.5.b. formulas for compounds
 - ____ S.8.5.c. names of compounds

- ____ **Tri. S. 8.6** The student will investigate and explain chemical changes of matter using the theory of conservation of matter and energy
- ____ S.8.6.a. evidence of reaction
 - ____ S.8.6.b. reactants and products
 - ____ S.8.6.c. type of reaction
 - ____ S.8.6.d. balanced chemical equations

- ____ **Tri. S.8.7** The student will investigate and understand temperature scales, heat, and thermal energy transfer and its relation to the kinetic theory
- ____ S.8.7.a. Celsius and Kelvin temperature scales and absolute zero;
 - ____ S.8.7.b. phase change, freezing point, melting point, boiling point, vaporization, and condensation;
 - ____ S.8.7.c. conduction, convection, and radiation; and
 - ____ S.8.7.d. applications of thermal energy transfer

- ____ **Tri. S.8.8** The student will research and discuss nuclear changes in matter using the theory of conservation of matter and energy
- ____ S.8.8.a. fusion and fission
 - ____ S.8.8.b. products of nuclear reactions
 - ____ S.8.8.c. effects on humans and the environment
 - ____ S.8.8.d. alternative energy sources

____ **Tri. S.8.9** The student will investigate and understand the scientific principles of motion and the forces that affect it

- ____ S.8.9.a. speed, velocity, and acceleration
- ____ S.8.9.b. net force
- ____ S.8.9.c. friction;
- ____ S.8.9.d. gravity and centripetal force
- ____ S.8.9.e. Newton's laws of motion
- ____ S.8.9.f. deriving SI unit for force

____ **Tri. S.8.10** The student will define and explain

- ____ S.8.10.a. work
- ____ S.8.10.b. power
- ____ S.8.10.c. mechanical advantage and efficiency
- ____ S.8.10.d. simple machines and complex machines
- ____ S.8.10.e. deriving SI unit for work

____ **Tri. S.8.11** The student will investigate and understand basic principles of electricity and magnetism

- ____ S.8.11.a. static electricity, current electricity, and circuits;
- ____ S.8.11.b. relationship between a magnetic field and an electric current;
- ____ S.8.11.c. electromagnets, motors, and generators and their uses; and
- ____ S.8.11.d. conductors, semiconductors, and insulators

____ **Tri. S.8.12** The student will investigate and explain the basic characteristics of transverse waves

- ____ S.8.12.a. wavelength, frequency, speed, amplitude, crest, and trough;
- ____ S.8.12.b. the wave behavior of light
- ____ S.8.12.c. images formed by lenses and mirrors
- ____ S.8.12.d. the electromagnetic spectrum
- ____ S.8.12.e. technological applications of light

____ **Tri. S.8.13** The student will investigate and explain the basic characteristics of sound waves

- ____ S.8.13.a. wavelength, frequency, speed, amplitude, rarefaction, and compression
- ____ S.8.13.b. resonance
- ____ S.8.13.c. the nature of compression waves
- ____ S.8.13.d. technological applications of sound