School District of Pickens County

Building success beyond the classroom

SC Standards: Science Physical Science

Unit: Atomic Structure and Nuclear Chemistry

Science-PS-2	Compare the subatomic particles (protons, neutrons, electrons) of an atom with regard to mass, location, and charge, and explain how these particles affect the properties of an atom (including identity, mass, volume, and reactivity).
Science-PS-2	Illustrate the fact that the atoms of elements exist as stable or unstable isotopes.
Science-PS-2	Explain the trends of the periodic table based on the elements' valence electrons and atomic numbers.
Science-PS-2	Use the atomic number and the mass number to calculate the number of protons, neutrons, and/or electrons for a given isotope of an element.
Science-PS-2	Predict the charge that a representative element will acquire according to the arrangement of electrons in its outer energy level.
Science-PS-2	Compare fission and fusion (including the basic processes and the fact that both fission and fusion convert a fraction of the mass of interacting particles into energy and release a great amount of energy).
Science-PS-2	Explain the consequences that the use of nuclear applications (including medical technologies, nuclear power plants, and nuclear weapons) can have.
Science-PS-3	Illustrate the difference between a molecule and an atom.

Unit: Introduction to Physical Science

Science-PS-1	Generate hypotheses on the basis of credible, accurate, and relevant sources of scientific information.
Science-PS-1	Use appropriate laboratory apparatuses, technology, and techniques safely and accurately when conducting a scientific investigation.
Science-PS-1	Use scientific instruments to record measurement data in appropriate metric units that reflect the precision and accuracy of each particular instrument.
Science-PS-1	Design a scientific investigation with appropriate methods of control to test a hypothesis (including independent and dependent variables), and evaluate the designs of sample investigations.
Science-PS-1	Organize and interpret the data from a controlled scientific investigation by using mathematics (including formulas and dimensional analysis), graphs, models, and/or technology.
Science-PS-1	Evaluate the results of a controlled scientific investigation in terms of whether they refute or verify the hypothesis.
Science-PS-1	Evaluate a technological design or product on the basis of designated criteria (including cost, time, and materials).
Science-PS-1	Compare the processes of scientific investigation and technological design.

School District of Pickens County

Building success beyond the classroom

SC Standards: Science Physical Science

Science-PS-1 Use appropriate safety procedures when conducting investigations.

Unit: Properties of Matter

Science-PS-3 Distinguish chemical properties of matter (including reactivity) from physical properties of matter (including boiling point, freezing/melting point, density [with density calculations], solubility, viscosity, and conductivity).

Science-PS-3 Classify matter as a pure substance (either an element or a compound) or as a mixture (either homogeneous or heterogeneous) on the basis of its structure and/or composition.

Science-PS-3 Explain the effects of temperature, particle size, and agitation on the rate at which a solid dissolves in a liquid.

Science-PS-3 Compare the properties of the four states of matter-solid, liquid, gas, and plasma-in terms of the arrangement and movement of particles.

Science-PS-3 Explain the processes of phase change in terms of temperature, heat transfer, and particle arrangement.

Unit: Bonding and Organic Chemistry

Science-PS-3 Infer the practical applications of organic and inorganic substances on the basis of their chemical and physical properties.

Science-PS-4 Explain the role of bonding in achieving chemical stability.

Science-PS-4 Explain how the process of covalent bonding provides chemical stability through the sharing of electrons.

Science-PS-4 Illustrate the fact that ions attract ions of opposite charge from all directions and form crystal lattices.

Science-PS-4 Classify compounds as crystalline (containing ionic bonds) or molecular (containing covalent bonds) based on whether their outer electrons are transferred or shared.

Science-PS-4 Predict the ratio by which the representative elements combine to form binary ionic compounds, and represent that ratio in a chemical formula.

Unit: Reactions & Acids and Bases

Science-PS-3 Classify various solutions as acids or bases according to their physical properties, chemical properties (including neutralization and reaction with metals), generalized formulas, and pH (using pH meters, pH paper, and litmus paper).

Science-PS-4 Recognize simple chemical equations (including single replacement and double replacement) as being balanced or not balanced.

Science-PS-4 Explain the effects of temperature, concentration, surface area, and the presence of a catalyst on reaction rates.

SC Standards: Science Physical Science

Science-PS-4	Distinguish between chemical changes (including the formation of gas or reactivity with acids) and physical changes (including changes in size, shape, color, and/or phase).
Science-PS-4	Summarize characteristics of balanced chemical equations (including conservation of mass and changes in energy in the form of heat-that is, exothermic or endothermic reactions).
Science-PS-4	Summarize evidence (including the evolution of gas; the formation of a precipitate; and/or changes in temperature, color, and/or odor) that a chemical reaction has occurred.
Science-PS-4	Apply a procedure to balance equations for a simple synthesis or decomposition reaction.

Unit: Energy and Work

Science-PS-6	Explain how the law of conservation of energy applies to the transformation of various forms of energy (including mechanical energy, electrical energy, chemical energy, light energy, sound energy, and thermal energy).
Science-PS-6	Explain the factors that determine potential and kinetic energy and the transformation of one to the other.
Science-PS-6	Explain work in terms of the relationship among the force applied to an object, the displacement of the object, and the energy transferred to the object.
Science-PS-6	Use the formula W = Fd to solve problems related to work done on an object.

Unit: Motion and Forces

Science-PS-5	Explain the relationship among distance, time, direction, and the velocity of an object.
Science-PS-5	Explain how the gravitational force between two objects is affected by the mass of each object and the distance between them.
Science-PS-5	Use the formula v = d/t to solve problems related to average speed or velocity.
Science-PS-5	Explain how changes in velocity and time affect the acceleration of an object.
Science-PS-5	Use the formula a = (vf-vi)/t to determine the acceleration of an object.
Science-PS-5	Explain how acceleration due to gravity affects the velocity of an object as it falls.
Science-PS-5	Represent the linear motion of objects on distance-time graphs.
Science-PS-5	Explain the motion of objects on the basis of Newton's three laws of motion: inertia; the relationship among force, mass, and acceleration; and action and reaction forces.
Science-PS-5	Use the formula F = ma to solve problems related to force.
Science-PS-5	Explain the relationship between mass and weight by using the formula FW = mag.

School District of Pickens County

Building success beyond the classroom

SC Standards: Science Physical Science

Unit: Electricity and Magnetism

Science-PS-6	Compare alternating current (AC) and direct current (DC) in terms of the production of electricity and the direction of current flow.
Science-PS-6	Explain the relationship of magnetism to the movement of electric charges in electromagnets, simple motors, and generators.
Science-PS-6	Explain how objects can acquire a static electric charge through friction, induction, and conduction.
Science-PS-6	Explain the relationships among voltage, resistance, and current in Ohm's law.
Science-PS-6	Use the formula V = IR to solve problems related to electric circuits.
Science-PS-6	Represent an electric circuit by drawing a circuit diagram that includes the symbols for a resistor, switch, and voltage source.
Science-PS-6	Compare the functioning of simple series and parallel electrical circuits.

Unit: Waves

Science-PS-7	Illustrate ways that the energy of waves is transferred by interaction with matter (including transverse and longitudinal/compressional waves).
Science-PS-7	Compare the nature and properties of transverse and longitudinal/compressional mechanical waves.
Science-PS-7	Summarize characteristics of waves (including displacement, frequency, period, amplitude, wavelength, and velocity as well as the relationships among these characteristics).
Science-PS-7	Use the formulas v = f and v = d/t to solve problems related to the velocity of waves.
Science-PS-7	Summarize the characteristics of the electromagnetic spectrum (including range of wavelengths, frequency, energy, and propagation without a medium).
Science-PS-7	Summarize reflection and interference of both sound and light waves and the refraction and diffraction of light waves.
Science-PS-7	Explain the Doppler effect conceptually in terms of the frequency of the waves and the pitch of the sound.