6th Grade Physical Science Standards At A Glance:

1st Quarter: 1. Explore Scientific Inquiry. 2. Identify the properties used to describe matter. 3. Explain how elements relate to compounds. 4. Describe the properties of a mixture. 5. Distinguish between a physical and chemical change. 6. Explain how changes in matter relate to changes in energy. 7. Identify and describe physical state changes. 8. Using the appropriate lab equipment and formulas, measure mass, volume, and density. 9. Construct data tables and graphs of student-collected data.	2nd Quarter: 1. Identify and illustrate the Dalton, Thompson, Rutherford and Bohr models of Atoms. 2. Calculate the number of subatomic particles and construct models of various elements using the modern atomic model. 3. Recognize the patterns of organization in the periodic table. 4. Make inferences of interaction based on periodic properties. 5. Calculate the number of valence electrons in given elements using the periodic table. 6. Explain how the reactivity of elements is related to valence electrons.
3rd Quarter: 1. Describe ions and how they form bonds. 2. Explain how formulas and names of ionic compounds are written. 3. State what holds covalently bonded atoms together. 4. Distinguish between the properties of ionic and covalently bonded compounds. 5. Identify the different types of Energy. 6. Describe and model the two different types of mechanical waves. 7. Describe wave properties. 8. Explain how wave speed is related to wavelength and frequency. (Calculate)	4th Quarter: 1. Calculate and objects speed and velocity. 2. Demonstrate how to graph motion. 3. Calculate acceleration. 4. Describe what graphs are used to analyze the motion of an accelerating object. 5. Explain how balanced and unbalanced forces are related to an object's motion. 6. Identify factors that determine friction force. 7. Explain why objects accelerate during free fall. 8. Describe and model Newton's three laws of motion. 9. Explain how an object's momentum is determined.

7th Grade Life Science Standards At A Glance:

1st Quarter: 1. Identify process of scientific inquiry 2. Define Lab safety and protocol 3. Define taxonomy and demonstrate taxonomic levels 4. Introduce cells and their relationship to all living things 5. Introduce 5 Kingdoms of living things (needs and characteristics) 6. Describe the 1st Kingdom	**2nd Quarter:** 1. Describe 2nd, 3rd, 4th Kingdoms 2. Dissect various organisms in each Kingdom 3. Identify relationships between Kingdoms
3rd Quarter: 1. Divide 5th Kingdom into appropriate Phyla 2. Observe organisms in Phyla 3. Dissect organisms in Invertebrate/Vertebrate Phyla	**4th Quarter:** 1. Describe systems of Human body 2. Dissect organisms that allow students to view a simulated version of the workings of the human body 3. Discuss genetics and hereditary material 4. Describe and demonstrate the probability of occurrence of a simple genetic cross (single trait)

8th Grade Earth Science Standards at a Glance:

1st Quarter: 1. Identify the process of scientific inquiry 2. Describe safety protocols and use of lab equipment 3. Classify rocks by observing mineral composition, color, and texture 4. Describe the differences between igneous, sedimentary and metamorphic rocks. 5. Describe the processes that change one kind of rock to another (rock cycle) 6. Identify and describe the nature and structure of earth's interior. 7. Explain plate tectonic theory and describe plate boundaries and features associated with this geologic activity 8. Describe the cause and location of earthquakes and volcanoes	2nd Quarter: 1. Describe and discuss the origin of the physical universe 2. Understand the structure, scale and motion of the physical universe 3. Describe the process of star formation from nebulas 4. Explain the life cycles of various sized stars 5. Understand the structure, scale and motion of the solar system
3rd Quarter: 1. Identify variables in atmosphere which generate weather 2. Identify steps and describe process of the water cycle and its impact on the geologic features of the earth. 3. Describe the composition, layering, and motion of the atmosphere 4. Compare and contrast groundwater and surface water	4th Quarter: 1. Explain how interactions between atmosphere and oceans influence climate 2. Explain how oceans redistribute matter and energy around the earth 3. Explain and describe composition, layering, and movement of ocean water

9th Grade Physical Science Standards At A Glance:

1st Quarter: 1. Describe the scientific method and the elements of an experiment. 2. Conduct investigations using tools and techniques safely and competently. 3. Identify and give reasons for patterns in data and relate to theoretical models. 4. Develop understanding of scientific concepts by accessing multiple resources. Evaluate the information provided. 5. Explore a variety of careers in science. 6. Describe the structure of an atom as a tightly packed nucleus, empty space, and an electron cloud. 7. Identify location, relative mass, and charge for electrons, protons, and neutrons. 8. Describe the concept of reactivity and stability based on fulfillment of electron levels. 9. Describe the nuclear forces as those that hold the naturally repellent protons together in the nucleus.	**2nd Quarter:** 1. Describe energy transfer in terms of molecular motion and collision. 2. Describe states of matter and transfer between states in terms of molecular motion, intermolecular forces and particle arrangement. 3. Measure and plot a graph of a phase change from solid to liquid to gas. 4. Read a periodic table for atomic number, mass number, atomic symbols and location of metals and nonmetals. 5. Determine the number of protons, neutrons, and electrons for an atom or ion. 6. Identify key trends in electronegativity, atomic size, and reactivity. 7. Define ionic, covalent, and hydrogen bonding. 8. Predict which elements bond in which ways. 9. Find the name and give the formula and vice versa for simple binary compounds.
3rd Quarter: 1. Distinguish between chemical and physical changes in terms of the properties of the products and reactants. 2. Balance simple chemical equations applying the concept of conservation of matter. 3. Define terms endothermic and exothermic and apply them to the lab. 4. Explain why chemical reactions will either absorb or release energy. 5. Define acid and base and how they relate to the pH scale, giving examples. 6. Predict products of an acid/base reaction. 7. Identify and apply in the lab the concept of specific heat capacity. 8. Draw structural diagrams of simple carbon chain molecules and there possible isomers.	**4th Quarter:** 1. Identify the force(s) acting between objects in “direct contact” or at a distance. (pulls/pushes/friction, gravity/electromagnetism/nuclear) 2. Describe and calculate motion in terms of time, distance, speed, velocity, and acceleration. 3. Describe and graph waves (mechanical and electromagnetic) in terms of their wavelength, amplitude, frequency, and speed. 4. Describe and calculate the nature of electricity and how electrons move and are conducted. 5. Describe the effects of heat energy on solids/liquids/gasses.

Biology Standards at a Glance:

1st Quarter:

Introduction to Biology

1. Understand that science is an organized way of understanding the natural world.
2. Identify and demonstrate the process of scientific inquiry.
3. Describe the basic chemical principles that affect living things.

Ecology

4. Explain levels of organization in biosphere.
5. Describe how energy in transferred and how matter cycles through ecosystems.
6. Explain the different interactions that occur in ecosystems.
7. Explain how populations grow and change.
8. Describe the effect humans have on the biosphere.

2nd Quarter:

Cells

1. Explain the cell theory and describe the major cell organelles.
2. Describe major functions of the cell membrane.
3. Explain processes of diffusion, osmosis, facilitated diffusion, and active transport.

Metabolism

4. Describe role of ATP in cellular activities.
5. Explain process of photosynthesis including light-dependent and light-independent (Calvin Cycle) reactions.
6. Explain process of cellular respiration including glycolysis, fermentation, Kreb's Cycle, and Electron Transport Chain.

Cell Division

7. Describe the major events in the cell cycle
8. Explain how the cell cycle is regulated

3rd Quarter:

Genetics

1. Describe how biological information passes from one generation to the next.
2. Describe the principles of Mendelian genetics.
3. Describe patterns of inheritance through the use of punnett squares and probability.
4. Describe the structure of DNA and its function in genetic inheritance.
5. Explain the process of DNA replication.
6. Explain how and why DNA is transcribed into RNA.
7. Explain how and why RNA is translated into proteins.
8. Use genetic principles to describe human inheritance.

4th Quarter:

Evolution

1. Explain the theory of evolution.
2. Explain the process of natural selection.
3. Explain how populations can evolve to make new species.

Bacteria and Viruses

4. Explain how viruses reproduce and cause infection.
5. Describe the structure and function of bacteria.

Human Body

6. Describe the organs of the digestive system and how they function to maintain homeostasis.
7. Describe the structure of the heart and how functions to pump blood throughout the body.
8. Discuss the structures and function of the male/female reproductive systems.

Chemistry Standards At A Glance:

1st Quarter: 1. Lab safety (what are the dangers and what is the safety equipment found in the lab) 2. Knowledge and use of lab equipment 3. Nature of inquiry (scientific method) 4. Measurement (How to make and record a measurement) 5. Significant digits (what numbers are significant, how 6. Determine the number of significant digits in x, /, +,-) 7. Metric conversions (convert from pico to kilo) 8. Error (percent relative error, percent error, accuracy and precision)	2nd Quarter: 1. Periodic table 2. Electron locations in atoms 3. Orbital notation 4. Quantum numbers 5. How the electrons affect chemical and physical properties 6. Possible charges on metals and nonmetals 7. Electronegativity to determine the type of bond 8. The type of bond to determine the polarity of the bond 9. The polarity of the bond to determine the chemical and physical properties of the compound.
3rd Quarter: 1. Polyatomic ion names 2. Naming binary inorganic compounds (ionic and covalent) 3. Naming tertiary inorganic compounds (ionic and covalent) 4. Writing formulas for inorganic compounds (ionic and covalent) 5. Naming and writing formulas for acids using rules for naming acids. 6. Mole concept (mass, volume, number of atoms) 7. Molarity 8. Empirical formulas 9. Hydrates	4th Quarter: 1. Stoichiometric relationships in chemical reactions 2. Mass – mass reactions 3. Mass – volume reactions 4. Volume – volume reactions 5. Energy relationships in reactions (calorimetry, exothermic, endothermic diagrams and equations) 6. Kinetic theory and gas behaviors 7. Ideal gas laws, Boyle's law, Charles' law, Graham's law 8. Acids and bases 9. Equilibrium 10. Hess' law

Physics Standards At A Glance:

1st Quarter: 1. Metric system measurement 2. Conversion in metric system 3. Standard deviation, Percent error, Percent relative error, accuracy and precision 4. Kinematics (the study of straight line motions) 5. The use of graphs to describe linear motion (no acceleration) 6. The use of graphs to describe acceleration or deceleration 7. Newtonian dynamics and how weight and mass are related but different. 8. How friction is calculated 9. How friction affections motion	**2nd Quarter:** 1. Vector algebra (adding vectors, subtracting vectors) 2. Straight line vectors 3. Addition of up to 3 vectors 4. Law of universal gravitation (calculating mass and distance effects) 5. Kepler and Newton's laws 6. Einstein and relativity (general relativity and special relativity). 7. Circular motion 8. Centripetal force, centripetal acceleration, tangential velocity
3rd Quarter: 1. Work and power 2. Kinetic and potential energy 3. Ideal and mechanical energy 4. Simple machines (inclined plane, wheel and axle, lever, pulley) 5. Percent efficiency of simple machines. 6. Law of conservation of momentum 7. Impulse 8. Power 9. Units to define energy and power	**4th Quarter:** 1. The nature of static charge 2. The nature of electric field 3. Ohm's law 4. Potential (voltage), current (amperage), resistance (Ohm) 5. Series and parallel circuits 6. What magnetism is 7. How magnetism is related to electricity 8. The nature of light and sound 9. How reflection, refraction are related to light and sound 10. Snell's law 11. Lenz's law