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*Students will be able to:* SKILLS IN INQUIRY-BASED LEARNING

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- Formulate a testable hypothesis.
- Design and conduct an experiment specifying variables to be changed, controlled, and measured.
- Select appropriate tools and technology (*calculators, computers, thermometers, meter sticks, balances, graduated cylinders, and microscopes*), and make quantitative observations.
- Present and explain data findings using multiple representations, including tables, graphs, mathematical and physical models, and demonstrations.
- Draw conclusions based on data or evidence presented in tables or graphs, and make inferences based on patterns or trends in the data.
- Communicate procedures and results using appropriate science and technology terminology.
- Offer explanations of procedures, and critique and revise them.

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*Students will be able to:* LIFE SCIENCE

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- Recognize that producers (*plants that contain chlorophyll*) use the sun's energy to make sugars through a process called photosynthesis.
- Relate the extinction of species to a mismatch of adaptation and the environment.
- Give examples of ways in which genetic variation and environmental factors are causes of evolution and the diversity of organisms.
- Recognize that every organism requires a set of instructions that specifies its traits and these instructions are stored in the organism's chromosomes.
- Model how heredity is the passage of these instructions from one generation to another.
- Recognize that hereditary information is contained in genes located in the chromosomes of each cell.
- Compare sexual reproduction (*offspring inherit half of their genes from each parent*) with asexual reproduction (*offspring have an identical copy of the parent cell*).
- Compare and contrast plant and animal cells including major organelles (*cell membrane, cell wall, nucleus, cytoplasm, chloroplasts, mitochondria, vacuoles*).
- Recognize that within cells, many of the basic functions of organisms (*extracting energy from food and getting rid of waste*) are carried out. The way in which cells function is similar in all living organisms.
- Recognize that biological evolution accounts for the diversity of species developed through gradual processes over many generations.
- Recognize that evidence drawn from geology, fossils, and comparative anatomy provides the basis of the theory of evolution.
- Identify ways in which ecosystems have changed throughout geologic time in response to physical conditions, interactions among organisms, and the actions of humans. Describe how changes may be catastrophic such as volcanic eruptions or ice storms.

*Students will be able to:*

PHYSICAL SCIENCE

- Give basic examples of elements and compounds.
- Differentiate between mixtures and pure substances.
- Recognize that a substance (*element or compound*) has a melting point and a boiling point, both of which are independent of the amount of the sample.
- Recognize that there are more than 100 elements that combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.
- Differentiate between an atom (*the smallest unit of an element that maintains the characteristics of that element*) and a molecule (*the smallest unit of a compound that maintains the characteristics of that compound*).
- Differentiate between physical and chemical changes.
- Explain and give examples of how the motion of an object can be described by its position, direction of motion, and speed.
- Graph and interpret distance vs. time graphs for constant speed.
- Recognize that heat is a form of energy and that temperature change results from adding or taking away from a system.
- Explain the effect of heat on particle motion through a description of what happens to particles during a change in phase.
- Give examples of how heat moves in predictable ways, moving from warmer objects to cooler ones until they reach equilibrium.
- Differentiate between weight and mass, recognizing that weight is the amount of gravitational pull on an object.
- Differentiate between volume and mass. Define density.
- Recognize that the measurement of volume and mass requires understanding of the sensitivity of measurement tools (*rulers, graduated cylinders, balances*) and knowledge of appropriate use of significant digits.
- Differentiate between potential and kinetic energy and identify situations where kinetic energy is transformed into potential energy and vice versa.

*Students will be able to:*

EARTH SCIENCE

- Recognize, interpret, and model contour maps.
- Describe and give examples of ways in which the earth's surface is built up and torn down by natural processes, including weathering, erosion and deposition.
- Explain and give examples of how physical evidence, such as fossils and surface features of glaciation supports theories that the earth has evolved over geologic time.
- Tell the difference between radiation, conduction, and convection, the three mechanisms by which heat is transferred through the earth's system.