Year-at-a-Glance



6th Grade Science

2015-2016

2nd Quarter (8 weeks)

|  |  |  |
| --- | --- | --- |
| Chemistry: Matter and Process Skills **)** | | |
|  | **Unit 5**  6.5A  6.5B  6.5C  6.5D  6.6A  6.6B  ADI  6.1-6.4 | **Matter (7 wks)**  Know that an element is a pure substance represented by chemical symbols  Recognize that a limited number of the many known elements comprise the largest portion of solid Earth, living matter, oceans and the atmosphere  Differentiate between elements and compounds on the most basic level  Identify the formation of a new substance by using the evidence of a possible chemical change such as production of a gas, change in temperature, production of a precipitate, or color change  Compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity, or malleability  Calculate density to identify an unknown substance  ***ADI – Argument Driven Instruction***  ***(1 wk)***  Scientific Investigation and Reasoning:  Students can use scientific inquiry, critical thinking, and a variety of tools and safety equipment  (ADI- Nature of Science) |

4th Quarter (12 weeks)

|  |  |  |
| --- | --- | --- |
| Force, Motion & Energy (8 weeks) | | |
|  | **Unit 9**  6.8A  6.9A  6.9B  6.9C  **Unit 10**  6.8B  6.8C  6.8D  6.8E    **Unit 11**  6.11A  6.11B  6.11C | **Energy Forms/Transformations 4wks**  Compare and contrast potential and kinetic energy  Investigate methods of thermal energy transfer, including conduction,  convection and radiation  Verify through investigations that thermal energy moves in a predictable pattern from warmer to cooler until all the substances attain the same temperature (ex: an ice cube melting)  Demonstrate energy transformation such as energy in a flashlight battery changes from chemical energy to electrical to light energy  **ADI – embed into unit.**  **Forces and Simple Machines (4 wks)**  Identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces  Calculate average speed using distance and time measurements  Measure and graph changes in motion  Investigate how inclined planes and pulleys can be used to change the amount of force to move an object  **ADI – embed into unit.**  **Space & Space Exploration (4 weeks)**  **Solar System Exploration (4 wks)**  Describe the physical properties , locations, and movements of the Sun, planets, Galilean moons , meteors, asteroids, and comets  Understand that gravity is the force that governs the motion of our solar system  Describe the history and future of space exploration, including the types of equipment and transportation needed for space travel |  |
|  |  |  |  |

3rd Quarter (9 weeks)

|  |  |  |
| --- | --- | --- |
| Earth Science and Energy | | |
|  | **Unit 7 & Unit 8**  6.10A  6.10C  6.10D  6.6C  6.10B  ADI  6.1-6.4  **Unit 6**  6.7A  6.7B | **Earth: (6 weeks)**  **Layers, Plate Tectonics and Rock Cycle (6 wks)**  Build a model to illustrate the structural layers of Earth, including the inner core, outer core, mantle, crust, asthenosphere, and lithosphere  Identify the major tectonic plates, including Eurasian, African, Indo-Australian, Pacific, North American, and South American  Describe how plate tectonics causes major geological events such as ocean basins, earth quakes, volcanic eruptions and mountain building  Test the physical properties of minerals, including hardness, color, luster, and streak  Classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation  ***ADI – Argument Driven Instruction***  ***(1 week embedded into unit)***  Science Process Skills  (ADI- Nature of Science)  **Energy Resources (3 wks)**  Research and debate the advantages and disadvantages of using coal, oil, natural gas, nuclear power, biomass, wind, hydropower, geothermal, and solar resources  Design a logical plan to manage energy resources in the home, school, and community |  |

1st Quarter (8 weeks)

|  |  |  |
| --- | --- | --- |
| Organisms and Environments (8 weeks) | | |
|  | ***Unit 1***  *6.1 and 6.4*  ***Unit 4***  *6.12E*  *6.12F*  ***Units 2 &***  ***Unit 3***  *6.12A*  *6.12B*  *6.12C*  *6.12D*  *Leap4ward*  *Support*  *Standard*  *Readiness*  *Foundation* | ***ELM Protocols and Middle School Science Classroom***  ***(1 wk)***  Students can use a variety of tools and safety equipment.  ***Ecosystems (2 wks)***  Describe biotic and abiotic parts of an ecosystem in which organisms interact  Diagram the levels of organization within an ecosystem, including organism, population, community, and ecosystem  ***Cells and Classification (5 wks)***  Understand that all organisms are composed of one or more cells.  Recognize that the presence of a nucleus determines whether a cell is prokaryotic or eukaryotic  Recognize that the broadest taxonomic classification of living organisms is divided into currently recognized Domains  Identify the basic characteristics of organisms, including prokaryotic or eukaryotic, unicellular or multi-cellular, autotrophic or heterotrophic, and mode of reproduction, that further classify them in the currently recognized Kingdoms  Student Expectation specifically included in STAAR Assessed Curriculum at Grade 8  Aligned with STAAR Assessed Curriculum at Grade 8 | recognize that waves are generated and can travel through different media. |

**Scientific Investigation and Reasoning Skills**

(1) The student, for at least 40% of instructional time, conducts laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices. The student is expected to:

1. demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standards; and
2. practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials.

(2) The student uses scientific inquiry methods during laboratory and field investigations. The student is expected to:

1. plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and technology;
2. design and implement experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses, and using appropriate equipment and technology;
3. collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers;
4. construct tables and graphs, using repeated trials and means, to organize data and identify patterns; and
5. analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.

(3)  The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists. The student is expected to:

1. in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;
2. use models to represent aspects of the natural world such as a model of Earth's layers;
3. identify advantages and limitations of models such as size, scale, properties, and materials; and
4. relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content.

(4)  The student knows how to use a variety of tools and safety equipment to conduct science inquiry. The student is expected to:

1. use appropriate tools to collect, record, and analyze information, including journals/notebooks, beakers, Petri dishes, meter sticks, graduated cylinders, hot plates, test tubes, triple beam balances, microscopes, thermometers, calculators, computers, timing devices, and other equipment as needed to teach the curriculum; and
2. use preventative safety equipment, including chemical splash goggles, aprons, and gloves, and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher.

Ongoing TEKS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3.14A | Identify Math in Everyday Situations |  | 3.15A | Explain and Record Observations Using Objects, Words, Pictures, Numbers, & Technology (NT) |
| 3.14B | Problem Solving Models |  | 3.15B | Relate Informal Language to Mathematical Language and Symbols |
| 3.14C | Select and Use Problem-Solving Strategies |  | 3.16A | Make Generalizations from Patterns or Sets of Examples and Nonexamples |
| 3.14D | Use Tools, Objects, Manipulatives, and Technology to Solve Problems (NT) |  | 3.16B | Justify Why an Answer is Reasonable and Explain the Solution Process (NT) |