7th Grade Science Syllabus / Pacing Guide

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| **State Standard** | **“I Can”** | 9 Weeks | Chapter | T | M |
| **SPI 0707.Inq.1** Design a simple experimental procedure with an identified control and appropriate variables. | * I can design a simple experiment. (P)
* I can define the terms control and variable. (K)
* I can identify the control and variables in an experiment. (K)
 | 1 | 1 |  |  |
| **SPI 0707.Inq.2** Select tools and procedures needed to conduct a moderately complex experiment.  | * I can match laboratory tools with their appropriate function. (K)
* I can choose the appropriate tools and procedures for an experiment. (K, S)
 | 1 | 11 |  |  |
| **SPI 0707.Inq.3** Interpret and translate data in a table, graph, or diagram. | * I can define the words interpret and translate. (K)
* I can construct a graph when given a set of data. (P)
* I can answer questions using a graph as text evidence. (R, S)
 | 1 | 1 |  |  |
| **SPI 0707.Inq.4** Draw a conclusion that establishes a cause and effect relationship supported by evidence. | * I can define the terms conclusion and cause and effect. (K)
* I can use evidence to draw a conclusion. (S)
* I can use evidence to identify the cause and effect. (K, R, S)
 | 1 | 1 |  |  |
| **SPI 0707.Inq.5** Identify a faultyinterpretation of data that is due to bias or experimental error. | * I can define the term bias. (K)
* I can analyze data and identify bias and experimental error. (K, R, S)
* I can define terms accurate and precise. (K)
 | 1 | 1 |  |  |
| **SPI 0707.T/E.1** Identify the tools and procedures needed to test the design features of a prototype. | * I can define the term prototype. (K)
* I can match laboratory tools with their appropriate function. (K)
* I can build, test, and evaluate a working prototype. (R, S, P)
 | 1 | 1 |  |  |
| **SPI 0707.T/E.**2 Evaluate a protocol to determine if the engineering design process was successfully applied. | * I can identify and explain the steps of the Engineering Design Process. (K, R)
* I can define the term protocol. (K)
* I can evaluate a protocol to determine if the engineering design process was successfully applied.
* I can define the term cost-benefit analysis.
 | 1 | 1 |  |  |
| **SPI 0707.T/E.3** Distinguish between the intended benefits and the unintended consequences of a new technology. | * Define the terms intended benefit and unintended consequence. (K)
* I can identify examples of intended benefits/ unintended consequences of a technology. (K, R, S)
 | 1 | 1 |  |  |
| **SPI 0707.T/E.4** Differentiate between adaptive and assistive engineered products (e.g., food, biofuels, medicines, integrated pest management). | * I can define the term differentiate. (K)
* I can define the terms adaptive and assistive. (K)
* Differentiate between adaptive and assistive engineered products. I
* I can classify a technology as an example of bioengineering. (R, S)
 | 1 | 1 |  |  |
| **SPI 0707.1.1** Identify and describe the function of the major plant and animal cell organelles. | * I can draw and accurately label a plant and animal cell. (K, S)
* I can create a physical model a plant/animal cell. (S, P)
* I can compare the functions of cell organelles to dissimilar object/character/unit. (P)
* I can use a microscope to examine different examples of cells. (K)
* I can match cell organelles with their appropriate function. (K, S)
* I can Identify and describe the function of the major plant and animal cell organelles. (K, R)
 | 1 | 2 |  |  |
| **SPI 0707.1.2** Interpret a chart to explain the integrated relationships that exist among cells, tissues, organs, and organ systems. | * I can summarize the levels of organization of life. (K)
* I can create a leveled diagram showing the levels of organization. (K)
 | 11 | 2 |  |  |
| **SPI 0707.1.5** Explain how materials move through simple diffusion. | * I can define the term concentration. (K)
* I can define the term semipermeable membrane. (K)
* I can identify regions of high concentration and regions of low concentration. (K)
* I can predict the movement of a given substance across a semipermeable membrane. I
* I can design an experiment that demonstrates simple diffusion. (R, S, P)
 | 2 | 3 |  |  |
| **SPI 0707.3.1** Compare the chemical compounds that make up the reactants and products of photosynthesis and respiration. | * I can define the terms reactants, products, photosynthesis, and respiration. (K)
* I can identify the reactants and products of photosynthesis and cellular respiration. (K, R)
* I can correctly write the formulas for photosynthesis and cellular respiration. (K)
* I can use mnemonic devices to correctly sequence reactants and products of photosynthesis and cellular respiration. (K, R, S)
* I can use laboratory tools to examine the cellular structures associated with gas exchange. (K, R, S, P)
* I can use physical models to represent the reactants and products of photosynthesis and cellular respiration. (K, R, S, P)
 | 2 | 3 |  |  |
| **SPI 0707.3.2** Interpret a diagram to explain how oxygen and carbon dioxide are exchanged between living things and the environment. | * I can identify the cellular organelles associated with photosynthesis and cellular respiration. (K)
* I can identify which organisms perform photosynthesis and which organisms perform cellular respiration. (K)
* I can draw a diagram representing carbon dioxide/ oxygen exchange. (K, R, S, P)
 | 2 | 3 |  |  |
| **SPI 0707.1.4** Sequence a series of diagrams that depict chromosome movement during plant cell division. | * I can sequence diagrams showing the steps of mitosis. (K)
* I can use a physical model to represent chromosome movement during mitosis. (K, R, S, P)
 | 2 | 3 |  |  |
| **SPI 0707.4.1** Classify methods of reproduction as sexual or asexual. | * I can define the terms sexual and asexual reproduction. (K)
* I can classify organisms based on how they reproduce. (R, S)
* I can classify methods of reproductions (budding, fragmentations, regeneration, flowering) as sexual or asexual reproduction.
* I can compare the genetic makeup of the offspring to the genetic make-up of the parent as the result of sexual/asexual reproduction. (K, R, S, P)
 | 2 | 4 |  |  |
| **SPI 0707.4.2** Match flower parts with their reproductive functions. | * I can draw and label the reproductive structures of a flowering plant. (K)
* I can associate flowering plants with sexual reproduction. (K)
* I can use laboratory tools to examine the reproductive structures of an actual flower. (K, R, S, P)
* I can use various materials to construct and label a physical model of a flowering plant. (K, R, S, P)
 | 2 | 4 |  |  |
| **SPI 0707.4.3** Describe the relationship among genes, chromosomes, and inherited traits. | * I can define the terms genes, chromosomes, and traits. (K)
* I can describe the relationship among genes, chromosomes, and inherited traits. (K, R)
 | 2 | 4 |  |  |
| **SPI 0707.4.4** Interpret a Punnett square to predict possible genetic combinations passed from parents to offspring during sexual reproduction. | * I can predict the genotype of offspring using a Punnett square. (R)
* I can predict the mathematical likelihood of a specific genotype/ phenotype given the cross between given genotypes. (R, S, P)
 | 2 | 4 |  |  |
| **SPI 0707.1.3** Explain the basic functions of a major organ system. | * I can identify the major organ systems. (K)
* I can match organ systems with their corresponding diagram. (K)
* I can match the organ systems with their corresponding functions. (K)
* I can interrelate the functions of 2 organ systems and how they are interdependent. I
* I can create a physical model of an organ system. (P)
 | 3 | 8-12 |  |  |
| **SPI 0707.7.1** Use a table of physical properties to classify minerals. | * I can define the term mineral. (K)
* I can identify physical/ chemical properties of minerals. (K)
* I can use Moh’s Hardness Scale to identify the hardness of a mineral sample. (K)
* I can use a series of physical tests to determine the identify of an unknown mineral. (K, R, S,P)
 | 3 | 13 |  |  |
| **SPI 0707.7.7** Analyze and evaluate the impact of man’s use of earth’s land, water, and atmospheric resources. | * I can evaluate the impact of man’s use of earth’s land, water, and atmospheric resources. (R)
* I can describe the importance of recycling. (K)
 | 3 | 13 |  |  |
| **SPI 0707.7.2** Label a diagram that depicts the three different rock types. | * I can identify the 3 types of rocks (sedimentary, metamorphic, igneous). (K)
* I can explain the formation of each rock type. (K, R, S)
* I can label a diagram that depicts the three different rock types. (K)
 | 3 | 14 |  |  |
| **SPI 0707.7.3** Identify the major processes that drive the rock cycle. | * I can explain the terms weathering, erosion, heat and pressure, melting, cooling, compaction and cementation. (K, R)
* I can associate each process with the appropriate rock type. (R)
 | 3 | 14 |  |  |
| **SPI 0707.7.4** Differentiate among the characteristics of the earth’s three layers. | * I can draw and label a diagram depicting the 3 layers of the earth.
* I can identify the characteristics of each layer. (K)
 | 3 | 15 |  |  |
| **SPI 0707.7.5** Recognize that lithospheric plates on the scale of continents and oceans continually move at rates of centimeters per year. | * I can describe the rate at which lithospheric plates move as cm/year. (K, S)
 | 4 | 15 |  |  |
| **SPI 0707.7.6** Describe the relationship between plate movements and earthquakes, mountain building, volcanoes, and sea floor spreading. | * I can explain the theories of Plate Tectonics, Sea-Floor Spreading, and Continental Drift. (K, R)
* I can draw and describe the 3 types of plate boundaries (diverging, converging, and transform). (K, S)
* I can explain how plate movement creates each of the following: earthquakes, volcanoes, mountains, and mid-ocean ridges.
* I can infer as to what past geological processes created various landforms. (R)
 | 4 | 15-17 |  |  |
| **SPI 0707.11.3** Apply proper equations to solve basic problems pertaining to distance, time, speed, and velocity. | * I can use mathematical equations to calculate distance, time, speed (rate), and velocity. (R, S)
* I can use laboratory tools to collect data and then calculate distance, time, speed (rate), and velocity. (S)
 | 4 | 19-20 |  |  |
| **SPI 0707.11.4** Identify and explain how Newton’s laws of motion relate to the movement of objects. | * I can summarize Newton’s three laws of motion. (K)
* I can apply the correct law of motion to a given real-world example. (S)
* I can use laboratory tools to demonstrate Newton’s laws of motion. (R, S)
 | 4 | 19-20 |  |  |
| **SPI 0707.11.1** Differentiate between the six simple machines. | * I can define the term differentiate. (K)
* I can identify the 6 simple machines. (K)
* I can identify examples of each of the 6 simple machines. (K)
* I can demonstrate and explain how each simple machine makes work easier.
 | 4 | 21 |  |  |
| **SPI 0707.11.2** Determine the amount of force needed to do work using different simple machines. | * I can use mathematical equations to calculate force and work. (R, S)
 | 4 | 21 |  |  |
| **SPI 0707.11.5** Compare and contrast the different parts of a wave. | * I can draw and label a transverse and longitudinal wave. (K)
 | 4 | 22 |  |  |
| **SPI 0707.11.6** Differentiate between transverse and longitudinal waves in terms of how they are produced and transmitted. | * I can identify a wave as transverse or longitudinal. (K)
* I can use laboratory equipment to produce waves and demonstrate how they are produced and move. (K, R, S, P)
 | 4 | 22 |  |  |