Science Pacing Guide
Grade 7

To successfully complete seventh grade Science the learner will:

The Nature of Science and Design Process

- Conduct investigations applying the scientific method
- Formulate appropriate conclusions providing different explanations using the same evidence
- Explain a need for repetition of experimentation to ensure accurate and precise results
- Formulate ideas to extend investigation to refine conclusion

The Nature of Science

- Make predictions and develop testable questions based on research and prior knowledge.
- Plan and carry out investigations as a class, in small groups or independently often over a period of several class lessons.
- Collect quantitative data with appropriate tools or technologies and use appropriate units to label numerical data.
- Incorporate variables that can be changed, measured or controlled.
- Use the principles of accuracy and precision when making measurement.
- Test predictions with multiple trials.
- Keep accurate records in a notebook during investigations.
- Analyze data, using appropriate mathematical manipulation as required, and use it to identify patterns and make inferences based on these patterns.
- Evaluate possible causes for differing results (valid data).
- Compare the results of an experiment with the prediction.
- Communicate findings using graphs, charts, maps and models through oral and written reports.

The Design Process

- Identify a need or problem to be solved.
- Brainstorm potential solutions.
- Document the design throughout the entire design process so that it can be replicated in a portfolio/notebook with drawings including labels.
- Select a solution to the need or problem.
- Select the most appropriate materials to develop a solution that will meet the need.
- Create the solution through a prototype.

- Test and evaluate how well the solution meets the goal.
- Evaluate and test the design using measurement.
- Present evidence using mathematical representations (graphs, data tables).
- Communicate the solution including evidence using mathematical representations (graphs, data tables), drawings or prototypes.
- Redesign to improve the solution based on how well the solution meets the need.

Learning Targets/Outcomes

- Performance
  - Design an experiment using the scientific method.
  - Record experimental observations in a non-biased manner.
  - Present experimental data in an appropriate graph or diagram.
- Analysis
  - Distinguish observable outcomes from expected outcomes.
  - Decide if further inquiry is necessary based on multiple explanations of results.
  - Analyze media claims to determine scientific viability.

Key Vocabulary

- Accurate
- Precise
- Hypothesis
- Observations
- Conclusion
- Variable
- Control
- Theory

Core Standard 1A: Physical Science: Explain that energy cannot be created or destroyed but only changed from one form into another or transferred from place to place.

- Describe how energy is transferred and the mechanisms used in the transfer.

7.1.1 Explain that when energy is transferred from one system to another, the total quantity of energy does not change. 7.1.2 Describe and give examples of how energy can be transferred from place to place and transformed from one form to another through radiation, convection and conduction. 7.1.3 Recognize and explain how different ways of obtaining, transforming, and distributing energy have different environmental consequences. 7.1.4 Recognize and provide evidence how light, sound and other waves have energy and how they interact with different materials.
Learning Targets/Outcomes - - Mechanisms and Transfer o Identify the various forms of energy and how they are produced. o Summarize how electrical energy is transferred from other forms of energy. - Environmental Consequences o Explain how the production of energy affects the environment.
Key Vocabulary - Radiation - Convection - Conduction - Sound - Visible Light - Energy - Electromagnetic Spectrum

Core Standard 1B: Physical Science: Describe and investigate how forces between objects can act at a distance or by means of direct contact between objects.

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7.1.5 Describe and investigate how forces between objects can act at a distance, such as magnetic, electrical or gravitational forces, or by means of direct contact between objects.
7.1.6 Explain that forces have magnitude and direction and those forces can be added to determine the net force acting on an object.
7.1.7 Demonstrate and describe how an object's speed or direction of motion changes when a force acts upon it. Demonstrate and describe that an object's speed and direction of motion remain unchanged if the net force acting upon it is zero.

Learning Targets/Outcomes

- Where energy comes from
  - Identify the sun as the source of all energy.
  - Explain the transfer of the sun's energy into earth's atmosphere.

Learning Targets/Outcomes

- Mechanisms and Transfer
  - Identify the various forms of energy and how they are produced.
  - Summarize how electrical energy is transferred from other forms of energy.

Learning Targets/Outcomes

- Environmental Consequences
  - Explain how the production of energy affects the environment.

Key Vocabulary

- Radiation
- Convection
- Conduction
- Thermal
- Mechanical
- Electrical
- Electromagnetic
- Visible Light
- Ultraviolet Radiation
- Electromagnetic Spectrum
- Wavelength
- Energy
- Infrared

Core Standard 2: Earth Structures

- Compare and contrast different rock types and formations including the differences in their creations.
- Recreate the rock cycle focusing on time.
- Analyze fossils and apply methods, including relative dating, to infer environmental changes.

7.3.7 Give examples of some changes in the Earth's surface that are abrupt, such as earthquakes and volcanic eruptions, and some changes that happen very slowly, such as uplift and wearing down of mountains, and the action of glaciers. 7.3.10 Explain how the thousands of layers of sedimentary rock can confirm the long history of the changing surface of Earth and the changing life forms whose remains are found in successive layers, although the youngest layers are not always found on top, because of folding, breaking, and uplifting of layers.
Learning Targets/Outcomes - Compare and contrast changes at the Earth's surface both slowly and abruptly. - Describe the process of creating sedimentary rock and how humans use the layers and fossils to retell Earth's story.
Key Vocabulary - Geologic column - Superposition - Relative dating - Unconformity - Faulting - Folding - Fossil - Sedimentary rock - Igneous rock - Metamorphic rock - Trace fossil - Index - Sedimentation - Erosion - Weathering - Deposition - Heat - Pressure - Magma - Lava - Cementation - Melting - Cooling - Crystallization - Recrystallization - Solidification - Compaction - Uplift

Core Standard 3: Life Science

- Compare and contrast the major organelles within plant and animal cells.
- Distinguish differences between single celled and multi-cellular organisms, citing examples of each organism.
- Explain the process of cell growth and repair for a multi-cellular organism.
- Differentiate the levels of cellular organization.
- Analyze similarities of internal and external structures to explain why structural features are a better indicator of similarity than behavior.

6.4.5 Investigate and explain that all living things are composed of cells whose details are usually visible only through a microscope.
6.4.6 Distinguish the main differences between plant and animal cells, such as the presence of chlorophyll and cell walls in plant cells and their absence in animal cells.
7.4.4 Explain that cells continually divide to make more cells for growth and repair and that various organs and tissues function to serve the needs of cells for food, air, and waste removal.
7.4.5 Explain that the basic functions of organisms, such as extracting energy from food and getting rid of wastes, are carried out within the cell and understand that the way which cells function is similar in all organisms.

Learning Targets/Outcomes

- Identify the major organelles of plant and animal cells.
- Explain the importance of the flow of energy within cells.
- Explain and apply the process of mitosis.

7.4.1 Explain that similarities among organisms are found in external and internal anatomical features, including specific characteristics at the cellular level, such as the number of chromosomes. Understand that these similarities are used to classify organisms since they may be used to infer the degree of relatedness among organisms.
5.4.8 Observe that and describe how fossils can be compared to one another and to living organisms according to their similarities and differences.
8.4.9 Recognize and describe that fossil evidence is consistent with the idea that human beings evolved from earlier species.

Learning Targets/Outcomes

- Support how fossil evidence can be compared to living organisms (evolution).
- Classify organisms based on cellular characteristics or internal/external features.

Key Vocabulary

- Photosynthesis
- Cells
- Cell Wall
- Cell membrane
- Mitochondria
- Nucleus
- Chloroplast
- Golgi complex
- Mitosis
- Endoplasmic reticulum
- Prokaryote
- Eukaryotes
- Ribosomes
- Cytoplasm
- Vacuole

Essential Outcomes
7th Grade Science Pacing Guide

1. The scientific method can be used to formulate conclusions. (Core Standard 1)
   Learning goals:
   1. Students will conduct investigations applying the scientific method.
   2. Students will formulate appropriate conclusions providing different explanations using the same evidence.
   3. Students will explain a need for repetition of experimentation.
   4. Students will ensure accurate and precise results.
   5. Students will formulate ideas to extend investigation to refine conclusion.

2. Elements are made up of atoms. (Core Standard 3A)
   Learning goals:
   1. Students will compare and contrast the atomic structure of different elements.
   2. Students will be able to recognize the different parts of the atom.
   3. Students will be able to show how elements can form compounds.

3. Energy is transferred from one place to another. (Core Standard 3D)
   Learning goals:
   1. Students will describe how energy is transferred and the mechanisms used in the transfer.

4. The water cycle affects Earth's climate. (Core Standard 4A)
   Learning goals:
   1. Students will explain the water cycle.
   2. Students will conclude that the ocean's high heat capacity affects the earth's climate.

5. The rock cycle provides evidence of Earth's history. (Core Standard 4B)
   Learning goals:
   1. Students will compare and contrast different rock types and formations including the differences in their creations.
   2. Students will recreate the rock cycle focusing on time.
   3. Students will analyze fossils and apply methods, including relative dating, to infer environmental changes.

6. Plants and animals have many different structures and functions. (Core Standard 5A)

Learning goals:

1. Students will Compare and contrast the major organelles within plant and animal cells.
2. Students will distinguish differences between single celled and multi-cellular organisms, citing examples of each organism.
3. Students will explain the process of cell growth and repair for a multi-cellular organism.
4. Students will differentiate the levels of cellular organization.
5. Students will analyze similarities of internal and external structures to explain why structural features are a better indicator of similarity than behavior.

7. Sexual and asexual reproduction has many differences. (Core Standard 5B)

Learning goals:

1. Students will compare and contrast asexual and sexual reproduction.
2. Students will explain and apply the process of meiosis.

8. Technological developments formed by a variety of cultures and societies. (Core Standard 2)

Learning goals:

1. Students will recognize how the needs and cultural values of a time period influence technological developments.

Bundle 1: Energy: Explain that energy cannot be created or destroyed but only changed from one form into another or transferred from place to place.

7.1.1 Explain that when energy is transferred from one system to another, the total quantity of energy does not change.
7.1.2 Describe and give examples of how energy can be transferred from place to place and transformed from one form to another through radiation, convection and conduction.
7.1.3 Recognize and explain how different ways of obtaining, transforming, and distributing energy have different environmental consequences.
7.1.4 Recognize and provide evidence how light, sound and other waves have energy and how they interact with different materials.

Declarative Knowledge		Procedural Knowledge	
Concepts	1. Energy is transferred from one place to another. 2. Total Energy does not change 3. Sound and light travel differently through various mediums.	Process	1. Scientific Method 2. Writing Process 3. Reading process
Organizing Ideas	1. Students will analyze how energy is transferred.		
Details	1. Energy transformation almost always creates heat. 2. Forms of energy: - Mechanical, thermal, light, electrical, chemical, potential, kinetic 3. Environmental Consequences: - Air Pollution, acid rain, smog, wildlife endangerment 4. Waves travel at different speeds through solids, liquids and gasses.	Skills	1. Investigation of heat transfer. 2. Classify the types of EM waves. 3. Categorize forms of energy.
Vocabulary	Radiation Conduction Electromagnetic Spectrum Convection Energy Sound Visible light		

Bundle 2: Forces: Describe and investigate how forces between objects can act at a distance or by means of direct contact between objects.

7.1.5 Describe and investigate how forces between objects can act at a distance, such as magnetic, electrical or gravitational forces, or by means of direct contact between objects.

7.1.6 Explain that forces have magnitude and direction and those forces can be added to determine the net force acting on an object.

7.1.7 Demonstrate and describe how an object's speed or direction of motion changes when a force acts upon it. Demonstrate and describe that an object's speed and direction of motion remain unchanged if the net force acting upon it is zero.

Declarative Knowledge		Procedural Knowledge	
Concepts	Forces occur between two objects. Force causes motion. Newton's 3 Laws of Motion. Net force is the combined forces of a system.	Process	1. Scientific Method 2. Reading Process 3. Writing Process
Organizing Ideas	1. Students will discover how objects act upon each other. 2. Students will investigate how an object's speed or direction is affected by a force or absence of force. 3. Students will calculate net force of a system		
Details	1. An object at rest stays at rest, an object in motion stays in motion until an unbalanced force is added. 2. F=MA 3. For every action there is an equal and opposite reaction.	Skills	1. Measuring distance, speed, acceleration. 2. Calculating net force. 3. Analyzing charts, graphs and other data.
Vocabulary	-Potential Energy -Kinetic Energy -Speed -Direction -Velocity -Acceleration -Net Force		

Bundle 3: Ever changing Earth: Describe how earth processes have shaped the topography of the earth and have made it possible to measure geological time.

7.2.1 Describe how the earth is a layered structure composed of lithospheric plates, a mantle and a dense core.
7.2.2 Recognize that the earth possesses a magnetic field that is detectable at the surface with a compass.
7.2.3 Characterize the immensity of geologic time and recognize that it is measured in eras and epochs.
7.2.4 Explain how convection currents in the mantle cause lithospheric plates to move causing fast changes like earthquakes and volcanic eruptions, and slow changes like creation of mountains and formation of new ocean floor.
7.2.5 Describe the origin and physical properties of igneous, metamorphic and sedimentary rocks and how they are related through the rock cycle.
7.2.6 Describe physical and chemical characteristics of soil layers and how they are influenced by the process of soil formation, including the action of bacteria, fungi, insects, and other organisms.
7.2.7 Use geological features such as karst topography and glaciation to explain how large scale physical processes have shaped the land.
7.2.8 Compare and contrast fossils with living organisms in a given location to explain how earth processes have changed environments over time.

Declarative Knowledge		Procedural Knowledge	
Concepts	The rock cycle provides evidence of Earth's history.	Process	1. Scientific Method 2. Writing Process 3. Reading Process
Organizing Ideas	1. Students will identify layers of the earth. 2. Students will acknowledge the earth has magnetic fields. 3. Students will analyze different rock types and formations including the differences in their creations. 4. Students will experiment with the rock cycle to determine how it affects geological time. 5. Students will identify how geologic features were formed. 6. Students will comprehend the process of soil formation. 7. Students will analyze fossils and apply methods, including relative dating, to infer environmental changes.		
Details	1. Earth's Geological changes: abruptly (volcanic eruptions, EQ) slowly (glaciers, uplifting, erosion) 2. Fossil record and geologic history 3. Rock cycle 4. Evolution 5. Movement of tectonic plate causes shifts that create geologic changes. 6. Soil formation	Skills	1. Classify rocks. 2. Interpret trace fossils. 3. Analyze data found in a geologic column to determine Earth's story. 4. Investigate soil
Vocabulary	Geologic column Fossil		

	Rock cycle Evolution Volcano Earthquake Plate tectonics Era Epoch		

Bundle 4: Life Science: Understand the cellular structure of living organisms, both single-celled and multicellular.

7.3.1 Explain that all living organisms are composed of one or more cells and that the many functions needed to sustain life are carried out within such cells.

7.3.2 Understand that water is a major component within all cells and is required to carry out many cellular functions.

7.3.3 Explain that although the way cells function is similar in all living organisms, multicellular organisms also have specialized cells whose specialized functions are directly related to their structure.

7.3.4 Compare and contrast similarities and differences between specialized subcellular components within plant and animal cells, including organelles and cell walls that perform essential functions and give a cell its shape and structure.

7.3.5 Explain that cells in multicellular organisms repeatedly divide to make more cells for growth and repair.

7.3.6 Explain that after fertilization, a small cluster of cells divides to form the basic tissues of an embryo which further develops into all the specialized tissues and organs within a multicellular organism.

7.3.7 Describe how various organs and tissues serve the needs of cells for nutrient and oxygen delivery and waste removal.

<table>
<tr><th colspan="2">Declarative Knowledge</th><th colspan="2">Procedural Knowledge</th></tr>
<tr><td>Concepts</td><td>Plants and animals have many different structures and functions.</td><td rowspan="2">Process</td><td rowspan="2">1. Scientific Method
2. Writing Process
3. Reading Process</td></tr>
<tr><td>Organizing Ideas</td><td>1. Students will analyze the major organelles within plant and animal cells.
2. Students will distinguish differences between single celled and multi-cellular organisms.
3. Students will differentiate the levels of cellular organization.
4. Students will analyze similarities of internal and external structures to explain why structural features are a better indicator of similarity than behavior.
5. Students will understand basic concepts of embryonic elopement.</td></tr>
<tr><td>Details</td><td>1. All living things are composed of cells.
2. Plant cells: chloroplasts, cell walls.
3. Cell functions: waste removal, growth, repair, respiration.</td><td rowspan="2">Skills</td><td rowspan="2">1. View cells using a microscope.
2. Analyze the differences between plant and animal cells.</td></tr>
<tr><td>Vocabulary</td><td>Cells
Organisms
Organelle (nucleus, mitochondria, vacuole, cell membrane, cell wall, chloroplast, cytoplasm)
Respiration, Specialization</td></tr>
</table>

Bundle 5: Science, Engineering and Technology: Design and construct a device that converts energy from one form to another to perform work.

7.4.1 Understand that energy is the capacity to do work.
7.4.2 Explain that energy can be used to do work using many processes, for example generation of electricity by harnessing wind energy.
7.4.3 Explain that power is the rate that energy is converted from one form to another.
7.4.4 Explain that power systems are used to provide propulsion for engineered products and systems.

<table>
<tr><th colspan="2">Declarative Knowledge</th><th colspan="2">Procedural Knowledge</th></tr>
<tr><td>Concepts</td><td>Design and construct a device that converts energy from one form to another to perform work.</td><td rowspan="2">Process</td><td rowspan="2">1. Scientific Method
2. Writing Process
3. Reading Process</td></tr>
<tr><td>Organizing Ideas</td><td>1. Students will understand that energy is the capacity to do work.
2. Students will generate electricity though various processes.
3. Students will explain the relationship between power and energy.
4. Students will explain that power systems propel objects forward.</td></tr>
<tr><td>Details</td><td>1. Energy can be generated in many different ways, from many different sources:
- wind, fossil fuels, solar, geothermal, hydroelectric, biomass</td><td rowspan="2">Skills</td><td rowspan="2">Design and construct a device that transfers energy to propel an object forward.</td></tr>
<tr><td>Vocabulary</td><td>Power
Work
Energy
Propulsion</td></tr>
</table>

MICHIGAN CITY MIDDLE SCHOOL Science Grade 7				
Ongoing/All Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
Course Title Science 7th	**Assessment** Quarter 1 Summative Pre and Post Bundle 2 Formative in FOSS	**Assessment** Quarter 2 Summative Pre and Post Bundle 3 Formatives in It's About Time	**Assessment** Quarter 3 Summative Pre and Post Bundle 1, 5 Formatives	**Assessment** Quarter 4 Summative Pre and Post Bundle 5 Formatives
Standard	**Bundle #/Standard** 2	**Bundle #/Standard** 3	**Bundle #/Standard** 1,5	**Bundle #/Standard** 4
	Instructional Strategies • Identifying Similarities & Differences • Summarizing & Note Taking • Providing Recognition • Homework & Practice • Nonlinguistic Representation • Cooperative Learning Groups • Setting Objective/Providing Feedback • Generating & Testing Hypothesis • Cues, Questioning, & Advance Organizers • Direct Vocabulary Instruction	**Instructional Strategies** • Identifying Similarities & Differences • Summarizing & Note Taking • Providing Recognition • Homework & Practice • Nonlinguistic Representation • Cooperative Learning Groups • Setting Objective/Providing Feedback • Generating & Testing Hypothesis • Cues, Questioning, & Advance Organizers • Direct Vocabulary Instruction	**Instructional Strategies** • Identifying Similarities & Differences • Summarizing & Note Taking • Providing Recognition • Homework & Practice • Nonlinguistic Representation • Cooperative Learning Groups • Setting Objective/Providing Feedback • Generating & Testing Hypothesis • Cues, Questioning, & Advance Organizers • Direct Vocabulary Instruction	**Instructional Strategies** • Identifying Similarities & Differences • Summarizing & Note Taking • Providing Recognition • Homework & Practice • Nonlinguistic Representation • Cooperative Learning Groups • Setting Objective/Providing Feedback • Generating & Testing Hypothesis • Cues, Questioning, & Advance Organizers • Direct Vocabulary Instruction

Essential Outcome: The rock cycle provides evidence of Earth's history.					
Summative Assessment: Multiple Choice, Short Answer, Diagram Students will analyze different rock types and formations including the differences in their creations. Students will experiment with the rock cycle to determine how it affects geological time. Students will analyze fossils and apply methods, including relative dating, to infer environmental changes.					
Describe assessment and timeline	Method	Knowledge	Types of Reasoning	Performance Skills	Products
Formative: Rock types and formations have differences in their creations. Timeline: 2-3 weeks assess week 3	Take a crayon through the rock cycle steps			X	X
Formative: The rock cycle affects geological time. Timeline: 2-3 weeks assess week 3	Create a geologic column (see page 99)		X		X
Formative: Methods of fossil dating, including relative dating, inferring environmental changes. Timeline: 2-3 weeks assess week 3	Interpret information based on the construct (MC)	X	X		

Essential Outcome: Energy is transferred from one place to another. Technological developments formed by a variety of cultures and societies.					
Summative Assessment: Multiple choice, short answer Students will analyze how energy is transferred. Students will identify the mechanisms used in the transfer of energy. Students will recognize how the needs and cultural values of a time period influence technological developments.					
Describe assessment and timeline	Method	Knowledge	Types of Reasoning	Performance Skills	Products
Formative: How energy is transferred. Timeline: 1-2 weeks assess week 2	Explain two different paths of energy starting with the sun and becoming the energy to power a CD player.		X		
Formative: The transfer of energy requires different mechanisms. Timeline: 1-2 weeks assess week 2	Create a diagram of the EM spectrum including wavelengths and human use of energy. (pg, 467)				X
Formative: The needs and cultural values of a time period influence technological developments. Timeline: 6-7 days assess day 7	Environmental project (Earth Day)				X

Essential Outcome: Plants and animals have many different structures and functions.					
Summative Assessment: Multiple Choice, short answer, microscope identification (plant and animal) Students will analyze the major organelles within plant and animal cells. Students will distinguish differences between single celled and multi-cellular organisms. Students will understand the process of cell growth and repair for a multi-cellular organism. Students will differentiate the levels of cellular organization. Students will analyze similarities of internal and external structures to explain why structural features are a better indicator of similarity than behavior.					
Describe assessment and timeline	Method	Knowledge	Types of Reasoning	Performance Skills	Products
Formative: Major organelles are different within plant and animal cells. Timeline: 1 week assess day 6	Create a model of each a plant and animal cell				X
Formative: Differences exist between single celled and multi-cellular organisms and structural features are a better indicator of similarity than behavior. Timeline: 2 week assess day 10	Examine various single-celled and multi-celled organisms with a microscope and explain the visible differences and the relationships of structural features.		X	X	
Formative: The process of cell growth and repair for a multi-cellular organisms Timeline: 1 week assess day 6	Multiple Choice questions	X			
Formative: Differentiate the levels of cellular organization. Timeline: 2-3 days assess day 3	Respond to a writing prompt.	X			

MONTH	ESSENTIAL OUTCOME	LEARNING GOAL(S)	BUNDLE #	SKILLS	SUGGESTED ACTIVTIES	FORMATIVE ASSESSMENT
DATE: September **QUARTER: 1** **WEEK: 1-8**	Describe and investigate how forces between objects can act at a distance or by means of direct contact between objects.	Forces occur between two objects. Force causes motion. Newton's 3 Laws of Motion. Net force is the combined forces of a system.	**2**	Measuring distance, speed, acceleration. Calculating net force. Analyzing charts, graphs and other data.	FOSS KIT	**Assessment #: Foss Assessments** **Q1 Summative**
DATE: Oct.-Nov. **QUARTER: 1-2** **WEEK: 9-1**	Describe how the Rock cycle provides evidence of Earth's history.	The rock cycle provides evidence of Earth's history.	**3**	Classify Rocks	Rock Cycle Lab	**Assessment #: Q3, F1**
DATE: Nov. – Jan. **QUARTER: 2-3** **WEEK: 2-1**	Describe how earth processes have shaped the topography of the earth and have made it possible to measure geological time.	Processes within the earth cause geologic changes.	**3**	**TBA**	Ever changing Earth Kit	**Assessment #: It's about time assessments**

WEEK	ESSENTIAL OUTCOME	LEARNING GOAL(S)	BUNDLE #	SKILLS	SUGGESTED ACTIVTIES	FORMATIVE ASSESSMENT
DATE: Jan. – Feb. QUARTER: 3 WEEK: 2-3	Describe how the Rock cycle provides evidence of Earth's history.	The rock cycle provides evidence of Earth's history.	**3**	Interpret trace fossils. Analyze data found in a geologic column to determine Earth's story	Construct a Geologic column.	**Assessment #:Q2 Summative, Q3F2**
DATE: Feb.-March QUARTER: 3 WEEK: 4-9	Explain that energy cannot be created or destroyed but only changed from one form into another or transferred from place to place.	Students will analyze how energy is transferred.	**1**	Investigation of heat transfer. Classify the types of EM waves. Categorize forms of energy.	NEED Energy kits	**NEED Energy Assessments**
DATE: Feb.-March QUARTER: 3 WEEK: 4-9	Design and construct a device that converts energy from one form to another to perform work.	Students will explain that power systems propel objects forward.	**5**	Design and construct a device that transfers energy to propel an object forward.	NEED energy kits	**Assessment #:NEED Assessments**

WEEK	ESSENTIAL OUTCOME	LEARNING GOAL(S)	BUNDLE #	SKILLS	SUGGESTED ACTIVTIES	FORMATIVE ASSESSMENT
DATE: Mar.-Apr. QUARTER: 4 WEEK: 1-2	Understand the cellular structure of living organisms, both single-celled and multicellular.	Students will analyze the major organelles within plant and animal cells.	**4**	View cells using a microscope. Analyze the differences between plant and animal cells.	Create a model of each a plant and animal cell	**Assessment #: F1**
DATE: April QUARTER: 4 WEEK: 2-4	Understand the cellular structure of living organisms, both single-celled and multicellular.	Students will distinguish differences between single celled and multi-cellular organisms. Students will understand the process of cell growth and repair for a multi-cellular organism.	**4**	View cells using a microscope. Analyze the differences between plant and animal cells	Examine various single-celled and multi-celled organisms with a microscope and explain the visible differences and the relationships of structural features	**Assessment #:F2**
DATE: April QUARTER: 4 WEEK: 4-5	Understand the cellular structure of living organisms, both single-celled and multicellular.	Students will differentiate the levels of cellular organization.	**4**	View cells using a microscope. Analyze the differences between plant and animal cells	The process of cell growth and repair for a multi-cellular organisms	**Assessment #:F3**

WEEK	ESSENTIAL OUTCOME	LEARNING GOAL(S)	BUNDLE #	SKILLS	SUGGESTED ACTIVTIES	FORMATIVE ASSESSMENT
DATE: May QUARTER: 4 WEEK: 5-6	Understand the cellular structure of living organisms, both single-celled and multicellular.	Students will analyze similarities of internal and external structures to explain why structural features are a better indicator of similarity than behavior.	**4**	View cells using a microscope. Analyze the differences between plant and animal cells	Differentiate the levels of cellular organization.	**Assessment #:F4**
DATE: May QUARTER: 4 WEEK: 7	Understand the cellular structure of living organisms, both single-celled and multicellular.	Students will understand basic concepts of embryonic development	**4**	View cells using a microscope.	Create a poster showing the stages of embryonic development.	**Assessment #:F5**

Revised 8/1710

Quarter	Dates	Kit #	Delivery Date	Pick up Date	Kit Time	Summative
1	**8/25-10/29**	*1*	08/16/10	10/23/10	8 weeks	Quarter 1
	9 weeks	*Force & Motion*				
1 – 2	10/25-11/5	rocks:			1 week 1st qrt	Quarter 2
		diggin in?			1 week 2nd qrt	
		rock cycle				
		geologic time				
2	**11/1-1/20**	*2*	11/03/10	01/29/10	9 weeks	Quarter 3
	9 weeks	*ever change earth*			(1 week from 3rd qrt)	
3	**1/24-3/25**	rock cycle			2 weeks	Quarter 3
	9 weeks	geologic time				
	lstep 2/28				1 week	
		energy types			3 weeks	Quarter 3
		energy transfer			3 weeks	Quarter 3
4	**3/28-5/27**	cells				Quarter 4
	8 weeks					
	lstep 4/25					