Centerville-Abington Jr. High School Curriculum Mapping Grade 7 Science Mrs. Laurie Shadle

7th Science Overview

The Indiana Academic Standards specify the core, fundamental skills students should learn, master, and apply at grade level beginning in kindergarten and continuing through grade twelve. These academic standards serve as the basis to our curriculum in Centerville-Abington Community Schools but do not serve as curriculum alone. The Indiana Academic Standards are supported through grade-level, content-specific curriculum maps and resources. These curriculum maps and resources are aligned to the Indiana Academic Standards and provide the tools which are necessary to meet the needs of all learners. As a result, the Centerville-Abington Community Schools' curriculum maps are examined regularly and undergo periodic revisions.

CJHS seventh grade science class is designed to help students further develop scientific skills and knowledge. Lessons in this course introduce students to major concepts in the nature of science, technology and engineering, physical science, life science, and Earth and environmental science. Students improve their scientific literacy by analyzing, evaluating, and critiquing sources of non-fiction text. This guides students to make connections that are important in the overall study of science. Topics covered in this curriculum include the following: nature of science, the scientific method, matter, energy, motion, forces, work and simple machines, cell structure and function, cell organization and systems, Earth's structure and formation, plate tectonics, Geologic time, rocks and the rock cycle, weathering and erosion, soil, and conservation and human impact on the environment.

Textbook: McGraw-Hill (2020) Inspire Science: Grade 7 Integrated and McGraw-Hill (2012) Indiana Grade 7 iScience

<u>Unit 1 Theme</u> Nature of Science and Scientific Method; Energy	Duration of Unit Weeks 1 -12	Essential Question(s) How can science provide answers to your questions about the world around you? What are energy transfers and energy transformation?
		energy transfers and energy transformation?

Unit 1 Authentic Learning Tasks

Students will do various mini-lab activities to demonstrate and understand the nature of Science and Energy.

- (1) Candle Observation Activity Students make qualitative and quantitative observations as they watch a candle burn.
- (2) Using SI Units Lab Students will take various measurements using different units from the International System of Measurement
- (3) Thermal Energy Transfer Lab Compare final water temperatures after different masses of ice melted in the same volume of water with the same initial temperature
- (4) RIMS (Racing into Math and Science) project: Students build the fastest race car possible while following the scientific method.

Standards: MS-PS2-2; MS-PS2-3; MS-PS2-4; MS-PS2-5; MS-PS3-1; MS-PS3-2; MS-PS3-3; MS-PS3-4; MS-PS3-5; 6-8.ETS1-1; 6-8.ETS1-2; 6-8.ETS1-3; 6-8.ETS1-4; 6-8.LST.7.1

Pacing: Unit 1: Weeks 1 - 9, Days 1 - 45 (Block Scheduling)

Indiana Academic Standards

MS-PS2-1; MS-PS2-2; MS-PS2-3; MS-PS2-4; MS-PS2-5; MS-PS3-1; MS-PS3-2; MS-PS3-3; MS-PS3-4; MS-PS3-5; 6-8.ETS1-1; 6-8.ETS1-2; 6-8.ETS1-3; 6-8.ETS1-4; 6-8.LST.1.1; 6-8.LST.2.1; 6-8.LST.2.2; 6-8.LST.2.3; 6-8.LST.3.1; 6-8.LST.3.2; 6-8.LST.3.3; 6.8.LST.4.1; 6-8.LST.4.2; 6-8.LST.4.3; 6-8.LST.5.1; 6-8.LST.5.2; 6-8.LST.6.1; 6-8.LST.6.2; 6-8.LST.7.1; 6-8.LST.7.2; 6-8.LST.7.3

Academic Vocabulary

Content Vocabulary: Science, Life Science, Earth Science, Physical Science, observation, inference, hypothesis, prediction, scientific theory, scientific law, accuracy, precision, variable, dependent variable, independent variable, potential energy, kinetic energy, chemical energy, nuclear energy, electric energy, mechanical energy, thermal energy, wave, sound energy, radiant energy, law of conservation of energy, energy transfer, energy transformation, biomass

Marzano Vocabulary: Atom, Element, Molecule, Compound, Solid, Liquid, Gas, Density, Temperature, Mass, Energy, Conduction, Convection, Radiation

Literacy Vocabulary: textual evidence, cite, analysis

Key Concepts/Learning Targets

- 1. I can apply scientific ideas or principles to design an object, tool, process, or system.
- 2. I can describe the criteria and constraints, including quantification.
- 3. I can evaluate potential solutions.
- 4. I can formulate questions that arise from examining given data of objects.
- 5. I can form hypotheses based on scientific principles and given data.
- 6. I can describe the relationship between kinetic energy and mass.
- 7. I can describe the relationship between kinetic energy and speed.
- 8. I can describe relationships between components, such as when two objects interact at a distance or when the relative position of two objects changes.
- 9. I can identify that the faster a given object is moving, the more energy it possesses.
- 10. I can describe how energy can be moved from place to place by moving objects, or through sound, light or electric currents.
- 11. I can describe how light transfers energy from place to place.
- 12. I can differentiate between kinetic and potential energy, depending on their relative positions.
- 13. I can describe conservation of energy.
- 14. I can identify that energy cannot be created or destroyed, but can be transformed or transferred.

Literacy Standards Learning Targets

- 1. I can read science text independently and proficiently.
- 2. I can write about scientific subjects in order to inform my audiences about scientific concepts/ideas.

Question Stems

- 1. What technology will be used in the solution?
- 2. How is the criteria appropriate to solve the given problem?
- 3. What are the constraints?
- 4. How is the choice of technology used in the design affected by the constraints of the problem and the limits of technological advances?
- 5. What are the cause-and-effect relationships that affect magnetic forces?
- 6. What happens to kinetic energy as the mass of the object doubles?
- 7. What happens to kinetic energy as the speed of the object doubles?
- 8. How does energy manifest itself in multiple ways at the macroscopic scale?
- 9. How does energy manifest itself at the microscopic scale?
- 10. How can energy be transformed and/or transferred?
- 11. What types of matter are used in the investigation(s)?
- 12. How and when will the temperature and mass be measured?
- 13. What is the Law of Conservation of Energy?
- 14. What does the amount of energy transfer needed to change the temperature of a matter sample by a given amount depend on?

Literacy Standards Question Stems

- 1. How can you read text in science with a purpose?
- 2. How can you explain a scientific concept/idea through writing?
- 3. What specific text evidence or data is used to support the main idea?

 I can cite specific textual evidence to support my analysis. I can identify useful specific textual evidence for its use in analysis of science and technical texts. I can cite specific textual evidence for its use in supporting the main idea, supporting details, conclusion, and purpose. I can determine the central ideas of a text. I can determine the conclusions of a text. I can accurately summarize the text. I can follow a multistep procedure for experiments. I can take measurements and perform technical tasks. I can identify what tools or instruments I need for a procedure. I can analyze results of an experiment, including evidence and data to support my conclusion. 	 4. How does the text evidence or data support the supporting details of this text? How does the specific text evidence or data from the text support your conclusion? 5. What was the purpose of citing the specific text evidence or data at the time of publication? 6. What is the central idea of this text? 7. What are the components of an objective summary? 8. How can I summarize this text? 9. What is the conclusion of the text? 10. What is the purpose of this experiment? 11. What comes first? 12. What are the steps? 13. What is the best unit of measurement to use? 14. What instruments or tools are used?
Resources/Activities-Daily warm-up questions to gauge student learning growthMain idea lecture presentation focused on essential questionsPost Lecture Analysis QuestionsVideo clips about different key concepts using Generation Genius, BrainPop and/or EdPuzzle-Guided Lecture w/Summary Notes and pictures-Textbook reading with key concept checks, and main idea note taking -Marzano Vocabulary builders-Vocabulary Lecture with video clips and picturesScience Magazine Articles - read and write about relevant science topics (RWS)-Math connection: Calculating measurements, SI units-Creating posters of key concept material. -New Path Learning: Properties & States of Matter, Energy Forms and Changes	Assessments -Pre-assessment to assess prior knowledge and experiences. -Entrance Tickets -Exit Slips -Check point Quiz -Socratic Questioning -Quizlet online review resource -Kahoot or Blooket online Game review of material -BrainPop mini quizzes -Lab Reports -Performance Assessment Project -Unit Test

<u>Unit 2 Theme</u>	Duration of Unit	Essential Question(s)
Engineering, Design, and Technology;	Weeks 8-18	How can science provide answers to your
Motion, Forces, and Newton's Laws		questions about the world around you? In what ways do forces affect an object's motion?

Unit 2 Authentic Learning Task (s)

(1)Newton's Laws of Motion Lab - Students will practice Newton's Laws of Motion using a Penny, Index Card, and Cup(2) PhET Interactive Simulations: Forces and Motions Basics

(3) RIMS (Racing into Math and Science) project: Students build the fastest race car possible while following the scientific method.

Standards: MS-PS2-1; MS-PS2-2; MS-PS2-3; MS-PS2-4; MS-PS2-5; MS-PS3-1; MS-PS3-2; MS-PS3-3; MS-PS3-4; MS-PS3-5; MS-ETS1-1; MS-ETS1-2; MS-ETS1-3; MS-ETS1-4; 6-8.LST.7.1

Pacing: Unit 2: Weeks 8 - 18, Days 41-89

Indiana Academic Standards

MS-PS2-1; MS-PS2-2; MS-PS2-3; MS-PS2-4; MS-PS2-5; MS-PS3-1; MS-PS3-2; MS-PS3-3; MS-PS3-4; MS-PS3-5; MS-ETS1-1; MS-ETS1-2; MS-ETS1-3; MS-ETS1-4; 6-8.LST.1.1; 6-8.LST.1.2; 6-8.LST.2.1; 6-8.LST.2.2; 6-8.LST.3.1; 6-8.LST.3.2; 6-8.LST.3.3; 6-8.LST.3.2; 6-8.LST.3.3; 6-8.LST.3.2; 6-8.LST.3.2; 6-8.LST.3.2; 6-8.LST.3.2; 6-8.LST.3.3; 6-8.LST.3.3; 6-8.LST.3.3; 6-8.LST.3.2; 6-8.LST.3.2; 6-8.LST.3.2; 6-8.LST.3.3; 6-8.LST.3; 6-8.LST.3; 6-8.LST.3; 6-8.LST.3;

Academic Vocabulary

Content Vocabulary: reference point, distance, displacement, speed, velocity, contact force, noncontact force, balanced forces, unbalanced forces, Newton's First Law of Motion, Newton's Second Law of Motion, Newton's Third Law of Motion, force pair, work, power, simple machines, lever, fulcrum, wheel and axle, inclined plane, wedge, screw, pulley, frequency, amplitude, refraction

Marzano Vocabulary: Gravity, Friction, Force, Acceleration, Inertia, Motion

Literacy Vocabulary: textual evidence, cite, analysis

 Key Concepts/Learning Targets I can identify the phenomenon to be investigated. I can develop a plan for the investigation individually or collaboratively. I can apply scientific ideas or principles to design an object, tool, process, or system. I can describe the criteria and constraints, including quantification. I can evaluate potential solutions. I can formulate questions that arise from examining given data of objects. I can determine that the motion of an object is the sum of the forces acting on it; if the total force on the object is not zero, its motion will change. I can determine that the greater the mass of the object, the greater the force needed to achieve the same change in motion. I can determine that for any given object, a larger force causes a larger change in motion. 	 Question Stems 1. What are the independent and dependent variables and controls in the investigation? 2. What tools are needed to do the gathering, measurements, and data collection? 3. What data is needed to provide evidence? 4. What is the mass of the object? What are the forces acting on the object? 5. How can a force be applied to move two attracting objects farther apart? 6. How can a force be applied to move two repelling objects closer together? 7. How many trials will there be for the experiment? 8. What are the components within the system that are involved in the collision? What are the forces exerted by the first object on the second object? 9. How is Newton's third law applied to design a solution to the problem? 10. What are the factors that affect the strength of electric and magnetic forces?
 10. I can determine that for any given object, a larger force causes a larger change in motion. 11. I can describe the cause-and-effect relationship that affects electric forces due to the magnitude and signs of the electric charges on the interacting objects, the distances between the interacting objects, and the magnetic forces. 	I. What are the factors that affect the strength of electric and magnetic forces?
	<u>Enterney Standards Question Stems</u>
Literacy Standards Learning Targets	 How can you read text in science with a purpose? How can you explain a scientific concept/idea through writing?
1. I can read science text independently and proficiently.	3. What specific text evidence or data is used to support the main
 I can write about scientific subjects in order to inform my audiences about scientific concepts/ideas. 	idea?
3. I can cite specific textual evidence to support my analysis.	

 I can identify useful specific textual evidence for its use in analysis of science and technical texts. I can cite specific textual evidence for its use in supporting the main idea, supporting details, conclusion, and purpose. I can determine the central ideas of a text. I can determine the conclusions of a text. I can accurately summarize the text. I can follow a multistep procedure for experiments. I can take measurements and perform technical tasks. I can identify what tools or instruments I need for a procedure. I can analyze results of an experiment, including evidence and data to support my conclusion. 	 How does the text evidence or data support the supporting details of this text? How does the specific text evidence or data from the text support your conclusion? What was the purpose of citing the specific text evidence or data at the time of publication? What is the central idea of this text? What are the components of an objective summary? How can I summarize this text? What is the conclusion of the text? What is the purpose of this experiment? What comes first? What is the steps? What is the best unit of measurement to use? What instruments or tools are used?
Resources/Activities-Daily warm-up questions to gauge student learning growthMain idea lecture presentation focused on essential questionsPost Lecture Analysis QuestionsVideo clips about different key concepts using Generation Genius, BrainPop and/or EdPuzzle-Guided Lecture w/Summary Notes and pictures-Textbook reading with key concept checks, and main idea note taking-Marzano Vocabulary builders-Vocabulary Lecture with video clips and picturesScience Magazine Articles - read and write about relevant science topics (RWS)-Math connection: Calculating measurements, SI units-Creating posters of key concept material-New Path Learning: Forces and Motion	Assessments Pre-assessment to assess prior knowledge and experiences. -Entrance Tickets -Exit Slips -Check point Quiz -Socratic Questioning -Quizlet online review resource -Kahoot or Blooket online Game review of material -BrainPop mini quizzes -Lab Reports -Performance Assessment Project -Unit Test

Unit 3 Theme	Duration of Unit	Essential Question(s)
Life: Structure and Function	Weeks 19-26	How do the structures and processes of a cell
		enable it to survive? How can one cell become a multicellular organism?

Unit 3 Authentic Learning Tasks

(1) Microscope Lab - Students will have a microscope lab to study cells and other objects and understand the parts of a microscope and how it is used properly; study cells and cell structure.

(2) Dissection Labs - Students will dissect crayfish and frogs to study and compare the different systems in animals and humans.

(3) Wisconsin Fast Plant Project - Students will grow plants and use the scientific method to show the effects of acid rain on plant growth.

Standards: MS-LS1-1; MS-LS1-2; MS-LS1-3; MS-LS1-7; MS-LS1-8; 6-8.LST.1.1; 6-8.LST.2.3; 6-8.LST.3.1; 6.8.LST.4.1; 6-8.LST.4.3; 6-8.LST.5.2; 6-8.LST.6.2; 6-8.LST.7.1; 6-8.LST.7.2; 6-8.LST.7.3

Pacing: Unit 3: Weeks 19 - 27, Days 90-135

Indiana Academic Standards

MS-LS1-1; MS-LS1-2; MS-LS1-3; MS-LS1-7; MS-LS1-8; 6-8.LST.1.1; 6-8.LST.1.2; 6-8.LST.2.1; 6-8.LST.2.2; 6-8.LST.2.3; 6-8.LST.3.1; 6-8.LST.3.2; 6-8.LST.3.3; 6.8.LST.4.1; 6-8.LST.4.2; 6-8.LST.4.3; 6-8.LST.5.1; 6-8.LST.5.2; 6-8.LST.6.1; 6-8.LST.6.2; 6-8.LST.7.1; 6-8.LST.7.2; 6-8.LST.7.3

Academic Vocabulary

Content Vocabulary: microscope, magnify, unicellular, multicellular, bacteria, algae, DNA, chromosomes, organelle, cytoplasm, nucleus, cell wall, cell membrane, chloroplasts, mitochondrion, diffusion, osmosis, photosynthesis, cellular respiration, ATP, glucose, proteins, enzymes

Marzano Vocabulary: Cell theory, Prokaryotic, Eukaryotic, tissue, organ, organ system, mitosis, cytokinesis, cell differentiation, digestive system, circulatory system, immune system

Literacy Vocabulary: textual evidence, cite, analysis

 Key Concepts/Learning Targets 1. I can identify that all living things are made of cells (either one cell or many different numbers and types of cells) and that the cell is the smallest unit that can be said to be alive. 2. I can determine the presence or absence of cells in living and nonliving things. 3. I can determine the presence or absence of cells in a variety of organisms, including unicellular and multicellular organisms. 4. I can identify and describe the different types of cells within one multicellular organism. 5. I can identify the tools used for observation at different magnifications and describe that different tools are required to observe phenomena related to cells at different scales. 6. I can determine that organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring. 7. I can describe that within cells, special structures are responsible for 	Question Stems1. What is the smallest unit of life?2. How can you determine the presence or absence of cells in a living or nonliving organism?3. What are the different types of cells in a multicellular organism?4. What are the different structures or components of prokaryotic cells?5. What are the different structures or components of eukaryotic cells?6. What are the different parts of the microscope and magnifications used to observe cells and other objects?7. How do different organisms reproduce?8. What are the different systems in organisms and what is their function?9. What are some different systems in organisms and what is their function?10. What is DNA and what is its function?11. What are the differences between plant and animal cells?13. What are tissues?14. What are organs?
 organisms, including unicellular and multicellular organisms. 4. I can identify and describe the different types of cells within one multicellular organism. 5. I can identify the tools used for observation at different magnifications and describe that different tools are required to observe phenomena related to cells at different scales. 6. I can determine that organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring. 7. I can describe that within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. 8. I can identify and describe several systems of specialized cells within organisms that help them perform the essential functions of life. 9. I can determine that all cells contain genetic information in the form of DNA molecules. 10. I can describe chloroplasts' involvement in photosynthesis and energy production and mitochondria's involvement in cellular respiration. 	 used to observe cells and other objects? 7. How do different organisms reproduce? 8. What are the different components of the cell involved in photosynthesis and cellular respiration? 9. What are some different systems in organisms and what is their function? 10. What is DNA and what is its function? 11. What are the differences between plant and animal cells? 12. What is the function of chloroplasts? 13. What are organs? 14. What are organ systems? 16. What are some organ systems and their functions in the body? 17. How is matter (atoms) used by an organism for growth? 18. How are food molecules taken in by organisms broken down and used for the organism's benefit?

11. I can distinguish between plant cells and animal cells; I can describe how plant cells have a cell wall in addition to a cell membrane, whereas animal cells have only a cell membrane.

12. I can describe how plant cells contain organelles called chloroplasts, (while animal cells do not), to carry out photosynthesis.

13. I can describe how specialized groups of cells work together to form tissues.

14. I can describe how specialized tissues comprise each organ, enabling the specific organ functions to be carried out

15. I can describe how different organs can work together as subsystems to form organ systems that carry out complex functions

16. I can describe how the body contains organs and organ systems that interact with each other to carry out all necessary functions for survival and growth of the organism.

17. I can describe that all matter (atoms) used by the organism for growth comes from the products of the chemical reactions involving the matter taken in by the organism.

18. I can describe how food molecules taken in by the organism are broken down and can then be rearranged to become the molecules that comprise the organism and that energy is released and can be used to support other processes within the organism.

Literacy Standards Learning Targets

- 1. I can read science text independently and proficiently.
- 2. I can write about scientific subjects in order to inform my audiences about scientific concepts/ideas.

Literacy Standards Question Stems

- 1. How can you read text in science with a purpose?
- 2. How can you explain a scientific concept/idea through writing?
- 3. What specific text evidence or data is used to support the main idea?

 I can cite specific textual evidence to support my analysis. I can identify useful specific textual evidence for its use in analysis of science and technical texts. I can cite specific textual evidence for its use in supporting the main idea, supporting details, conclusion, and purpose. I can determine the central ideas of a text. I can determine the conclusions of a text. I can accurately summarize the text. I can follow a multistep procedure for experiments. I can take measurements and perform technical tasks. I can identify what tools or instruments I need for a procedure. I can analyze results of an experiment, including evidence and data to support my conclusion. 	 4. How does the text evidence or data support the supporting details of this text? How does the specific text evidence or data from the text support your conclusion? 5. What was the purpose of citing the specific text evidence or data at the time of publication? 6. What is the central idea of this text? 7. What are the components of an objective summary? 8. How can I summarize this text? 9. What is the conclusion of the text? 10. What is the purpose of this experiment? 11. What comes first? 12. What are the steps? 13. What is the best unit of measurement to use? 14. What instruments or tools are used?
Resources/Activities-Daily warm-up questions to gauge student learning growthMain idea lecture presentation focused on essential questionsPost Lecture Analysis QuestionsVideo clips about different key concepts using Generation Genius, BrainPop and/or EdPuzzle-Guided Lecture w/Summary Notes and pictures-Textbook reading with key concept checks, and main idea note taking -Marzano Vocabulary builders-Vocabulary Lecture with video clips and picturesScience Magazine Articles - read and write about relevant science topics (RWS)-Math connection: Calculating measurements, SI units-Creating posters of key concept material -New Path Learning - Photosynthesis & Respiration, Cells, Mitosis	Assessments Pre-assessment to assess prior knowledge and experiences. -Entrance Tickets -Exit Slips -Check point Quiz -Socratic Questioning -Quizlet online review resource -Kahoot or Blooket online Game review of material -BrainPop mini quizzes -Lab Reports -Performance Assessment Project -Unit Test

<u>Unit 4 Theme</u>	Duration of Unit	Essential Question(s)
Earth's Structure, Geologic Time, Rocks,	Weeks 27-36	How is Earth Structured? What have scientists
Environment Science		learned about Earth's past by studying rocks and fossils?

End of Unit 4 Authentic Learning Tasks

PhET Interactive Simulation: Radioactive (Carbon) Dating - students will use an online simulation to learn about rocks, fossils, carbon dating
 New Path Learning - Online interactive tool to learn about different Earth science topics studied (Rocks and Minerals, Plate Tectonics)

Standards: MS-ESS1-4; MS-ESS2-1; MS-ESS2-2; MS-ESS2-3; MS-ESS3-1

Pacing: Weeks 28 - 37, Days 136 - 179

Indiana Academic Standards

MS-ESS1-4; MS-ESS2-1; MS-ESS2-2; MS-ESS2-3; MS-ESS3-1; MS-ESS3-2; 6-8.LST.1.1; 6-8.LST.1.2; 6-8.LST.2.1; 6-8.LST.2.2; 6-8.LST.2.3; 6-8.LST.3.1; 6-8.LST.3.2; 6-8.LST.3.3; 6.8.LST.4.1; 6-8.LST.4.2; 6-8.LST.4.3; 6-8.LST.5.1; 6-8.LST.5.2; 6-8.LST.6.1; 6-8.LST.6.2; 6-8.LST.7.1; 6-8.LST.7.2; 6-8.LST.7.3

Academic Vocabulary

Content Vocabulary: Geology, plate tectonics, meteor, crater, continental drift, subduction zone, divergent boundary, convergent boundary, rock cycle, erosion, weathering, deposition, mineral, sediment, magma, lava

Marzano Vocabulary: Crust, Lithosphere, Asthenosphere, Mantle, Core, Igneous Rock, Sedimentary Rock, Metamorphic Rock

Literacy Vocabulary: textual evidence, cite, analysis

Key Concepts/Learning Targets

1. I can identify and describe the types and order of rock strata.

2. I can identify and describe the fossil record.

Question Stems

1. What are the major types of rocks?

- 2. What is the fossil record?
- 3. What is some evidence of major events that happened in Earth's

 4. I can identify the types of Earth materials that can be found at the surface (exterior) and/or in the interior of Earth. 5. I can identify the types of Earth materials that exist(ed) before and/or after chemical and/or physical changes that occur during Earth processes. 6. I can describe how energy flows from the sun and causes matter cycling via processes that produce weathering, erosion, and sedimentation. 7. I can describe the slow and large-scale motion of the Earth's plates and the results of that motion. 8. I can describe surface weathering, erosion, movement, and the deposition of sediment ranging from large to microscopic scales 9. I can describe how surface processes such as erosion, movement, weathering, and the deposition of sediment can modify surface features 10. I can describe how the shapes of continents, which roughly fit together (like pieces in a jigsaw puzzle) suggest that those land masses 	 4. What are the different types of materials found in Earth's exterior and interior? 5. What types of Earth materials existed before chemical and physical changes occurred during Earth processes? 6. How does energy flow from the sun and what processes occur as a result? 7. What are the effects of the slow and large-scale motion of Earth's plates? 8. How do surface processes, such as weathering and erosion, affect surface features? 9. How have the continents changed over time? 10. How do you explain the finding of similar fossils and rocks on different continents? 11. What evidence is there for past and current geologic processes that have resulted in the formation of minerals, energy, and groundwater? 12. How does human activity affect the amount of resources on Earth?
 were once joined and have since separated. 11. I can describe how regions of different continents that share similar fossils and similar rocks suggest that, in the geologic past, those sections of continents were once attached and have since separated. 12. I can identify evidence for past and current geologic processes (e.g. volcanic activity, sedimentary processes) that have resulted in the formation of minerals, energy, and groundwater. 13. I can describe the ways in which the extraction of each type of resource by humans changes how much and where more of that resource can be found. 	

Literacy Standards Learning Targets

- 1. I can read science text independently and proficiently.
- 2. I can write about scientific subjects in order to inform my audiences about scientific concepts/ideas.
- 3. I can cite specific textual evidence to support my analysis.
- 4. I can identify useful specific textual evidence for its use in analysis of science and technical texts. I can cite specific textual evidence for its use in supporting the main idea, supporting details, conclusion, and purpose.
- 5. I can determine the central ideas of a text. I can determine the conclusions of a text.
- 6. I can accurately summarize the text.
- 7. I can follow a multistep procedure for experiments. I can take measurements and perform technical tasks.
- 8. I can identify what tools or instruments I need for a procedure. I can analyze results of an experiment, including evidence and data to support my conclusion.

Resources/Activities

Literacy Standards Question Stems

- 1. How can you read text in science with a purpose?
- 2. How can you explain a scientific concept/idea through writing?
- 3. What specific text evidence or data is used to support the main idea?
- 4. How does the text evidence or data support the supporting details of this text? How does the specific text evidence or data from the text support your conclusion?
- 5. What was the purpose of citing the specific text evidence or data at the time of publication?
- 6. What is the central idea of this text?
- 7. What are the components of an objective summary?
- 8. How can I summarize this text?
- 9. What is the conclusion of the text?
- 10. What is the purpose of this experiment?
- 11. What comes first?
- 12. What are the steps?
- 13. What is the best unit of measurement to use?
- 14. What instruments or tools are used?

<u>Assessments</u>

-Daily warm-up questions to gauge student learning growth.Pre-assessment to assess prior knowledge and experiences.-Main idea lecture presentation focused on essential questions.-Entrance Tickets-Post Lecture Analysis Questions.-Exit Slips-Video clips about different key concepts using Generation Genius,
BrainPop and/or EdPuzzle-Check point Quiz-Guided Lecture w/Summary Notes and pictures-Quizlet online review resource

 Textbook reading with key concept checks, and main idea note taking Marzano Vocabulary builders Vocabulary Lecture with video clips and pictures. Science Magazine Articles - read and write about relevant science topics (RWS) Math connection: Calculating measurements, SI units Creating posters of key concept material New Path Learning - Volcanoes, Plate Tectonics, Atmosphere & Weathering, Rocks, Minerals 	-Kahoot or Blooket online Game review of material -BrainPop mini quizzes -Lab Reports -Performance Assessment Project -Unit Test
--	--

Indiana Academic Standards Addressed and Assessed Each Term Grade 7 Science (A=assessed; I=introduced; P=practiced; R=reviewed) (Green=high priority; Yellow=moderate priority; Blue=low priority)							
Standard	Standard Statement	Term 1	Term 2	Term 3	Term 4		
	Motion and Stability: Forces and Interactions						
MS-PS2-1	Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.	Ι	P/R/A				
MS-PS2-2	Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	I/P/R/A	P/R/A				
MS-PS2-3	Ask questions and design a plan to determine the factors that affect the strength of electric and magnetic forces.	I/P/R/A	P/R				
MS-PS2-4	Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.	I/P/R/A	P/R				
MS-PS2-5	Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	I/P	R/A				
Energy							
MS-PS3-1	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.	I/P/R/A	P/R/A				
MS-PS3-2	Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.	I/P/R/A	P/R/A				
MS-PS3-3	Apply scientific principles to design, construct, and test a device that either	I/P	P/R/A				

	minimizes or maximizes thermal energy transfer					
MS-PS3-4	Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	I/P/R/A	P/R/A			
MS-PS3-5	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	I/P/R/A	P/R/A			
	From Molecules to Organisms: Structures and Proce	esses				
MS-LS1-1	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.			I/P/R/A	R/A	
MS-LS1-2	Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.			I/P/R/A	R/A	
MS-LS1-3	Use arguments supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.			I/P/R/A	R/A	
MS-LS1-7	Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.			I/P/R/A	R/A	
Earth's Place in the Universe						
MS-ESS1-4	Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.				I/P/R/A	
Earth's Systems						
MS-ESS2-1	Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.				I/P/R/A	
MS-ESS2-2	Construct an explanation based on evidence for how geoscience processes have				I/P/R/A	

changed Earth's surface at varying time and spatial scales.						
MS-ESS2-3 Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.				I/P/R/A		
Earth and Human Activity						
MS-ESS3-1 Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.				I/P/R/A		
MS-ESS3-2 Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.				I/P/R/A		
Engineering Design						
MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	//P	P/R/A	P/R/A			
MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	/P	P/R/A				
MS-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	//P	P/R/A				
MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	//P	P/R/A				
Science/Technical Studies Content Area Literacy						

6-8.LST.1.1	Read and comprehend science and technical texts within a range of complexity appropriate for grades 6-8 independently and proficiently by the end of grade 8.	I/P/R/A	P/R/A	I/P/R/A	P/R/A
6-8.LST.1.2	Write routinely over a variety of time frames for a range of discipline-specific tasks, purposes, and audiences.	I/P/R/A	P/R/A	I/P/R/A	P/R/A
6-8.LST.2.1	Cite specific textual evidence to support analysis of science and technical texts.	I/P/R/A	P/R/A	I/P/R/A	P/R/A
6-8.LST.2.2	Determine the central ideas or conclusions of a text; provide an accurate, objective summary of the text.	I/P/R/A	P/R/A	I/P/R/A	P/R/A
6-8.LST.2.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	I/P/R/A	P/R/A	I/P/R/A	
6-8.LST.3.1	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.	I/P/R/A	P/R/A	I/P/R/A	P/R/A
6-8.LST.3.2	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.	I/P/R/A	P/R/A	I/P/R/A	P/R/A
6-8.LST.3.3	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	I/P/R/A	P/R/A	I/P/R/A	P/R/A
6-8.LST.4.1	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).	I/P/R/A	P/R/A	I/P/R/A	P/R/A
6-8.LST.4.2	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	I/P/R/A	P/R/A	I/P/R/A	P/R/A

6-8.LST.4.3	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic	I/P/R/A	P/R/A	I/P/R/A	P/R/A
6-8.LST.5.1	Write arguments focused on discipline-specific content.	I/P/R/A	P/R/A	I/P/R/A	P/R/A
6-8.LST.5.2	Write informative texts, including scientific procedures/experiments or technical processes that include precise descriptions and conclusions drawn from data and research.	I/P/R/A	P/R/A	I/P/R/A	
6-8.LST.6.1	Plan and develop; draft; revise using appropriate reference materials; rewrite; try a new approach; and edit to produce and strengthen writing that is clear and coherent, with some guidance and support from peers and adults.	I/P/R/A	P/R/A	I/P/R/A	
6-8.LST.6.2	Use technology to produce and publish writing and present the relationships between information and ideas clearly and efficiently.		I/P/R/A	P/R/A	
6-8.LST.7.1	Conduct short research assignments and tasks to answer a question (including a self generated question), or test a hypothesis, drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	I/P/R/A	P/R/A	I/P/R/A	P/R/A
6-8.LST.7.2	Gather relevant information from multiple sources, using search terms effectively; annotate sources; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation (e.g., APA or CSE).	I/P/R/A	P/R/A	I/P/R/A	P/R/A
6-8.LST.7.3	Draw evidence from informational texts to support analysis, reflection, and research.	I/P/R/A	P/R/A	I/P/R/A	P/R/A