## PACING Guide SY 2019-2020

### First Quarter

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<th>Essential Question (HESS Matrix)</th>
<th>Learning Goal</th>
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<td>Integrated Science:</td>
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<td>S1Concept 1: Observations,</td>
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<tr>
<td>McGraw Hill</td>
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<td>Formulate predictions,</td>
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<tr>
<td>Understanding Science</td>
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<td>Locate appropriate resources.</td>
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<td>S1C1PO 1. Differentiate</td>
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<td>among a question,</td>
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<td>hypothesis, and prediction.</td>
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<td>What is the difference</td>
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<td>between a hypothesis</td>
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<td>and a prediction?</td>
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<td>Describe how scientists</td>
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<td>formulate and test a hypothesis.</td>
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<td>Draw conclusion</td>
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</tr>
</tbody>
</table>
**Integrated Science:**
**McGraw Hill**

**Understanding Science**

**Lesson 1**

**Internet for better understanding and examples the text book does not give.**

**Concept 1: Observations, Questions, and Hypotheses**

*Formulate predictions, questions, or hypotheses based on observations.*

*Locate appropriate resources.*

**Why is using the scientific method important to research?**

**Describe how experiments and investigations use the scientific method.**

**What is the scientific method?**

**Distinguish between questions, hypotheses, and predictions.**

**How is the scientific method used?**

**What are inquiry skills?**

**What is prediction outcome?**

**What is a prediction from data?**

**S1C1PO 2. Formulate questions based on observations that lead to the development of a hypothesis. (See M06-S2C1-01)**
Integrated Science: McGraw Hill

**Methods of Science**

**S1Concept 1: Observations, Questions, and Hypotheses**

Formulate predictions, questions, or hypotheses based on observations.

Locate appropriate resources.

How are relevant questions formed through observations that may lead to a hypothesis?

I will be able to:

- Explain the scientific method.
- Describe how experiments and investigations use the scientific method.

- S1C1PO 3. Locate research information, not limited to a single source, for use in the design of a controlled investigation.

(See W06-S3C6-01, R06-S3C1-06, and R06-S3C2-03)

What are selected resources used for in designing an investigation or experiment?

- Why is conducting research important to designing an investigation or experiment?

- Identify the steps in the scientific method.
- Explain how scientists test a hypothesis.

- Identify predictions from data.

**S1C1Concept 2: Scientific Testing (Investigating and Modeling)**

Design and conduct controlled investigations.

What are some tools used in scientific investigation?

- Explain prediction outcome.

- Parts of Speech
- Root Words
- Prefix
- Suffix

- Internet for better understanding and examples the text book does not give.
Integrated Science: McGraw Hill

Measurement and Scientific Tools

Internet for better understanding and examples the text book does not give.

S1C2PO 1. Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, organisms) in all science inquiry.

What are the proper safety procedures during investigations?

S1Concept 2: Scientific Testing (Investigating and Modeling)
Design and conduct controlled investigations.

What is the difference between an independent and dependent variable?

Form relevant questions through observations that may lead to a hypothesis.

What do I design and conduct an investigation to test individual variables?

Select appropriate resources for use in designing an investigation or experiment.

How do I design and conduct an investigation to test individual variables?

Analyze Date
Organize data
Draw conclusion
Share results

Scientific Method
Hypothesis
Prediction

Ask questions
Conduct research
Formulate a hypothesis
Plan and conduct an experiment
Integrated Science: McGraw Hill
Case Study

Internet for better understanding and examples the text book does not give.

S1C1PO 2. Design an investigation to test individual variables using scientific processes.
S1Concept 2: Scientific Testing (Investigating and Modeling)
Design and conduct controlled investigations.

What are the types of variables?
What is the difference between a controlled variable and a control group?

S1C2PO 3. Conduct a controlled investigation using scientific processes.
S1Concept 2: Scientific Testing (Investigating and Modeling)
Design and conduct controlled investigations.

What are the two types of variables in a controlled experiment, and how do they relate to each other?
What is the difference between qualitative and quantitative?

I will be able to:
Describe some tools used in scientific investigations
Explain and observe proper safety procedures during investigations
Demonstrate safe behavior and appropriate procedures in all science inquiry

Variable
Independent variable
Dependent variable
Controlled variables
Prediction outcome
Prediction data
Integrated Science:
McGraw Hill

Case Study

Lesson 3

Internet for better understanding and examples the text book does not give.

S1C2PO 4. Perform measurements using appropriate scientific tools (e.g., balances, microscopes, probes, micrometers). (See M06-S4C4-02)

S1Concept 2: Scientific Testing (Investigating and Modeling)

Design and conduct controlled investigations.

What is the metric system?

How do I graph both descriptive and continuous data?

I will be able to:

Recognize the independent and dependent variables of a controlled investigation

Present a design and conduct an investigation to test individual variables.

Name different types of variables.

Located research information

Controlled investigation

Prediction

S1C2PO 5. Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs. (See W06-S3C2-01 and W06-S3C3-01)
Integrated Science:
McGraw Hill
Methods of Science
Lesson 2

Internet for better understanding and examples the textbook does not give.

S1Concept 3: Analysis and Conclusions
Analyze and interpret data to explain correlations and results; formulate new questions.

How do I compare and contrast descriptive data and continuous data?

I will be able to:
Display data collected from a controlled investigation in the most optimum format

Questions
Hypotheses
Inquiry
Pan balance
Microscope
Metric ruler
Dropper
Beakers
Stopwatch
Measurement
Organisms
Micrometer
Micro
Macro
### Integrated Science: Methods of Science

**Textbook:** McGraw Hill

**Internet for better understanding and examples the textbook does not give.**

<table>
<thead>
<tr>
<th>Concept</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S1C3PO 1.</strong> Analyze data obtained in a scientific investigation to identify trends. (See M06-S2C1-03)</td>
<td>How to demonstrate the ability to identify and name basic trends between variables from graphed data? How do relevant questions through observation lead to a hypothesis?</td>
</tr>
<tr>
<td><strong>S1Concept 3: Analysis and Conclusions</strong></td>
<td>I will be able to: Understand the basics of the metric system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variables</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent variable</td>
<td>Dependent variable</td>
</tr>
<tr>
<td>Controlled variables</td>
<td>Controlled investigation</td>
</tr>
</tbody>
</table>
Integrated Science: McGraw Hill

Case Study

Internet for better understanding and examples the textbook does not give.

S1C3PO 2. Form a logical argument about a correlation between variables or sequence of events (e.g., construct a cause-and-effect chain that explains a sequence of events).

How are resources used to design an investigation or experiment?

What is “reasoning” in science?

Scientific processes
- Balances
- Microscopes
- Probes
- Micrometers
- Metric System
- SI units
- Measurement

I will be able to:

Explain the role and importance of observation in the empirical nature of science.

What are observations and data created by others?

I will be able to:

Identify both appropriate and inappropriate interpretations drawn from a given set of data.

S1Concept 3: Analysis and Conclusions
Analyze and interpret data to explain correlations and results; formulate new questions.

What are observations and data created by others?
Integrated Science: McGraw Hill

Case Study

S1C3PO 3. Evaluate the observations and data reported by others.

S1Concept 3: Analysis and Conclusions
Analyze and interpret data to explain correlations and results; formulate new questions.

S1C3PO 4. Interpret simple tables and graphs produced by others.

S1Concept 3: Analysis and Conclusions
Analyze and interpret data to explain correlations and results; formulate new questions.

I will be able to:

- Determine which data will lead to identify a hypothesis.
- Find the differences between an experiment and investigation.

- How do simple tables help to interpret data?
- How does a graph give information for others to use?
- How does explaining data correlate with results?
- How does interpreting data help to explain and formulate new questions?

Observations
Notes
Sketches
Questions
Logs
Integrated Science: McGraw Hill

S1C3PO 5. Analyze the results from previous and/or similar investigations to verify the results of the current investigation.

How are new questions based on the results of a completed investigation? Evaluate observation and data created by others. Analyze Data

S1Concept 3: Analysis and Conclusions
Analyze and interpret data to explain correlations and results; formulate new questions.

When is the appropriate time to use a line graph? Scientific investigation

When is the appropriate time to use a bar graph?

S1C4PO 6. Formulate new questions based on the results of a completed investigation.

What is the difference between a bar graph and a histogram?

S1Concept 4: Communication
Communicate results of investigations.

How are new questions based on the results of a completed investigation? I will be able to:

Evaluate observation and data created by others.

Analyze Data

S1Concept 3: Analysis and Conclusions
Analyze and interpret data to explain correlations and results; formulate new questions.

When is the appropriate time to use a line graph?

When is the appropriate time to use a bar graph?

S1C4PO 6. Formulate new questions based on the results of a completed investigation.

What is the difference between a bar graph and a histogram?

S1Concept 4: Communication
Communicate results of investigations.
Integrated Science:
McGraw Hill
Launch Lab
Internet for better understanding and examples the text book does not give.

S1C4PO 1. Choose an appropriate graphic representation for collected data:
- line graph
- double bar graph
- stem and leaf plot
- histogram
(See M06-S2C1-02)

How is collected data used for information?

I will be able to:
- Analyze data to explain results.
- Interpret simple tables produced by others.
- Interpret simple graphs produced by others

Logical
Argument
Sequence of events
Cause – and - effect

I will be able to:
- Interpret data to explain new questions.
- Analyze data to explain correlations and results.
- Compare previous and/or similar investigations to verify the results of the current investigation.

Evaluate
Observation
Data
Evaluate
observation
S1Concept 4: Communication
Communicate results of investigations.

I will be able to:
- Describe how new questions are based on the results of a completed investigation.
- Examine graphed data to determine if a given prediction is interpolated or extrapolated.
- Create a line graph.
- Create a bar graph.
- Compose & Illustrate a written document to communicate results of investigation in appropriate formats including written and graphical.

S1C4PO 2. Display data collected from a controlled investigation.
(See M06-S2C1-02)

Interpretation
Tables
Graphs
Formulate new questions
S1Concept 4: Communication
Communicate results of investigations.

S1C4PO 3. Communicate the results of an investigation with appropriate use of qualitative and quantitative information.
(See W06-S3C2-01)

Analyze Results
Investigations
Current investigation
Correlations and results

Analyze Results
Investigations
Current investigation
Correlations and results

Graphic representation
Line graph
Double bar graph
Stem and leaf plot

Investigation logs
Collected data
Line graph
Bar Graph
Histogram
Circle graph
Pie chart

Communicate Results
Investigation Qualitative Quantitative
Integrated Science:
McGraw Hill

Technology and
Mapmaking

Inquiry Lab

Internet for better understanding and examples the text book does not give.
## Second Quarter

### Integrated Science: McGraw Hill
#### Plant Process
- **S3Concept 1: Structure and Function in Living Systems**
  - Understand the relationships between structures and functions of organisms.

### Internet for better understanding and examples the text book does not give.
- **S4C1PO 1.** Explain the importance of water to organisms.

### Integrated Science: McGraw Hill
#### Cells
- **S4C1PO 2.** Describe the basic structure of a cell, including: cell wall, cell membrane, and nucleus

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<table>
<thead>
<tr>
<th>What is water?</th>
<th>I will be able to: Relate the function of the water.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why is water important to living organisms?</td>
<td>Know the effects of water.</td>
</tr>
<tr>
<td>I will be able to: Explain cell theory.</td>
<td>Describe the functions of the various parts of plant cells.</td>
</tr>
</tbody>
</table>

- **Water organisms**
- **Cell theory**
- **Cell wall**
- **Cell membrane**
- **Nucleus**
- **Organs**
- **Tissues**

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**Integrated Science:**

**McGraw Hill**

**Cells**

**Internet for better understanding and examples the text book does not give.**

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.

What is cell theory? Explain that cells are the basic units of life.

What are the functions of different parts of a cell, including: cell wall, cell membrane, and nucleus.

What are the characteristics of plant cells?

Emphasis is on developing evidence that living things are made of cells, distinguishing between living and non-living things, and understanding that living things may be made of one cell or many and varied cells.

Explain that all organisms are made up of cells.

Explain that all new cells come from preexisting cells.

Explain that all cells come from existing cells.

Summarize the cell cycle.

Compare the ways that organisms reproduce.

Describe how cells reproduce.

Explain that all new cells come from preexisting cells.

Cell cycle

Mitosis

Zygote

Meiosis

Fertilization

Explain that cells are the basic units of life.

Explain that all organisms are made up of cells.

Explain that all new cells come from preexisting cells.

Explain that all cells come from existing cells.

Summarize the cell cycle.

Compare the ways that organisms reproduce.

Describe how cells reproduce.
<table>
<thead>
<tr>
<th>Integrated Science: McGraw Hill</th>
<th>Internet for better understanding and examples the text book does not give.</th>
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<tbody>
<tr>
<td><strong>S4Concept 1: Structure and Function in Living Systems</strong>&lt;br&gt;Understand the relationships between structures and functions of organisms</td>
<td><strong>S4C1PO 3.</strong> Describe the function of each of the following cell parts&lt;br&gt;cell wall&lt;br&gt;cell membrane&lt;br&gt;nucleus</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Cells</strong></th>
<th><strong>What do all living things have in common?</strong></th>
<th><strong>What are cells?</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>What are all living things made from?</strong></td>
<td><strong>How do cells carry out life processes?</strong></td>
</tr>
<tr>
<td></td>
<td><strong>I will be able to:</strong></td>
<td><strong>Name the parts of a plant cell.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Describe the functions of plant cells.</strong></td>
<td><strong>Explain how organisms grow.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>How does one cell become many?</strong></td>
<td><strong>Explain why the nucleus is considered the control center of a cell.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>What are the functions of plant cells?</strong></td>
<td><strong>What are the functions of plant cells membrane/nucleus?</strong></td>
</tr>
<tr>
<td></td>
<td><strong>How do organism grow?</strong></td>
<td><strong>How do organisms grow?</strong></td>
</tr>
</tbody>
</table>

| Relationship of structures and functions | Organisms | Cell wall | Cell membrane | Nucleus |
**S4C1PO 6.** Relate the following structures of living organisms to their functions:

- Plants
  - transpiration – stomata, roots, xylem, phloem
  - absorption – roots, xylem, phloem
  - response to stimulus (phototropism, hydrotropism, geotropism) – roots, xylem, phloem

**S4Concept 1:** Structure and Function in Living Systems

Understand the relationships between structures and functions of organisms.

**I will be able to:**

- Explain plant transpiration
- Explain plant structures and how they are involved in transpiration.

**What is plant transpiration?**

**What are the plant structures involved in transpiration?**

- stomata
- roots, xylem, and phloem

**What are the factors that affect the rate of transpiration?**

- roots, xylem, and stomata

**S4C1PO 4.** Differentiate between plant and animal cells.

**What are the differences between plant and animal cells?**

**What are the parts of an animal cell?**

**What are the parts of plant cell?**

**S4Concept 1:** Structure and Function in Living Systems

Understand the relationships between structures and functions of organisms.

**What are the levels of organization in multicellular organisms?**

- systems
- organisms
- plant cell
- animal cell
- roots
- xylem
- stomata
- structures
- functions
### S4C1PO 5. Explain the hierarchy of cells, tissues, organs, and systems.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Tissues</th>
<th>Organs</th>
<th>Cells</th>
<th>Multicellular organisms</th>
</tr>
</thead>
</table>

#### S4Concept 1: Structure and Function in Living Systems

**Understand the relationships between structures and functions of organisms.**

<table>
<thead>
<tr>
<th>What are the characteristics of cells, tissues organs, and systems?</th>
<th>I will be able to: Identify the functions of different organelles in plant and animal cells.</th>
</tr>
</thead>
<tbody>
<tr>
<td>How are cells, tissues, organs, and systems organized to create organisms?</td>
<td>Distinguish the difference in animal cell and plant cell.</td>
</tr>
<tr>
<td>What is water?</td>
<td>Name the parts of animal cell.</td>
</tr>
<tr>
<td>Why is water important to living organisms?</td>
<td>Name the parts of plant cell.</td>
</tr>
<tr>
<td>What is the role of water (blood) in regard to respiration?</td>
<td>Identify the levels of organization in multicellular organisms.</td>
</tr>
</tbody>
</table>

**S4C1PO 1. Explain the importance of water to organisms.**

**S4Concept 1: Structure and Function in Living Systems**

**Integrated Science: McGraw Hill**

Internet for better understanding and examples the text book does not give.
**Integrated Science: McGraw Hill**

**Cells**

Understand the relationships between structures and functions of organisms.

What are the structures of animals?

Explain how cells, tissues, organs, systems are organized to create organisms.

**Internet for better understanding and examples the text book does not give.**

S4C1PO 6. Relate the following structures of living organisms to their functions:

<table>
<thead>
<tr>
<th>Animals</th>
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<tbody>
<tr>
<td>respiration – gills, lungs</td>
</tr>
<tr>
<td>digestion – stomach, intestines</td>
</tr>
<tr>
<td>circulation – heart, veins, arteries, capillaries</td>
</tr>
<tr>
<td>locomotion – muscles, skeleton</td>
</tr>
</tbody>
</table>

How the structures are used for the following processes: respiration, digestion, circulation?

I will be able to:

- Explain the importance of water to organisms.
- Illustrate the role of water in regard to respiration.

How do the circulatory system and respiratory system work together to allow for respiration?

How is the circulatory system dependent on the muscular system to allow for breathing?

How is the respiratory system dependent on the excretory system?

- I will be able to:
  - Explain the importance of water to organisms.
  - Illustrate the role of water in regard to respiration.

- Demonstrate what the properties of water.

- Explain that water is important to living organisms.

<table>
<thead>
<tr>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>H2O</td>
</tr>
<tr>
<td>Organisms</td>
</tr>
<tr>
<td>Respiration</td>
</tr>
<tr>
<td>Positive</td>
</tr>
<tr>
<td>negative</td>
</tr>
<tr>
<td>Electrolysis</td>
</tr>
<tr>
<td>Hydro</td>
</tr>
<tr>
<td>Hydrophobic</td>
</tr>
<tr>
<td>Hydrophilic</td>
</tr>
</tbody>
</table>
Integrated Science: McGraw Hill

Classifying Living Things

S4Concept 1: Structure and Function in Living Systems
Understand the relationships between structures and functions of organisms.

What are the differences between plant and animal cells?

What are the parts of an animal cell?

What are the parts of plant cell?

What are the levels of organization in multicellular organisms?

I will be able to:

Describe the structures of animals.

Describe how the structures used for the following process: respiration, digestion, circulation.

Organ

Organism

Structures

Respiration

Digestion

Circulation

Locomotion

Excretion

Absorb

Process
Integrated Science: McGraw Hill

Classifying Living Things

S4C1PO 7. Describe how the various systems of living organisms work together to perform a vital function:
- respiratory and circulatory
- muscular and skeletal
- digestive and excretory

I will be able to:
- Describe the vital functions in the muscular and skeletal systems.
- Describe the vital functions in the respiratory and circulatory systems.
- Describe the vital functions in digestive and excretory systems.
### Third Quarter

<table>
<thead>
<tr>
<th>Integrated Science:</th>
<th>S4Concept 3: Populations of Organisms in an Ecosystem</th>
<th>S4C3PO 1. Explain that sunlight is the major source of energy for most ecosystems. (See Strand 5 Concept 3 and Strand 6 Concept 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Analyze the relationships among various organisms and their environment.</td>
<td>What are different strategies that animals have evolved in order to obtain energy?</td>
</tr>
<tr>
<td></td>
<td>What is sunlight’s key role in most ecosystems?</td>
<td>I will be able to: Recognize the importance of the sun to an energy pyramid. Understand how every animal/organism occupies a niche within an ecosystem</td>
</tr>
<tr>
<td>Mcgraw Hill Ecosystem</td>
<td>Internet for better understanding and examples the textbook does not give.</td>
<td>How do organisms interact in an ecosystem?</td>
</tr>
</tbody>
</table>

- Sunlight
- Energy
- Ecosystem
- Environment
- Eco

- Visible
- Non visible
- Spectrum
- Niche
- Occupy

- Pyramid
- Vacuum
S4C3PO 2. Describe how the following environmental conditions affect the quality of life:
- Water quality
- Climate
- Population density
- Smog

How does climate affect ecosystem diversity?

What are the biotic and abiotic parts of an ecosystem?

S5Concept 3: Transfer of Energy
Understand that energy can be stored and transferred.

I will be able to:
- Describe how the following environmental conditions affect the quality of life:
  - Water quality
  - Climate
  - Population density
  - Smog

- Describe evidence that show how environments have changed over time.

S5C3PO 1. Identify various ways in which electrical energy is generated using renewable and nonrenewable resources.

How does the environment change over time?

What is electricity, and how is it produced?

What are some of the different ways that energy changes from one form to another.

Describe what is electricity.
### Energy Resources

**Integrated Science: McGraw Hill**

- Internet for better understanding and examples the textbook does not give.

**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.

- Emphasis is on descriptive relationships between kinetic energy and mass separately form kinetic energy and speed.

**S5Concept 3: Transfer of Energy**

Understand that energy can be stored and transferred.

- What is energy?
- Which sources of energy are better for the environment?
- I will be able to:
  - Explain the differences between kinetic and potential energy.
  - Define renewable and nonrenewable resources.
  - Explain why some sources of energy are better for the environment.

- Describe different forms of energy.
- How is energy related to work?

**Resources (e.g., wind, dams, fossil fuels, nuclear reactions).**

- electricity may be generated?
- What are renewable and nonrenewable resources?

**Fossil Fuels**

- Nuclear reactions
- Kinetic energy
- Speed

**Nuclear energy**

- Potential energy
- Work

- Mechanical energy
- Sound energy
- Electric energy
- Radiant energy

**Radiant energy**

- Fossil Fuels
<table>
<thead>
<tr>
<th>Integrated Science: Integrated Science: McGraw Hill Forms of Energy</th>
<th>S5C3PO 2. Identify several ways in which energy may be stored.</th>
<th>I will be able to: Identify ways that the different forms of energy can be stored: Potential energy Batteries</th>
<th>Energy Potential energy</th>
<th>Batteries</th>
<th>Stored energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet for better understanding and examples the text book does not give.</td>
<td>What are different forms of energy?</td>
<td>Objects that hold potential energy</td>
<td>Friction</td>
<td>Calculation</td>
<td>Relative</td>
</tr>
<tr>
<td>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 Emphasis is on relative amounts of potential energy, not on calculation of potential energy.</td>
<td>How may forms of energy be stored?</td>
<td>How do batteries work? What are the objects that hold potential energy?</td>
<td>Law of conservation</td>
<td>Transformed</td>
<td>Mechanical</td>
</tr>
<tr>
<td></td>
<td></td>
<td>How are potential and kinetic energy different? Is energy lost when it changes form?</td>
<td>I will learn to: Explain energy transformation.</td>
<td>Electrical</td>
<td>Thermal</td>
</tr>
</tbody>
</table>
S5Concept 3: Transfer of Energy

Understand that energy can be stored and transferred.

What are three forms of energy that can be changed into electrical energy?

How can energy change from one form to another?

How is energy transferred or stored in a system?

How is thermal energy transferred?

I will be able to:

Name the three forms of energy that can be changed into electrical energy.

Construct how energy changes from one form to another.

Stored energy
Potential
Temperature
Thermometer
Volts
Amps
Formula

S5C3PO 3. Compare the following ways in which energy may be transformed:
mechanical to electrical
electrical to thermal

MS-PS3-3 Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.
Examples of devices could include an insulated box, a solar cooker, and a Styrofoam cup.

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Energy Transformations

Understand that energy can be stored and transferred.

Internet for better understanding and examples the text book does not give.

S5C3PO 4. Explain how thermal energy (heat energy) can be transferred by:
- conduction
- convection
- radiation

What is thermal energy?
What is conduction, convection, and radiation?

I will be able to:
- Investigate the transfer of thermal energy through different materials.
- Define thermal energy and explain conduction, convection, and radiation.

Ultra
Ultra violet

Radiation

Reflect

Refract

Thermal insulate

Conduction

Convection

Radiation

Transferred Energy

Stored energy
Integrated Science: McGraw Hill

Energy Transformations

Internet for better understanding and examples the text book does not give.

I will be able to:

Investigate the transfer of thermal energy through different materials.

Define thermal energy and explain conduction, convection, and radiation.
### Fourth Quarter

**Integrated Science: Earth Systems**

**McGraw Hill**

- **S6Concept 1: Structure of the Earth**
  - Describe the composition and interactions between the structure of the Earth and its atmosphere.

- **Internet for better understanding and examples the text book does not give.**
  - **S6C1PO 1.** Describe the properties and the composition of the layers of the atmosphere.

---

**Properties**

<table>
<thead>
<tr>
<th>Layer of atmosphere</th>
<th>Temperature</th>
<th>Altitude</th>
<th>Latitude</th>
<th>Poles</th>
</tr>
</thead>
</table>

**I will be able to:**

- Identify the layers of the atmosphere.

**Composition**

- Define the composition and different layers of Earth’s atmosphere.
- Name the properties of the layers.

**Layers of atmosphere**

- Temperature
- Altitude
- Latitude
- Poles

---

**What are different layers of the atmosphere?**

**How do lakes compare to rivers?**

**What are different layers of the atmosphere?**

**What is a freshwater ecosystem?**

**What is the composition of the different layers of Earth’s atmosphere?**

**What is the composition of the different layers of Earth’s atmosphere?**

**What are the names and properties of the layers?**
**Integrated Science:**

**McGraw Hill Earth Systems**

Internet for better understanding and examples the textbook does not give.

**S6C1PO 2.** Explain the composition, properties, and structure of the Earth’s lakes and rivers.

**What are the processes in cycle water in nature?**

I will be able to:

- Define freshwater ecosystem.
- Compare lakes to rivers.
- Name the processes in the cycle water in nature.

**S6C1PO 3.** Explain the composition, properties, and structures of the oceans’ zones and layers.

**What is water cycle?**

How does it work as a whole?

How is it affected by temperature?

What are the processes in:
- Evaporation
- Transpiration
- Condensation
- Precipitation
- Infiltration?

Times zones
degrees
Troposphere
Stratosphere
Mesosphere

Thermosphere
Cycle
Mouth
Tributary
Meander
Delta

- **S6Concept 1:** Structure of the Earth
  - Describe the composition and interactions between the structure of the Earth and its atmosphere.

- **S6C1PO 3.** Explain the composition, properties, and structures of the oceans’ zones and layers.
Earth Systems

S6Concept 1: Structure of the Earth
Describe the composition and interactions between the structure of the Earth and its atmosphere.

S6C1PO 4. Analyze the interactions between the Earth’s atmosphere and the Earth’s bodies of water (water cycle).

Internet for better understanding and examples the text book does not give.

S6Concept 1: Structure of the Earth
Describe the composition and interactions between the structure of the Earth and its atmosphere.

How do Earth’s atmosphere and bodies of water affect each other?

I will be able to:
Define water cycle.
Name the process in
Evaporation
Transpiration
Condensation
Precipitation
Infiltration

What are the relationships between Earth’s atmosphere and bodies of water?

What is the process of the water cycle?

What is atmospheric moisture?

Structure of the Earth
Lakes
Rivers
Ecosystem
Composition
Density
Depth
Pressure
Twilight
Evaporation
Porous
freshwater
saltwater
contribute
<table>
<thead>
<tr>
<th>Integrated Science: Earth Systems</th>
<th>S6C1PO 5. Describe ways scientists explore the Earth’s atmosphere and bodies of water. (See Strand 2 Concept 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S6Concept 2: Earth’s Processes and Systems</td>
<td>Understand the processes acting on the Earth and their interaction with the Earth systems.</td>
</tr>
<tr>
<td>S6C2PO 1. Explain how water is cycled in nature.</td>
<td></td>
</tr>
</tbody>
</table>

- **What methods and tools do scientists use to explore Earth’s atmosphere and bodies of water?**
- **I will be able to:** Describe how Earth’s atmosphere and bodies of water affect each other.

- **How does water move around in nature?**
- **Describe the process of the water cycle.**
- **Define atmospheric moisture.**
- **Name the relationship between Earth’s atmosphere and bodies of water.**

- **What are the parts of the water cycle?**
- **How is water stored and how does it move?**
- **What are the forms of water?**
- **How does water move around in nature? What are the parts of the water cycle?**

- **Ocean zone**
- **Ocean layers**
- **Evaporation**
- **Transpiration**
- **Condensation**
- **Precipitation**
- **Infiltration**
<table>
<thead>
<tr>
<th>Integrated Science: McGraw Hill</th>
<th>Earth Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>S6Concept 2: Earth’s Processes and Systems</td>
<td>Understand the processes acting on the Earth and their interaction with the Earth systems.</td>
</tr>
<tr>
<td>S6C2PO 2. Identify the distribution of water within or among the following: atmosphere lithosphere hydrosphere</td>
<td>The forms of water What are the processes in: Evaporation Transpiration Condensation Precipitation Infiltration</td>
</tr>
</tbody>
</table>

**About water storage and movement**

**I will be able to:**

Identify the methods and tools scientists use to explore Earth’s atmosphere and bodies of water.

Identify water movement in nature:

- The parts of the water cycle
- Describe water storage and movement.

Identify the forms of water.
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Earth Systems

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S6C2PO 3. Analyze the effects that bodies of water have on the climate of a region.

S6Concept 2: Earth’s Processes and Systems
Understand the processes acting on the Earth and their interaction with the Earth systems.

Where can water be found in Earth’s sphere?

How is water distributed on Earth?

What are the spheres of Earth?

Where is water found in each of the spheres?

How is water cycled between the spheres?

What are the effects the bodies of water have on the climate of a region?

I will be able to:

Identify how water moves around in nature:

The parts of the water cycle
About water storage and movement

The forms of water
Water processes in:
Evaporation
Transpiration
Condensation
Precipitation
Infiltration

Composition
Interactions
Structure
Atmosphere
Bodies of water
Water cycle
Atmospheric moisture
Process of water cycle
Coriolis
Barometer
El Nino
Pollutant
<table>
<thead>
<tr>
<th>Integrated Science: Earth Systems</th>
<th>S6C2PO 4. Analyze the following factors that affect climate: ocean currents, elevation, location.</th>
<th>What are the following factors? Bodies of water, Ocean currents, Elevation, Location. What factors that affect climate? Ocean climate, Elevation, Location. What are the different factors that affect climate?</th>
<th>I will be able to: About where water can be found in Earth’s spheres. How water is distributed on Earth. Identify the sphere of Earth. Describe where water is found in each of the spheres. Describe how water is cycled between the spheres. Explain why water cycles between the spheres.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internet for better understanding and examples the text book does not give.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
S6C2PO 5. Analyze the impact of large-scale weather systems on the local weather.

What is large-scale weather?

How does large-scale weather form?

How do large-scale weather systems affect the local weather?

What is a weather system?

I will be able to:

Describe the effects that bodies of water can have on the climate of a region.

Identify the following factors that affect climate:
- Bodies of water
- Ocean currents
- Elevation
- Location

Water cycle
- Evaporation
- Condensation
- Precipitation
- Groundwater
- Transpiration
- Infiltration
- Tides
- Hydroelectric
- Coral reefs
- Carbon sink
Integrated Science: McGraw Hill
Earth Systems

S6Concept 2: Earth’s Processes and Systems Understand the processes acting on the Earth and their interaction with the Earth systems.

What are the parts of different weather systems?

What causes the different weather systems?

I will be able to: Identify the following factors that affect climate:
Ocean climate
Elevation
Location

Atmosphere
Lithosphere
Hydrosphere
Spheres
Geosphere
Fresh/salt water
Climate change
Reflection
Absorption
Onshore
Leeward
Windward

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Integrated Science: McGraw Hill

Earth Systems

S6C2PO 6. Create a weather system model that includes:
- the Sun
- the atmosphere
- bodies of water

Internet for better understanding and examples the text book does not give.

Find the different factors that affect climate:
- How ocean currents influence the climate
- Explain how location has an effect on climate.
- Explain how climate can be different at the top and bottom of a mountain.

Bodies of water
Ocean currents
Elevation
Location
Climate

I will be able to:

- Define large-scale weather systems.
- Explain the affect of large-scale where systems.
- Explain how large-scale weather affects the local weather.

Ocean currents
Elevation
Location
Earth systems
Integrated Science: McGraw Hill Earth Systems

Internet for better understanding and examples the textbook does not give.

I will be able to:

- Define weather system.
- Name the parts of different weather systems.
- Identify the cause of different weather systems.

Large-scale weather
Local weather
Major surface currents
Earth’s climate
Weather vs climate