

*Teachers may begin with the Unit of their choosing but should not continue on until all standards are completed within that unit. Materials for all hands on lessons have been ordered.*

<p align="center"><b>Physical Science Structures and Properties of Matter</b></p>	<p align="center"><b>Life Science Matter and Energy in Organisms and Ecosystems</b></p>
<ul style="list-style-type: none"> <li>● How can I describe matter when it is made up of particles too small to be seen?</li> <li>● Why is the total weight of matter conserved regardless of the type of change that occurs when heating, cooling, or mixing substances?</li> <li>● How can I use a material's properties to identify the material?</li> <li>● How can I use two or more different substances to make a new substance, and why will this result in a change of properties?</li> </ul> <p><i>Approximately 10 weeks to complete lessons and supplemental background building and hands-on activities.</i></p>	<ul style="list-style-type: none"> <li>● How did energy from the sun become the energy found in animals' food that is used for body repair, growth, motion, and to maintain body warmth?</li> <li>● How do plants get the materials they need for growth chiefly from air and water?</li> <li>● How does matter move among plants, animals, decomposers, and the environment?</li> </ul> <p><i>Approximately 10 weeks to complete lessons and supplemental background building and hands-on activities.</i></p>
<p align="center"><b>Earth Science Earth's Systems</b></p>	<p align="center"><b>Physical Science Space Systems: Stars and the Solar System</b></p>
<ul style="list-style-type: none"> <li>● How much water can be found in different places on Earth?</li> <li>● How are saltwater and freshwater is distributed on Earth?</li> <li>● How do the geosphere, biosphere, hydrosphere, and/or atmosphere interact?</li> <li>● How do individual communities use science ideas to protect the Earth's resources and environment?</li> </ul> <p><i>Approximately 10 weeks to complete lessons and supplemental background building and hands-on activities.</i></p>	<ul style="list-style-type: none"> <li>● How does the force of gravity impact life on Earth?</li> <li>● Why does the sun appear brighter than other stars?</li> <li>● How does Earth's position, relative to the sun, impact the length of day and night, the seasonal appearance of some stars, and the direction of shadows?</li> </ul> <p><i>Approximately 10 weeks to complete lessons and supplemental background building and hands-on activities.</i></p>

<b>Time Frame</b>	<b>10 Weeks</b>
<b>Course</b>	
<b>Physical Sciences</b>	
<b>Title of Unit</b>	
Space Systems: Stars and the Solar System	
<b>Essential Questions</b>	
<ol style="list-style-type: none"> <li>1. How does the force of gravity impact life on Earth?</li> <li>2. Why does the sun appear brighter than other stars?</li> <li>3. How does Earth's position, relative to the sun, impact the length of day and night, the seasonal appearance of some stars, and the direction of shadows?</li> </ol>	
<b>Enduring Understandings</b>	
<i>Students will understand that.....</i>	
<ul style="list-style-type: none"> <li>→ Stars range greatly in size and distance from Earth, and this can explain their relative brightness.</li> <li>→ The Earth's orbit and rotation and the orbit of the moon around Earth cause observable patterns.</li> </ul>	
<b>Key Knowledge</b>	
<i>Students will know.....</i>	
<ul style="list-style-type: none"> <li>→ the sun is a star that appears larger and brighter than other stars because it is closer.</li> <li>→ stars are all different sizes and distances from the Earth. Stars that are brighter are closer to the Earth.</li> <li>→ the gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center.</li> <li>→ the length of each day and the direction of shadows are affected by the orbit of both the Earth and the Moon.</li> <li>→ patterns can be seen in the Earth's orbit around the sun and the moon's orbit around the Earth. These patterns include day and night.</li> </ul>	
<b>Concepts and Skills</b>	
<i>Students will be able to...</i>	
<ul style="list-style-type: none"> <li>→ describe the relative size of the Sun compared to other recognized stars.</li> <li>→ create a model that shows the gravitational force on Earth pulling objects to the center of the planet.</li> <li>→ describe how the gravitational force may be different in other places in the solar system.</li> <li>→ show how the length of day and night is affected by the rotation and orbit of both the Earth and the moon.</li> <li>→ describe seasons and how they are impacted by the Earth's orbit and rotation on its axis.</li> <li>→ explain why shadows change throughout the day.</li> <li>→ explain why the sun, moon, and stars are at different positions at different times of the day, month, and year.</li> </ul>	
<b>Learning Activities</b>	
<b>Textbook Readings:</b>	
<ul style="list-style-type: none"> <li>❖ Close Read D 32-33 (rotation/seasons)</li> <li>❖ D 38-39 (day &amp; night varies)</li> <li>❖ D 74-75 (sun)</li> </ul>	

- ❖ Study Guide B Workbook pg 28 (seasons)

**Interactive Lesson Plans:**

- ❖ Explaining why Sun's shadows change throughout the day "[Connecting Shadows with the Sun's altitude](#)"
- ❖ Gravitational Force- Lessons 2 & 3: [Gravity's Pull](#)
- ❖ Egg Drop Engineering [Part 1](#) , [Part 2](#) (couple days), [Part 3](#), [Part 4](#) (includes a rubric)
- ❖ PBS [Gravity and Falling Objects](#) (approx 2 day lesson & investigation)

**Mystery Science:**

- ❖ Mystery Science "Why does the Sun Rise and Set?"
- ❖ Mystery Science: "[How can the sun tell the season's](#)" Assessment: [Worksheet](#)
- ❖ Mystery Science: [Why do the stars change with the seasons?](#)

**enVision Math and Science Connections:**

- ❖ [Earth's Rotation](#) Topic 14 pg 773
- ❖ [Solar Energy](#) Topic 4 pg 163

**Wonders:**

- ❖ Leveled Reader: Stargazing
- ❖ Read aloud: [The Sun, Our Star](#) (U5, W4, Day2- listening comprehension)

**Brain Pop:**

1. [Seasons](#)
2. [Sun](#)
3. [Gravity](#)
4. Printable [Seasons worksheet](#)

**Additional Reading Materials:**

- ❖ ReadWorks online article [The Sun Heats Up](#) and printable worksheet
- ❖ ReadWorks online article [The appearance of Stars](#)
- ❖ The Sun leveled reader [resources](#)
- ❖ [The Sun and the Stars](#) (includes worksheets)

**Online Videos:**

- ❖ CrashCourse kids [video](#) (Earth's rotation and revolution)
- ❖ CrashCourse kids [Sun and the Seasons](#)
- ❖ Crash Course Kids [Following the Sun](#) (shadows)
- ❖ Bill Nye [the SUN](#)
- ❖ Crash Course Kids [Gravity](#)
- ❖ What are [Stars](#)? (short video)
- ❖ Bill Nye [Gravity](#)

**Additional Resources/Games:**

- ❖ [Soft Schools](#) Gravity reading and questions
- ❖ Brain Pop Gravity [simulation](#)
- ❖ Gravity worksheet [gravity](#)
- ❖ Gravity and Orbits [simulation](#)
- ❖ Seasonal Appearance of the Stars [Prezi](#) (short prezi describing how stars look different in each season)

- ❖ Gravity [powerpoint](#)
- ❖ Sun and [Shadows](#) online game

### Assessments

1. [Brainpop Sun quiz](#)
2. [Brain Pop Gravity Quiz](#) and [worksheet](#)
3. [Brainpop Seasons worksheet](#)
4. Mystery Science: [Earth's Rotation Assessment](#) ([Answer key](#))
5. Mystery Science: [Sun's Path Assessment](#) ([answer key](#))
6. End of Unit assessment [NGSS resources](#)
7. Formative Monitoring (Questioning / Discussion)
8. Student Lab Sheets from BetterLesson

### NGSS and NJSLS

**Standards:** (Note: Include reference to relevant standards in the Core Content Area as well as technology and 21st-century life and careers.)

→ **NGSS:**

- ◆ **5-PS2-1.** Support an argument that the gravitational force exerted by Earth on objects is directed down.
- ◆ **5-ESS1-1.** Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distance from Earth.
- ◆ **5-ESS1-2.** Represent data in graphical displays to reveal patterns of daily changes in the length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.
- ◆ 3-5 ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved

→ **NJSLS: ELA**

- ◆ **RI.5.3** Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
- ◆ **RI.5.4** Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.
- ◆ **W.5.1** Write opinion pieces on topics or texts, supporting a point of view with reasons and information.
- ◆ **W.5.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

→ **Technology**

- ◆ **8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- ◆ **8.1.5.A.5** Create and use a database to answer basic questions

**Modifications**

**Modifications: (ELLs, Special Education, Gifted and Talented)**

- Follow all IEP modifications and 504 plans
- Provide differentiated instruction as needed.
- Structure lessons around questions that are authentic, relate to students’ interests, social/family background and knowledge of their community.
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Provide ELL students with multiple literacy strategies.
- Text to Speech when available

**Time Frame** | 10 Weeks

**Course**

**Earth Sciences**

**Title of Unit**

Earth Systems

**Essential Questions**

1. How much water can be found in different places on Earth?
2. How are saltwater and freshwater is distributed on Earth?
3. How do the geosphere, biosphere, hydrosphere, and/or atmosphere interact?
4. How do individual communities use science ideas to protect the Earth’s resources and environment?

**Enduring Understandings**

*Students will understand that.....*

- some events happen very quickly; others occur very slowly over
- four major Earth systems interact.
- rainfall helps to shape the land and affects the types of living things found in a region.
- most of Earth’s water is in the ocean and much of the Earth’s freshwater is in glaciers or underground.
- social activities have a major impact on land, oceans, atmosphere, and outer space. Society does things to protect Earth’s resources and environments.
- humans and other organisms will be affected in many different ways if Earth’s global mean temperature continues to rise.

## Key Knowledge

### *Students will know.....*

- the Earth's systems are the geosphere (solid and molten rock, soils, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans).
- the Earth's systems interact in a variety of ways that affect earth's surface materials and processes
- the ocean supports a variety of ecosystems and organisms, shapes landforms and influences climate
- the atmosphere affects landforms and ecosystems through weather and climate.
- winds and clouds in the atmosphere interact with the landforms to determine patterns of weather
- human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space.

## Concepts and Skills

### *Students will be able to.....*

- develop a model using an example to describe ways in which the geosphere, biosphere, hydrosphere, and or atmosphere interact
- investigate Earth's major systems and describe their similarities and differences.
- provide examples of ways that show that Earth's systems interact with one another.
- demonstrate the impact that the ocean has on each of the following: ecosystems, landform shape, and climate.
- prove that mountain ranges impact the winds and the clouds.
- study and graph the amounts of water on the planet other than the oceans.
- provide ways humans can protect our land, vegetation, waterways, and outer space.

## Learning Activities

### **Textbook Reading:**

- ❖ [Characteristics of Earth's Spheres](#) (*print & distribute for close read*)
- ❖ [Atmosphere and Climate leveled reader](#) (*printable -with a quiz*)
- ❖ [Earth's Systems and Interactions](#) (*pg 1 & 2 only*)
- ❖ [The Hydrosphere](#) (*library book*)

### **Presentations:**

- ❖ [Earth the Watery Planet](#)
- ❖ [Earth's Waters](#) (*prezi*)

### **Mystery Science-Water Cycle, Resources, and Systems**

- ❖ [Mystery 1-How much water is in the world?](#)
- ❖ [Mystery 2-When you turn on the faucet, where does the water come from?](#)
- ❖ [Mystery 3-Can we make it rain?](#)

### **Additional Lesson Plans:**

- ❖ An entire [Water System Unit](#) for 5th grade/aligned to standards
- ❖ [NASA Earth's Systems Unit](#) (teacher's guide)
- ❖ NASA Our Earth: [A Web of Systems](#)
- ❖ [The Earth's Systems](#) Great lesson for modeling how -spheres interact

**GRADE:** 5

**COURSE:** Science Curriculum 2017 NGSS Aligned

- ❖ [Hydrosphere](#): Water Distribution on Earth. Works for graphing amounts of water
- ❖ PBS: [Water](#) (*quick video with good conversation starters to open the topic*)
- ❖ Journey Through the Universe: [Earth Systems, Water Resources](#) 5 day unit with graphs and project based assessment
- ❖ National Weather Service: [Water Cycle Paper Craft](#)
- ❖ National Weather Service: [The Rain Man](#) demonstrate concept of precipitation
- ❖ National Weather Service: [What-a-cycle](#)
- ❖ National Weather Service: [Water, Water Everywhere](#) student use graduated cylinders to display amounts of water in the world.
- ❖ NASA [Water cycle webquest](#) with videos & articles embedded
- ❖ NASA additional resources for [weather & climate](#), [air](#), [ocean](#), and [freshwater](#) (all separate links)
- ❖ [Cycles of Earth's Systems](#)
- ❖ [Earth's Systems](#) and their interactions

### **Virtual Labs & Games:**

- ❖ [Protect the Earth Webquest](#) on using science ideas to protect Earth
- ❖ The Interaction of [Earth's Spheres](#)
- ❖ NASA [Climate Time Machine](#) & Game
- ❖ NASA [Climate Trivia](#)
- ❖ [Freshwater Quiz](#) by National Geographic
- ❖ Virtual Lab on [Assessing Water Quality](#)
- ❖ [Water Quality](#) Game
- ❖ Virtual [Water Conservation](#) Activity
- ❖ [Glacier](#) Interactive Simulation

### **Videos:**

- ❖ Bozeman Science: [Earth's Materials and Systems](#)
- ❖ Bozeman Science: [Role of Water](#)
- ❖ Bozeman Science: [Human Impact on Earth's Systems](#)
- ❖ [Crash Course Kids: Four Spheres Part 1 \(Geosphere and Biosphere\)](#)
- ❖ [Crash Course Kids: Four Spheres Part 2 \(Hydrosphere and Atmosphere\)](#)
- ❖ [Crash Course Kids: What on Earth? \(Interaction of Spheres\)](#)
- ❖ [Crash Course Kids: H2O- No! Fresh Water Problems](#)
- ❖ [Bill Nye The Science Guy on Wind](#)
- ❖ [Bill Nye The Science Guy on the Atmosphere](#)
- ❖ BrainPop- [Entire Earth's Systems](#) collection
- ❖ Youtube [4 Sphere Song](#)

### **EnVision Math and Science Connections:**

- ❖ Topic 3: [Water Usage](#)
- ❖ Topic 6: [States of Water](#)

### **STEAM**

- ❖ [Oil Spill Engineering](#)- 3 or 4 forty minute periods, links and assessments included

**Wonders Reading:**

- ❖ “Shelter in a Storm” *Unit 1 Week 2*
- ❖ “Changing Climate, Changing Lives” *Unit 5 Week 3*
- ❖ “Dams: Harnessing the Power of Water” *Unit 5 Week 5*
- ❖ “Science Makes a Difference!” *Unit 6 Week 4*

**Additional Reading:**

- ❖ Readworks: [Water, Water Everywhere](#) (*with vocabulary and assessment*)
- ❖ [The Hidden Water We Use](#) by National Geographic
- ❖ [A Freshwater Story](#) (*interactive*) by National Geographic

**Extension Activity Unit:**

- ❖ [NASA on Climate Science](#) (can use part or whole unit; final project on grant writing on page 49-55)

**Assessments**

1. Earth’s Spheres Formal Assessment
2. Poster of Earth’s Spheres done electronically or on paper
3. See 5th Grade Resources in *R Drive* for rubrics, projects, teacher’s guide
4. Formative Monitoring (Questioning / Discussion)
5. Student Lab Sheets from lessons

**NGSS and NJSLs**

**Standards:** (Note: Include reference to relevant standards in the Core Content Area as well as technology and 21st-century life and careers.)

→ **NGSS:**

- ◆ **5-ESS2-1.** Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
- ◆ **5-ESS2-2.** Describe and graph the amounts of saltwater and freshwater in various reservoirs to provide evidence about the distribution of water on Earth.
- ◆ **5-ESS3-1.** Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.

→ **NJSLS: ELA**

- ◆ **RI.5.3** Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
- ◆ **RI.5.4** Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.
- ◆ **W.5.1** Write opinion pieces on topics or texts, supporting a point of view with reasons and information.
- ◆ **W.5.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.



→ **NJSLS: Mathematics**

- ◆ **5.MD.B.2** Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.
- ◆ **5.G.A.2** Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

→ **Technology**

- ◆ **8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- ◆ **8.1.5.A.2** Format a document using a word processing application to enhance text and include graphics, symbols and/ or pictures.
- ◆ **8.1.5.E.1** Use digital tools to research and evaluate the accuracy of, relevance to, and appropriateness of using print and non-print electronic information sources to complete a variety of tasks.

**Modifications****Modifications: (ELLs, Special Education, Gifted and Talented)**

- Follow all IEP modifications and 504 plans
- Provide differentiated instruction as needed.
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Provide ELL students with multiple literacy strategies.
- Text to Speech when available

<b>Time Frame</b>	<b>10 Weeks</b>
<b>Course</b>	
<b>Life Science</b>	
<b>Title of Unit</b>	
Matter and Energy in Organisms and Ecosystems	
<b>Essential Questions</b>	
<ol style="list-style-type: none"> <li>1. How did energy from the sun become the energy found in animals' food that is used for body repair, growth, motion, and to maintain body warmth?</li> <li>2. How do plants get the materials they need for growth chiefly from air and water?</li> <li>3. How does matter move among plants, animals, decomposers, and the environment?</li> </ol>	
<b>Enduring Understandings</b>	
<i>Students will understand that.....</i>	
<ul style="list-style-type: none"> <li>→ Food provides animals with the materials and energy they need for body repair, growth, warmth and motion. Plants acquire material for growth chiefly from air, water, and process matter and obtain energy from sunlight, which is used to maintain conditions necessary for survival.</li> <li>→ The food of almost any animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants, while decomposers restore some materials back to the soil.</li> <li>→ Matter cycles between the air and soil and among organisms as they live and die. Energy can be “produced,” “used,” or “released” by converting stored energy. Plants capture energy from sunlight, which can later be used as fuel or food.</li> </ul>	
<b>Key Knowledge</b>	
<i>Students will know.....</i>	
<ul style="list-style-type: none"> <li>→ Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants.</li> <li>→ The energy released from food was once energy from the sun that was captured by plants in the chemical process that forms plant matter.</li> <li>→ A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life.</li> <li>→ Plants get the materials they need for growth mainly from air and water, not soil.</li> <li>→ Matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food.</li> </ul>	
<b>Concepts and Skills</b>	
<i>Students will be able to.....</i>	
<ul style="list-style-type: none"> <li>→ Describe the steps of a food chain for animals in an ecosystem.</li> <li>→ Describe how an animal is affected by the elimination of a part of a food chain.</li> <li>→ Show how energy is transferred from the sun into food into an animal through the chemical process.</li> <li>→ Present ideas of ecosystems that can be described as healthy.</li> <li>→ Describe the growth cycle of plants and the necessary factors for their growth.</li> <li>→ Describe the process in which plants turn matter that is not food into matter that is food.</li> </ul>	
<b>Learning Activities</b>	
<b><u>Textbook Readings:</u></b>	
<ul style="list-style-type: none"> <li>❖ A 50-54 (photosynthesis)</li> </ul>	

- ❖ B 24-25 (food webs)
- ❖ B 26-28 (food chains)
- ❖ Worksheets to support: A24-25 & B13 (food chains & webs)
- ❖ B 46-49 (balanced ecosystems)

### **Interactive Lessons:**

- ❖ Better Lesson (interactive) [Do plants need soil?](#) (*about 2 days*)
- ❖ Better Lessons Interactive activities: [Movement of Matter in Ecosystems \(part1\)](#) [Movement of Matter in Ecosystems \(part 2\)](#)
- ❖ Activity: [Plants in Space](#) (*will take 2 days plus observation (few weeks)*)
- ❖ Dramatic Food Chain lesson ([Dramatic Food Chain](#))
- ❖ Photosynthesis lesson & [activity](#)
- ❖ Food web [game](#) (how changes affect organisms)
- ❖ [How Do Animals obtain Energy?](#)
- ❖ [Energy flow through a Food Web lesson plan](#)

### **enVision Math and Science Connections:**

- ❖ [Ecosystems](#) Topic 16 pg 845
- ❖ [Food chains & Food webs](#) Topic 13 pg731

### **Brain Pop:**

- ❖ Photosynthesis: [Brain Pop](#)
- ❖ Brain Pop Food Chains
- ❖ [Energy Pyramid](#)

### **Mystery Science Lessons:**

- ❖ Mystery Science: [What do plants eat?](#) [Assessment Questions](#) (for discussions with partners)
- ❖ Mystery Science activity : [Why would a hawk move to NYC?](#) Assessment [worksheet](#) (*use this to intro food chains*)
- ❖ Mystery Science [What are the wandering stars?](#)

### **Online Videos:**

- ❖ [Photosynthesis Intro Video](#)
- ❖ Plants:[Who Needs Dirt?](#) ? intro video
- ❖ [Bill Nye](#) (food chains):
- ❖ [Crash Course Kids Food Chains](#)
- ❖ [Crash Course Kids Food Webs](#)
- ❖ [Energy Flow in an Ecosystem](#)
- ❖ [LS1C - Matter and Energy Flow in Organisms](#)

### **Additional Resources:**

- ❖ Kahoot(<https://play.kahoot.it/#/k/46050a92-5dcc-44e0-b6d7-f25a04597dc7>) (food chains/webs)
- ❖ game [Feed The Dingo Game](#) (balanced ecosystem)
- ❖ Study Jams (<http://studyjams.scholastic.com/studyjams/>)
- ❖ Ecosystems game: [Ecosystems](#)
- ❖ [Energy Pyramid](#) worksheet (using our environment to complete)
- ❖ Photosynthesis [worksheet](#)
- ❖ [Study Jams](#) food webs
- ❖ [Study Jams Food chains](#)

- ❖ ReadWorks [Ecosystem in a Forest](#) (how each organism is a necessary part)
- ❖ [Food Web Worksheet](#)

### Assessments

1. Schoology Food Chains & Food Web Quiz
  - *(join schoology: then use group access code R43RZ-9QSCX)*
2. [Energy Quiz](#) (food webs/chains)
3. [Follow Up Questions: Feed the Dingo](#)
4. Brain Pop Food Chains [Printable Quiz](#)
5. Energy pyramid [printable quiz](#)
6. Food Chain [printable quiz](#)
7. End of Unit Assessment [Web of Life](#)
8. Formative Monitoring (Questioning / Discussion)
9. Student Lab Sheets from Better Lessons/Mystery Science lessons

### NGSS and NJSLs

**Standards:** (Note: Include reference to relevant standards in the Core Content Area as well as technology and 21st-century life and careers.)

→ **NGSS:**

- ◆ **5-PS3-1.** Use models to describe that energy in animals' food (used for body repair, growth, and motion and to maintain body warmth) was once energy from the sun.
- ◆ **5-LS1-1.** Support an argument that plants get the materials they need for growth chiefly from air and water.
- ◆ **5-LS2-1.** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
- ◆ **3-5-ETS1-3.** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved

→ **NJSLS: ELA**

- ◆ **RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. **(5-LS1-1)**
- ◆ **RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. **(5-PS3-1),(5-LS2-1)**
- ◆ **RI.5.9** Integrate information from several texts on the same topic in order to speak about the subject knowledgeably. **(5-LS1-1)**
- ◆ **RI.5.4** Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.
- ◆ **W.5.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

→ **Technology**

- ◆ **8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

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- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Provide ELL students with multiple literacy strategies.
- Text to Speech when available

**Time Frame** | 10 weeks

**Course**

**Physical Sciences**

**Title of Unit**

Structures and Property of Matter

**Essential Questions**

1. How can I describe matter when it is made up of particles too small to be seen?
2. Why is the total weight of matter conserved regardless of the type of change that occurs when heating, cooling, or mixing substances?
3. How can I use a material’s properties to identify the material?
4. How can I use two or more different substances to make a new substance, and why will this result in a change of properties?

**Enduring Understandings**

*Students will understand that.....*

- Since matter exists as particles that are too small to see, matter is always conserved even if it seems to disappear. Measurements of a variety of observable properties can be used to identify particular materials.
- Chemical reactions occur when substances are mixed together and a new substance is formed. The properties of a chemical reaction will be different, but the total mass remains the same.

**Key Knowledge***Students will know.....*

- matter is made of particles too small to be seen through basic observations or demonstration. (5-PS1-1)
- the amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. (5-PS1-2)
- no matter what reaction or change in properties occurs, the total weight of the substances does not change. (5-PS1-2)
- when two or more different substances are mixed, a new substance with different properties may be formed. (5-PS1-3)
- examples of observable properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response.

**Concepts and Skills***Students will be able to.....*

- discuss that matter is too small to be seen
- explain that matter has mass and takes up space
- use a balance to measure the mass of different objects
- identify the various properties of matter, such as mass, texture, hardness, elasticity, odor, magnetism, mass, and if it reacts to heat
- describe the process of adding matter to an enclosed area and observing the physical and chemical changes
- describe the process of mixing matter and observing the results of the interaction
- prove that the total weight of matter remains constant (the same) when there is a change in property.
- explain the properties that are formed when two different substances are mixed together
- identify and compare materials by their observable properties

**Learning Activities****Houghton Mifflin Science: Unit E:**

- ❖ **Chapter 12-The Structure of Matter**
  - Lesson 1-What Are Elements?
  - Lesson 3-What Are Compounds?
- ❖ **Chapter 13-Characteristics of Matter**
  - Lesson 1- How Can Materials Be Identified?
  - Lesson 2-How Does Matter Change?
  - Lesson 3-What are Solutions and Mixtures?
  - [Why Does Matter Matter?](#) Close Read with Assessment

**Mystery Science-Chemical Magic:**

- ❖ Missing Mystery Science for 5-PS1-1 use [Matter Foldable and Modeling Matter](#)
- ❖ Mystery 1-[Could you transform something worthless into gold?](#)
- ❖ Mystery 2-[What would happen if you drank a glass of acid?](#)
- ❖ Mystery 3-[What do fireworks, rubber, and silly putty have in common?](#)

**Additional Lesson Plans:**

- ❖ Prezi: [Science Structures and Properties of Matter](#)
- ❖ [Dissolving Salt lab](#): dissolving DOES NOT create something new
- ❖ Using a [triple beam balance](#) to test if matter changes weight after melting and freezing
- ❖ Investigating [changes of state](#) with ice cubes
- ❖ Students make glue balls, lava lamps, origami dogs, and many more exciting things to help them [differentiate between physical and chemical changes](#).
- ❖ [Structure and Properties of Matter](#) Lesson Plans
- ❖ [Bubble Bomb](#)- baking soda, vinegar, plastic bag reaction

**Virtual Labs & Games:**

- ❖ ENGAGE: Opening Activity – Access Prior Learning / Stimulate Interest / Generate Questions Share internet website [“Strange Matter”](#)
- ❖ This site has the embedded States of Matter Video, Matter Sorter Game, Group Classroom Lesson and Review Quiz. Also, students will use the Cause and Effect Graphic Organizer as a recording device for the [States of Matter](#).
- ❖ Virtual [Phases of Matter](#) Gizmo with [vocabulary](#) and [student exploration sheet](#)
- ❖ Virtual Lab on [Properties of Materials](#)
- ❖ Virtual lab on [physical and chemical](#) changes
- ❖ Virtual Lab on [Mystery Powder Analysis](#) with [vocabulary](#) and [student exploration sheet](#)
- ❖ Virtual Lab on [Mineral Identification](#) using physical properties with [vocabulary](#) and [student exploration sheet](#)

**Videos:**

- ❖ BrainPop- [States of Matter](#)
- ❖ BrainPop- [Matter Changing States](#)
- ❖ Bill Nye- [3 Phases of Matter](#)
- ❖ Matter Compilation: [Crash Course Kids](#)
- ❖ Chemical Changes: [Crash Course Kids](#)
- ❖ Oobleck and Non-Newtonian Fluids: [Crash Course Kids](#)  
➤ *(to be used in conjunction with mystery science 3)*
- ❖ Bozeman Science: [Structure and Properties of Matter](#)
- ❖ Study Jams: [Matter](#)

**EnVision Math and Science Connections:**

- ❖ Topic 6: [States of Water](#)
- ❖ Topic 8: [Kitchen Chemistry](#)

**STEAM:**

- ❖ Engineering Activity using hot air balloons: [How heat can change air?](#)  
➤ *Use with additional reading below*

**Wonders Reading:**

- ❖ “Minerals” Unit 4 Week 4

**Additional Reading:**

- ❖ Readworks (with vocabulary and questions) [Matter Is Everywhere](#)
- ❖ [Chemistry for Kids](#)
- ❖ [Why is the Statue of Liberty Green?](#)
- ❖ [Matter](#)
- ❖ Adventure on [Hot Air Balloons](#)
- ❖ Bartholomew and the Oobleck by Dr. Seuss  
➤ (in conjunction with *Mystery Science 3*)

**Assessments**

1. See 5th Grade Resources in **R Drive** for rubrics, projects, teacher's' guide
2. Mystery Science Assessment pages for [Matter](#)
3. Houghton Mifflin Science Assessments for chapters 12 and 13 (*see Zen Room*)
4. [States of Matter](#) formal quiz after Close Read
5. [Phases of Matter](#) formal assessment with answer key
6. [Optional Unit Assessments](#) from Better Lesson
7. Formative Monitoring (Questioning / Discussion)
8. Student Lab Sheets from BetterLesson

**NGSS and NJSLs**

**Standards:** (Note: Include reference to relevant standards in the Core Content Area as well as technology and 21st-century life and careers.)

→ **NGSS:**

- ◆ **5-PS1-1.** Develop a model to describe that matter is made of particles too small to be seen.
- ◆ **5-PS1-2.** Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.
- ◆ **PS1-3.** Make observations and measurements to identify materials based on their properties.
- ◆ **5-PS1-4** Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

→ **NJSLS: ELA**

- ◆ **RI.5.3** Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
- ◆ **RI.5.4** Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.
- ◆ **W.5.1** Write opinion pieces on topics or texts, supporting a point of view with reasons and information.



- ◆ **W.5.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- ◆ **W.5.7** Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

→ **NJSLS: Mathematics**

- ◆ **5.MD.A.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
- ◆ **5.MD.B.2** Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

→ **Technology**

- ◆ **8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
- ◆ **8.1.5.A.2** Format a document using a word processing application to enhance text and include graphics, symbols and/ or pictures.
- ◆ **8.1.5.E.1** Use digital tools to research and evaluate the accuracy of, relevance to, and appropriateness of using print and non-print electronic information sources to complete a variety of tasks.

### **Modifications**

#### **Modifications: (ELLs, Special Education, Gifted and Talented)**

- Follow all IEP modifications and 504 plans
- Provide differentiated instruction as needed.
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Provide ELL students with multiple literacy strategies.
- Text to Speech when available

#### **Gifted and Talented:**

- Investigating Water Transformations: [Keeping Track of Matter](#)