

**Califon Public School  
Science Curriculum**



<b>Subject: Science</b>	<b>Grade:5</b>	<b>Unit #:1</b>	<b>Pacing: 10 weeks</b>
<b>Unit Title: Properties and Changes to Matter</b>			

**OVERVIEW OF UNIT:**

In this unit of study, students describe that matter is made of particles too small to be seen by developing a model and develop an understanding of the idea that regardless of the type of change that matter undergoes, the total weight of matter is conserved. Students will determine whether the mixing of two or more substances results in new substances. The crosscutting concept of *cause and effect, scale, proportion, and quantity* is called out as an organizing concept for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in *developing and using models, planning and carrying out investigations*, and use these practices to demonstrate understanding of the core ideas.

<b>Unit References</b>	
<b>Big Ideas</b>	<b>Essential Questions</b>
<ul style="list-style-type: none"> <li>● Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.</li> <li>● Measurements of a variety of properties can be used to identify materials. <i>(At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.)</i></li> <li>● Natural objects exist from the very small to the immensely large.</li> <li>● Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by means other than seeing.</li> <li>● A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can</li> </ul>	<ul style="list-style-type: none"> <li>● When matter changes, does its weight change?</li> <li>● How can properties be used to identify materials?</li> <li>● What kind of model would best represent/describe matter as made of particles that are too small to be seen?</li> <li>● If I have a frozen water bottle that weighs 500 mg, how much will it weigh if the water melts?</li> <li>● How can baking soda and vinegar burst a zip-lock bag?</li> </ul>

explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects.

- Cause-and-effect relationships are routinely identified, tested, and used to explain change.
- When two or more different substances are mixed, a new substance with different properties may be formed.
- Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.
- The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish.
- No matter what reaction or change in properties occurs, the total weight of the substances does not change. (*Note: Mass and weight are not distinguished at this grade level.*)
- Science assumes consistent patterns in natural systems.

#### Objectives

- Students will be able to describe when matter changes, and if there is a weight change.
- Students will be able to recognize how properties are used to identify materials.
- Students will be able to identify which model would best represent/describe matter as made of particles that are too small to be seen.
- Students will be able to discuss the law of conservation of mass.
- Students will be able to describe by products of a chemical change.

#### Assessment

##### **Formative Assessment:**

- Labs
- Claim-Evidence- Reasoning
- Class Discussions

##### **Summative Assessment:**

- Multiple Choice Assessment

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- Open Ended Response
- Claim-Evidence- Reasoning

**Benchmark:**

- Unit Assessments

**Alternative:**

- Performance Assessments
- Projects
- Models
- Modified Tests Independently Developed by Teacher

**Key Vocabulary**

Metals, Minerals, Liquids, Color, Hardness, Reflectivity, Electrical conductivity, Thermal conductivity, Response to magnetic forces, Solubility, Compressing, Dissolving, Evaporating, Matter, Mass, Weight, Time, Temperature, Volume, Phase changes, Dissolving, Mixing

**Resources & Materials**

Stemscopes website & kits

- Print and digital copies of textbook
- Lab write-ups
- SEP simulations
- Content videos
- PhET Interactive Simulations
- Reading articles
- Math connections
- Pre-assembled Kits

**Technology Infusion**

**Teacher Technology:**

- Chromebooks
- Stemscopes website
- SMARTBoard

**Student Technology:**

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- Chromebooks
- Stemsopes website

**Activities:**

- Students will use Chromebooks to access the Stemsopes website to: activate prior knowledge, build schema, watch videos, complete labs, take assessments and collect data.

<b>Standard</b>	<b>Standard Description</b>
8.1.5.F.1	8.1.5.F.1 Apply digital tools to collect, organize, and analyze data that support a scientific finding.

**Interdisciplinary Integration**

**Activities:**

- Students will read informational text for knowledge and understanding.

**Resources:**

- Teacher Vision Cross Curricular Theme Map - <https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html>
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<b>Standard</b>	<b>Standard Description</b>
RI.5.10	By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4–5 text complexity band independently and proficiently.

**21<sup>st</sup> Century Life Skills**

**Activities:**

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- Students will work in groups to collaborate, at times taking leadership roles to communicate project ideas to the whole class.

<b>Standard</b>	<b>Standard Description</b>
9.2.8.B.3	Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.

### Careers

**Activities:**

- Students will collect data to analyze a system.

<b>Standard</b>	<b>Standard Description</b>
CRP2	Apply appropriate academic and technical skills.

Standards			
Standard #	Standard Description	Student Learning Objectives	Clarification Statement
5-PS1-1	Matter and its Interactions	Develop a model to describe that matter is made of particles too small to be seen.	Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.]
5-PS1-2	Matter and its Interactions	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.	Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances.] [Assessment Boundary: Assessment does not include distinguishing mass and weight.]
5-PS1-3	Matter and its Interactions	Make observations and measurements to identify materials based on their properties.	Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.] [Assessment Boundary: Assessment does not include density or distinguishing mass and weight.]
5-PS1-4	Matter and its Interactions	Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	N/A

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
<ul style="list-style-type: none"> <li>● Provide modifications &amp; accommodations as listed in the student’s IEP</li> <li>● Position student near helping peer or have quick access to teacher</li> <li>● Modify or reduce assignments/tasks</li> <li>● Reduce length of assignment for different mode of delivery</li> <li>● Increase one-to-one time</li> <li>● Prioritize tasks</li> <li>● Use graphic organizers</li> <li>● Use online resources for skill building</li> <li>● Provide teacher notes</li> <li>● Use collaborative grouping strategies such as small groups</li> <li>● NJDOE resources - <a href="http://www.state.nj.us/education/specialed/">http://www.state.nj.us/education/specialed/</a></li> </ul>	<ul style="list-style-type: none"> <li>● Provide text-to-speech</li> <li>● Use of translation dictionary or software</li> <li>● Provide graphic organizers</li> <li>● NJDOE resources - <a href="http://www.state.nj.us/education/aps/cccs/ELL.htm">http://www.state.nj.us/education/aps/cccs/ELL.htm</a></li> <li>● Adapt a Strategy – Adjusting strategies for ESL students - <a href="http://www.teachersfirst.com/content/esl/adaptstrat.cfm">http://www.teachersfirst.com/content/esl/adaptstrat.cfm</a></li> </ul>	<ul style="list-style-type: none"> <li>● Tiered interventions following RTI framework</li> <li>● Effective RTI strategies for teachers - <a href="http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/">http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/</a></li> <li>● Interventional Central - <a href="http://www.interventioncentral.org/">http://www.interventioncentral.org/</a></li> </ul>	<ul style="list-style-type: none"> <li>● Process should be modified: higher order thinking skills, open-ended thinking, discovery</li> <li>● Utilize project-based learning for greater depth of knowledge</li> <li>● Utilize exploratory connections to higher grade concepts</li> <li>● Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations</li> <li>● Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied</li> <li>● NJDOE resources - <a href="http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm">http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm</a></li> </ul>

**Califon Public School  
Science Curriculum**



<b>Subject: Science</b>	<b>Grade: 5</b>	<b>Unit #:2</b>	<b>Pacing: 10 weeks</b>
<b>Unit Title: Energy and Matter in the Ecosystem</b>			

**OVERVIEW OF UNIT:**

In this unit of study, students develop an understanding of the idea that plants get the materials they need for growth chiefly from air and water. Using models, students can describe the movement of matter among plants, animals, decomposers, and the environment, and they can explain that energy in animals' food was once energy from the sun. The crosscutting concepts of *energy and matter* and *systems and system models* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *developing and using models* and *engaging in argument from evidence*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

<b>Unit References</b>	
<b>Big Ideas</b>	<b>Essential Questions</b>
<ul style="list-style-type: none"> <li>● Matter is transported into, out of, and within systems.</li> <li>● Plants acquire their material for growth chiefly from air and water.</li> <li>● Science explanations describe the mechanisms for natural events.</li> <li>● A system can be described in terms of its components and their interactions.</li> <li>● The food of almost any kind of animal can be traced back to plants.</li> <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>● Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as <i>decomposers</i>.</li> </ul>	<ul style="list-style-type: none"> <li>● What happens to the matter and energy that are part of each organism?</li> <li>● Where do plants get the materials they need for growth?</li> <li>● How does matter move among plants, animals, decomposers, and the environment?</li> <li>● How can energy in animals' food be traced to the sun?</li> </ul>



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- Decomposition eventually restores (recycles) some materials back to the soil.
- Organisms can survive only in environments in which their particular needs are met.
- Energy can be transferred in various ways and between objects.
- The energy released from food was once energy from the sun, which was captured by plants in the chemical process that forms plant matter (from air and water).
- Food provides animals with the materials they need for body repair and growth and the energy they need for motion and to maintain body warmth.

#### Objectives

- Students will be able to describe the flow of energy in an environment between the various organisms.
- Students will be able to identify the sun as the source of all energy.

#### Assessment

##### **Formative Assessment:**

- Labs
- Claim-Evidence- Reasoning
- Class Discussions

##### **Summative Assessment:**

- Multiple Choice Assessment
- Open Ended Response
- Claim-Evidence- Reasoning

##### **Benchmark:**

- Unit Assessments

##### **Alternative:**

- Performance Assessments
- Projects
- Models

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- Modified Tests Independently Developed by Teacher

### Key Vocabulary

Energy, organisms, ecosystems, Earth, plants, animals, decomposers, environment, fungi, bacteria, transport

### Resources & Materials

- Stemsscopes website & kits
- Print and digital copies of textbook
- Lab write-ups
- SEP simulations
- Content videos
- PhET Interactive Simulations
- Reading articles
- Math connections
- Pre-assembled Kits

### Technology Infusion

#### Teacher Technology:

- Chromebooks
- Stemsscopes website
- SMARTBoard

#### Student Technology:

- Chromebooks
- Stemsscopes website

#### Activities:

- Students will use Chromebooks to access the Stemsscopes website to: activate prior knowledge, build schema, watch videos, complete labs, take assessments and collect data.

Standard	Standard Description
8.1.5.F.1	8.1.5.F.1 Apply digital tools to collect, organize, and analyze data that support a scientific finding.

**Interdisciplinary Integration**

**Activities:**

- Students will read informational text for knowledge and understanding.

**Resources:**

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Standard	Standard Description
RI.5.10	By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4–5 text complexity band independently and proficiently.

**21<sup>st</sup> Century Life Skills**

**Activities:**

- Students will work in groups to collaborate, at times taking leadership roles to communicate project ideas to the whole class.

Standard	Standard Description
9.2.8.B.3	Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career

**Careers**

**Activities:**

- Students will explain the consequences of human movement and development on the Earth.

Standard	Standard Description
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CRP5.	Consider the environmental, social and economic impacts of decisions.
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Standards			
Standard #	Standard Description	Student Learning Objectives	Clarification Statement
5-LS1-1	From Molecules to Organisms: Structures and Processes	Support an argument that plants get the materials they need for growth chiefly from air and water.	Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.]
5-LS2-1	Ecosystems: Interactions, Energy, and Dynamics	Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.] [Assessment Boundary: Assessment does not include molecular explanations.]
5-PS3-1	Energy	Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.	Examples of models could include diagrams, and flow charts.

<b>Differentiation</b>			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
<ul style="list-style-type: none"> <li>● Provide modifications &amp; accommodations as listed in the student’s IEP</li> <li>● Position student near helping peer or have quick access to teacher</li> <li>● Modify or reduce assignments/tasks</li> <li>● Reduce length of assignment for different mode of delivery</li> <li>● Increase one-to-one time</li> <li>● Prioritize tasks</li> <li>● Use graphic organizers</li> <li>● Use online resources for skill building</li> <li>● Provide teacher notes</li> <li>● Use collaborative grouping strategies such as small groups</li> <li>● NJDOE resources - <a href="http://www.state.nj.us/education/specialed/">http://www.state.nj.us/education/specialed/</a></li> </ul>	<ul style="list-style-type: none"> <li>● Provide text-to-speech</li> <li>● Use of translation dictionary or software</li> <li>● Provide graphic organizers</li> <li>● NJDOE resources - <a href="http://www.state.nj.us/education/aps/cccs/ELL.htm">http://www.state.nj.us/education/aps/cccs/ELL.htm</a></li> <li>● Adapt a Strategy – Adjusting strategies for ESL students - <a href="http://www.teachersfirst.com/content/esl/adaptstrat.cfm">http://www.teachersfirst.com/content/esl/adaptstrat.cfm</a></li> </ul>	<ul style="list-style-type: none"> <li>● Tiered interventions following RTI framework</li> <li>● Effective RTI strategies for teachers - <a href="http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/">http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/</a></li> <li>● Interventional Central - <a href="http://www.interventioncentral.org/">http://www.interventioncentral.org/</a></li> </ul>	<ul style="list-style-type: none"> <li>● Process should be modified: higher order thinking skills, open-ended thinking, discovery</li> <li>● Utilize project-based learning for greater depth of knowledge</li> <li>● Utilize exploratory connections to higher grade concepts</li> <li>● Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations</li> <li>● Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied</li> <li>● NJDOE resources - <a href="http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm">http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm</a></li> </ul>

**Califon Public School  
Science Curriculum**



<b>Subject: Science</b>	<b>Grade: 5</b>	<b>Unit #: 3</b>	<b>Pacing: 10 weeks</b>
<b>Unit Title: Human Impact to Earth’s Systems</b>			

**OVERVIEW OF UNIT:**

In this unit of study, students describe and graph data to provide evidence about the distribution of water on Earth. Students will also be able to describe ways in which the geosphere, biosphere, hydrosphere, and atmosphere interact. The crosscutting concept of *systems, system models, scale, proportion, and quantity* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *using mathematics and computational thinking* and in *obtaining, evaluating, and communicating information*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

<b>Unit References</b>	
<b>Big Ideas</b>	<b>Essential Questions</b>
<ul style="list-style-type: none"> <li>● Standard units are used to measure and describe physical quantities such as weight and volume.</li> <li>● Nearly all of Earth’s available water is in the ocean.</li> <li>● Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.</li> <li>● A system can be described in terms of its components and their interactions.</li> <li>● Science findings are limited to questions that can be answered with empirical evidence.</li> <li>● Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space.</li> </ul>	<ul style="list-style-type: none"> <li>● How do individual communities use science ideas to protect Earth’s resources and environment?</li> <li>● Where is water found on the Earth? What percentage of the Earth’s water is fresh water?</li> <li>● How do individual communities use science ideas to protect Earth’s resources and environment?</li> <li>● In what ways do the geosphere, biosphere, hydrosphere, and/or atmosphere interact?</li> </ul>

- Individuals and communities are doing things to help protect Earth's resources and environments.
- A system can be described in terms of its components and their interactions.
- Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans).
- The Earth's major systems interact in multiple ways to affect Earth's surface materials and processes.
- The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate.
- Winds and clouds in the atmosphere interact with landforms to determine patterns of weather.
- A system can be described in terms of its components and their interactions.
- Science findings are limited to questions that can be answered with empirical evidence.
- Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space.
- Individuals and communities are doing things to help protect Earth's resources and environments.

Objectives

- Students will be able to identify the various places where water is found on Earth.
- Students will be able to indicate the percentage of fresh water is available on Earth vs. the total percentage of water on Earth.
- Students will be able to do individual communities use science ideas to protect Earth's resources and environment.
- Students will be able to illustrate in what ways do the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
- Students will be able to explain how do individual communities use science ideas to protect Earth's resources and environment.

Assessment



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**Formative Assessment:**

- Labs
- Claim-Evidence- Reasoning
- Class Discussions

**Summative Assessment:**

- Multiple Choice Assessment
- Open Ended Response
- Claim-Evidence- Reasoning

**Benchmark:**

- Unit Assessments

**Alternative:**

- Performance Assessments
- Projects
- Models
- Modified Tests Independently Developed by Teacher

**Key Vocabulary**

oceans, lakes, rivers, glaciers, ground water, Polar Ice Caps, wetlands, streams, vegetation, empirical evidence, atmosphere, communities, environment, geosphere, hydrosphere, atmosphere, biosphere, molten rock, agriculture, industry, vegetation, environment, ecosystems, wind, clouds, empirical evidence, weather patterns

**Resources & Materials**

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**Technology Infusion**

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**Activities:**

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Standard	Standard Description
8.1.5.F.1	8.1.5.F.1 Apply digital tools to collect, organize, and analyze data that support a scientific finding.

**Interdisciplinary Integration**

**Activities:**

- Students will read informational text for knowledge and understanding.

**Resources:**

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Standard	Standard Description
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### 21<sup>st</sup> Century Life Skills

**Activities:**

- Students will work in groups to collaborate, at times taking leadership roles to communicate project ideas to the whole class.

Standard	Standard Description
9.2.8.B.3	Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career

### Careers

**Activities:**

- Students will explain the consequences of human movement and development on the Earth.

Standard	Standard Description
CRP5.	Consider the environmental, social and economic impacts of decisions.

Standards			
Standard #	Standard Description	Student Learning Objectives	Clarification Statement
5-ESS2-1	Earth's Systems	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.] [Assessment Boundary: Assessment is limited to the interactions of two systems at a time.]
5-ESS2-2	Earth's Systems	Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	Assessment is limited to oceans, lakes, rivers, glaciers, ground water, and polar ice caps, and does not include the atmosphere.
5-ESS3-1	Earth and Human Activity	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources, environment, and address climate change issues.	N/A

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
<ul style="list-style-type: none"> <li>● Provide modifications &amp; accommodations as listed in the student's IEP</li> <li>● Position student near helping peer or have quick access to teacher</li> </ul>	<ul style="list-style-type: none"> <li>● Provide text-to-speech</li> <li>● Use of translation dictionary or software</li> <li>● Provide graphic organizers</li> <li>● NJDOE resources - <a href="http://www.state.nj.us/education/aps/cccs/ELL.htm">http://www.state.nj.us/education/aps/cccs/ELL.htm</a></li> </ul>	<ul style="list-style-type: none"> <li>● Tiered interventions following RTI framework</li> <li>● Effective RTI strategies for teachers - <a href="http://www.specialeducationguide.com/pre-k-12/respo">http://www.specialeducationguide.com/pre-k-12/respo</a></li> </ul>	<ul style="list-style-type: none"> <li>● Process should be modified: higher order thinking skills, open-ended thinking, discovery</li> <li>● Utilize project-based learning for greater depth of knowledge</li> </ul>

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<ul style="list-style-type: none"><li>● Modify or reduce assignments/tasks</li><li>● Reduce length of assignment for different mode of delivery</li><li>● Increase one-to-one time</li><li>● Prioritize tasks</li><li>● Use graphic organizers</li><li>● Use online resources for skill building</li><li>● Provide teacher notes</li><li>● Use collaborative grouping strategies such as small groups</li><li>● NJDOE resources - <a href="http://www.state.nj.us/education/specialed/">http://www.state.nj.us/education/specialed/</a></li></ul>	<ul style="list-style-type: none"><li>● Adapt a Strategy – Adjusting strategies for ESL students - <a href="http://www.teachersfirst.com/content/esl/adaptstrat.cfm">http://www.teachersfirst.com/content/esl/adaptstrat.cfm</a></li></ul>	<ul style="list-style-type: none"><li>● <a href="http://www.interventioncentral.org/">nse-to-intervention/effective-rti-strategies-for-teachers/</a></li><li>● Interventional Central - <a href="http://www.interventioncentral.org/">http://www.interventioncentral.org/</a></li></ul>	<ul style="list-style-type: none"><li>● Utilize exploratory connections to higher grade concepts</li><li>● Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations</li><li>● Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied</li><li>● NJDOE resources - <a href="http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm">http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm</a></li></ul>
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**Califon Public School  
Science Curriculum**



<b>Subject: Science</b>	<b>Grade: 5</b>	<b>Unit #: 4</b>	<b>Pacing: 10 weeks</b>
<b>Unit Title: Interactions Within the Earth, Sun, and Moon System</b>			

**OVERVIEW OF UNIT:**

In this unit of study, students develop an understanding of patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. The crosscutting concepts of *patterns*, *cause and effect*, and *scale, proportion, and quantity* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *analyzing and interpreting data* and *engaging in argument from evidence*. Students are also expected to use these practices to demonstrate an understanding of the core ideas.

Unit References	
Big Ideas	Essential Questions
<ul style="list-style-type: none"> <li>● Cause-and-effect relationships are routinely identified and used to explain change.</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>● Natural objects exist from the very small to the immensely large.</li> <li>● The sun is a star that appears larger and brighter than other stars because it is closer.</li> <li>● Stars range greatly in their distance from Earth.</li> <li>● Similarities and differences in patterns can be used to sort, classify, communicate, and analyze simple rates of change for natural phenomena.</li> <li>● The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its north and south poles, cause observable patterns. These include:               <ul style="list-style-type: none"> <li>✓ Day and night</li> <li>✓ Daily changes in the length and direction of shadows</li> <li>✓ Different positions of the sun, moon, and stars at different times of the day, month, and year.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● What patterns do we notice when observing the sky?</li> <li>● What effect does Earth’s gravitational force have on objects?</li> <li>● What effect does the relative distance from Earth have on the apparent brightness of the sun and other stars?</li> </ul>
Objectives	
<ul style="list-style-type: none"> <li>● Students will be able to detail what patterns they notice when observing the sky.</li> <li>● Students will be able to analyze the effects of Earth’s gravitational force on objects.</li> <li>● Students will be able to identify what effect the relative distance from Earth has on the apparent brightness of the sun and other stars.</li> </ul>	
Assessment	
<p><b>Formative Assessment:</b></p> <ul style="list-style-type: none"> <li>● Labs</li> </ul>	

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- Claim-Evidence- Reasoning
- Class Discussions

**Summative Assessment:**

- Multiple Choice Assessment
- Open Ended Response
- Claim-Evidence- Reasoning

**Benchmark:**

- Unit Assessments

**Alternative:**

- Performance Assessments
- Projects
- Models
- Modified Tests Independently Developed by Teacher

**Key Vocabulary**

Stars, moon, sun, gravitational force, relative distance, apparent brightness

**Resources & Materials**

- Stemsscopes website & kits
- Print and digital copies of textbook
- Lab write-ups
- SEP simulations
- Content videos
- PhET Interactive Simulations
- Reading articles
- Math connections
- Pre-assembled Kits

**Technology Infusion**

**Teacher Technology:**

- Chromebooks
- Stemsscopes website
- SMARTBoard

**Student Technology:**

- Chromebooks
- Stemsopes website

**Activities:**

- Students will use Chromebooks to access the Stemsopes website to: activate prior knowledge, build schema, watch videos, complete labs, take assessments and collect data.

Standard	Standard Description
8.1.5.F.1	8.1.5.F.1 Apply digital tools to collect, organize, and analyze data that support a scientific finding.

**Interdisciplinary Integration**

**Activities:**

- Students will read informational text for knowledge and understanding.

**Resources:**

- Teacher Vision Cross Curricular Theme Map - <https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html>
- Engineering Go For It! - <http://egfi-k12.org/>
- US Department of Education STEM - <http://www.ed.gov/stem>
- Intel STEM Resource - <http://www.intel.com/content/www/us/en/education/k12/stem.html>
- NASA STEM - <http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko>
- PBS STEM - <http://www.pbs.org/teachers/stem/#content>
- STEM Works - <http://stem-works.com/activities>
- What Every Education Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - [http://www.glencoe.com/sec/teachingtoday/subject/promoting\\_literacy.phtml](http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml)
- International Literacy Association Read Write Think - <http://www.readwritethink.org/>

Standard	Standard Description
RI.5.10	By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4–5 text complexity band independently and proficiently.

**21<sup>st</sup> Century Life Skills**

**Activities:**



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- Students will work in groups to collaborate, at times taking leadership roles to communicate project ideas to the whole class.

<b>Standard</b>	<b>Standard Description</b>
9.2.8.B.3	Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career

### Careers

**Activities:**

- Students will collect data to analyze a system.

<b>Standard</b>	<b>Standard Description</b>
CRP2	Apply appropriate academic and technical skills.

Standards			
Standard #	Standard Description	Student Learning Objectives	Clarification Statement
5-PS2-1	Motion and Stability: Forces and Interactions	Support an argument that the gravitational force exerted by Earth on objects is directed down.	“Down” is a local description of the direction that points toward the center of the spherical Earth.] [Assessment Boundary: Assessment does not include mathematical representation of gravitational force.]
5-ESS1-1	Earth’s Place in the Universe	Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.	Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).
5-ESS1-2	Earth’s Place in the Universe	Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.] [Assessment Boundary: Assessment does not include causes of seasons.]

<b>Differentiation</b>			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
<ul style="list-style-type: none"> <li>● Provide modifications &amp; accommodations as listed in the student’s IEP</li> <li>● Position student near helping peer or have quick access to teacher</li> <li>● Modify or reduce assignments/tasks</li> <li>● Reduce length of assignment for different mode of delivery</li> <li>● Increase one-to-one time</li> <li>● Prioritize tasks</li> <li>● Use graphic organizers</li> <li>● Use online resources for skill building</li> <li>● Provide teacher notes</li> <li>● Use collaborative grouping strategies such as small groups</li> <li>● NJDOE resources - <a href="http://www.state.nj.us/education/specialed/">http://www.state.nj.us/education/specialed/</a></li> </ul>	<ul style="list-style-type: none"> <li>● Provide text-to-speech</li> <li>● Use of translation dictionary or software</li> <li>● Provide graphic organizers</li> <li>● NJDOE resources - <a href="http://www.state.nj.us/education/aps/cccs/ELL.htm">http://www.state.nj.us/education/aps/cccs/ELL.htm</a></li> <li>● Adapt a Strategy – Adjusting strategies for ESL students - <a href="http://www.teachersfirst.com/content/esl/adaptstrat.cfm">http://www.teachersfirst.com/content/esl/adaptstrat.cfm</a></li> </ul>	<ul style="list-style-type: none"> <li>● Tiered interventions following RTI framework</li> <li>● Effective RTI strategies for teachers - <a href="http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/">http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/</a></li> <li>● Interventional Central - <a href="http://www.interventioncentral.org/">http://www.interventioncentral.org/</a></li> </ul>	<ul style="list-style-type: none"> <li>● Process should be modified: higher order thinking skills, open-ended thinking, discovery</li> <li>● Utilize project-based learning for greater depth of knowledge</li> <li>● Utilize exploratory connections to higher grade concepts</li> <li>● Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations</li> <li>● Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied</li> <li>● NJDOE resources - <a href="http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm">http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm</a></li> </ul>