

## New Haven Elementary

This is the condensed version of our journey in Science, Technology, Engineering and Math throughout the year. There is a complete version of Next Generation Science Standards available on the Kentucky Department of Education Website.

### August/September

<p><b>Kindergarten</b>          K-PS2-1, K-PS2-2, K-2-ETS-1,          K-2ETS1-1, K-2-ETS1-2, K-2-ETS1-3  <u>Cross Cutting Concepts</u> - Cause and Effect  <u>Practices</u> - Investigation, Data</p>	<p><u>Pushes and Pulls</u>          -I can plan and carry out investigations with peers to gather evidence of the effect of forces on objects.          -I can analyze data from tests of an object or tool to determine if it worked as intended.</p> 
<p><b>First</b>          K-TETS1-1, K-2-ETS1-2, K-2-ETS1-3  <u>CCC</u>-Structure and Function  <u>Practices</u>-Questioning, Models, Data</p> 	<p><u>Engineering Design</u>          -I can research situations to solve a simple problem by developing a tool.          -I can design a simple sketch or model to illustrate the solution to a problem.          -I can design, test, and collect data to compare two tools.</p>
<p><b>Second</b>          2-PS1-1, 2-PS1-2, K-2-ETS1-1  <u>CCC</u>- Patterns  <u>Practices</u>- Investigating, Interpreting Data, Arguing from Evidence</p> 	<p><u>Properties of Matter</u>          -I can plan and conduct investigations with peers to identify patterns to classify materials by properties.          -I can analyze data from tests of an object or tool to determine if it worked as intended.</p>

<p><b>Third</b></p>  <p>3-PS2-1, 3-PS2-2, 3-5ETS1-3  <u>CCC</u>-Patterns, Cause and Effect  <u>Practices</u>- Asking Questions and Defining Problems, Investigations</p>	<p><u>Force and Motion</u></p> <ul style="list-style-type: none"> <li>-I can plan and conduct an investigation using fair tests to explain cause and effect relationship between forces.</li> <li>-I can use evidence to explain patterns in motion.</li> </ul>
<p><b>Fourth</b></p> <p>4-PS3-2, 4-PS3-3  <u>CCC</u>-Energy and Matter  <u>Practices</u>-Questioning, Investigating, Explaining</p> 	<p><u>Transfer of Energy</u></p> <ul style="list-style-type: none"> <li>-I can design, test, and refine a device that converts energy from one form to another.</li> <li>-I can make observations to produce data to serve as evidence for an explanation of sound, light, heat, and electricity.</li> </ul>
<p><b>Fifth</b></p> <p>5-PS1-1, 5-PS1-3, 3-5ETS1-3, 3-5ETS1-2, 3-5ETS1-3  <u>CCC</u>-Cause and Effect, Scale, Proportion, Quantity  <u>Practices</u>-Models, Investigations, Math Thinking</p>	<p><u>Properties of Matter</u></p> <ul style="list-style-type: none"> <li>-I can understand that a standard set of units exist which are used to measure physical qualities.</li> <li>-I can use cause and effect relationships and models to show that matter changes states.</li> </ul>

# October/November

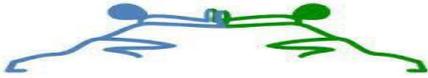
<p><b>Kindergarten</b> K-PS3-1, K-PS3-2, K-2-ETS1-1, K-2-ETS1-3 <u>CCC</u>-Cause and Effect <u>Practices</u>-Investigation, Explaining and Designing Solutions</p> 	<p><u>Sun's Energy</u> -I can explain the relationship between the sun's energy and the Earth's surface. -I can use tools and materials to reduce the warming effect of the sun. -I can compare a variety of tools and materials and decide which one has the greatest effect on the effect of the sun's energy.</p>
<p><b>First</b> 1-ESS1-1, 1-ESS1-2 <u>CCC</u>- Patterns <u>Practices</u>-Investigations, Data</p> 	<p><u>Patterns of Change in the Sky</u> -I can make observations and collect data to describe predictable patterns of movement for the sun, moon, stars. -I can make observations and collect data to compare the different amounts of daylight throughout the year. -I can research a simple problem and design a tool to solve the problem of observing objects in the</p>
<p><b>Second</b> 2-PS1-3, 2-PS1-4 <u>CCC</u>-Cause and Effect, Energy and Matter <u>Practices</u>-Data, Argument from Evidence</p>	<p><u>Interactions of Matter</u> -I can make observations to construct an explanation that objects break into smaller pieces to make a new object. -I can construct an argument using cause and effect that heating and cooling causes</p>
<p><b>Third</b> 3-PS2-3, 3-PS2-4, 3-5-ETS1-1 <u>CCC</u>-Patterns, Cause and Effect <u>Practices</u>-Questioning, Investigating</p> 	<p><u>Electric and magnetic Force</u> -I can ask questions that can be investigated based on patterns such as cause and effect relationships between electricity and objects. -I can plan and carry out investigations to test solutions to problems using magnets.</p>

## Fourth

4-PS3-1, 4-PS3-4, 3-5ETS1-1, 3-5ETS1-2, 3-5ETS1-3

CCC-Energy and Matter

Practices-Questioning, Investigating, Explaining



## Force and Motion

- I can use evidence to construct an explanation relating the speed of an object to the energy of the object.
- I can design, test and refine a device that converts energy from one form to another.
- I can ask questions that can be investigated and predict outcomes of collisions based on patterns.

## Fifth

5-PS1-2, 5-PS1-4, 3-5ETS1-1, 3-5ETS1-2, 3-5ETS1-3

CCC-Cause and Effect

Practices-Models, Investigations, Mathematical Thinking



## Changes in Matter

- I can plan and carry out fair tests in which variables are controlled and the number of trials is considered to generate data as evidence that regardless of type of change total weight of matter is conserved.
- I can identify test and use cause and effect relationships to explain that mixing two or more substances results in a new substance.

# December/January

## Kindergarten

K-ESS2-1, K-ESS3-2, K-ETS1-2

CCC-Patterns, Systems and System models

Practices-Data, Engaging in Argument from Evidence



## Patterns and Predictions of

### Weather -I can ask questions

based on observations of patterns in weather.

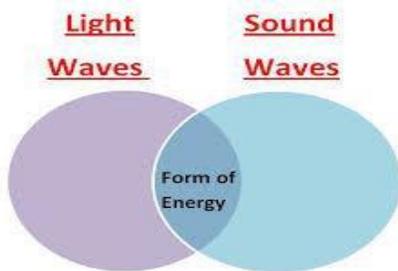
-I can make observations to collect data to make comparisons in weather.

## First

1-PS4-1, 1-PS4-2, 1-PS4-3, K-2-ETS1-2

CCC-Patterns, Cause and Effect

Practices-Data, Investigation, Models



## Light and Sound Waves

-I can design a simple test to make observations and gather evidence about light.

-I can plan and conduct investigations with peers to gather evidence about light.

-I can plan and conduct investigations with peers to gather evidence that vibrating materials make sound.

-I can design a simple sketch, or model to illustrate that an objects shape functions to solve a problem.

## Second

2-ESS2-2, 2-ESS2-3

CCC-Patterns, Stability and Change

Practices-Models, Obtain, Evaluate, and Communicate Information



## Earth's Land and Water

-I can obtain, evaluate, and communicate information about models that represent the shapes of land and bodies of water.

-I can obtain, evaluate, and communicate information about where water is found on Earth in solid and liquid forms.

-I can develop a model to identify shapes of land and bodies of water.

## Third

3-ESS2-1, 3-PS2-4, 3-5ETS1-1

CCC-Data, Obtaining, Evaluating, and Communicating Information

Practices- Engaging in Argument from Evidence



## Weather and Climate

-I can use a graph to analyze and interpret data to reveal patterns in typical weather conditions in a season or region.

-I can use evidence to argue a claim about the merit of a design solution that reduces the impact of weather related hazards.

## Fourth

4-PS4-1, 4-PS4-2, 4-PS4-3, 3-5ETS1-2, 3-5ETS1-3

CCC-Patterns, Cause and Effect  
Practices-Models, Explaining



## Waves

-I can develop a model to describe how light reflecting from objects enters the eye allowing objects to be seen.

-I can develop a model of waves to describe patterns in terms of amplitude and wavelength that cause an object to move.

-I can generate and compare multiple solutions that use patterns to transfer information.

## Fifth

5-PS3-1, 5-LS2-1, 5-LS1-1, 3-5ETS1-3

CCC-Energy and Matter  
Practices-Engaging in Argument from Evidence

## Matter and Energy Transfers in Ecosystems

-I can use models to describe how energy is transferred in ecosystems.

-I can support an argument with evidence that plants primarily need air and water to grow.

# January/February

<p><b>Kindergarten</b> K-LS1-1, K-ESS2-2, K-ESS3-1, K-ESS3-3, K-2-ETS1-2 <u>CCC</u>-Patterns <u>Practices</u>-Analyzing and Interpreting Data</p> 	<p><u>Plants Have Needs</u> -I can use patterns from observations as evidence to make a claim about what a plant needs to survive. -I can use evidence to make a claim that plants can change to meet their needs. -I can use a model to represent the relationship between the needs of plants and where they live. -I can communicate solutions that will reduce the impact of humans on their environment.</p>
<p><b>First</b> 1-PS4-4, K-2-ETS1-1, K-2-ETS1-3 <u>CCC</u>-Energy and Matter <u>Practices</u>-Data, Models, Investigation, Designing Solutions</p>	<p><u>Light and Sound in Communication</u> -I can use tools and materials to design and build a device that uses light/sound to solve a problem. -I can design, test, collect data, and analyze the performance of two objects using light and sound to solve a problem.</p>
<p><b>Second</b> 2-ESS1-1, 2-ESS2-1, K-2-ETS1-1, k-2-ETS1-1, K-2-ETS1-1 <u>CCC</u>-Stability and Change, Patterns <u>Practices</u>-Models, Explaining and Designing Solutions</p> 	<p><u>Changes to Earth's Land</u> -I can construct explanations from information to explain that events on Earth can occur quickly or slowly. -I can design solutions to slow or prevent wind and water from changing the Earth. -I can develop a model connecting structure and function to represent the ways humans help slow or prevent wind and water from changing the shape of the land.</p>

## Third

3-LS3-1, 3-LS3-2

CCC-Cause and Effect, Scale, Proportion and Quantity, Systems and Systems Model

Practices- Data, Explaining and Designing Solutions, Engaging in Argument from Evidence.

### Inherited Traits and the Life Cycle

-I can analyze and interpret data to observe differences and similarities in patterns in inherited traits.

-I can construct explanations of cause and effect relationships that are used to explain how traits are influenced.

-I can develop and use models to show patterns in life cycles of different organisms.

## Fourth

4-ESS1-1,4-ESS2-1,4-ESS3-1,4-ESS2-2,4-ESS3-2,3-5ETS1-2

CCC-Patterns, Cause and Effect

Practices-Investigating, Data



### Weathering/Erosion

-I can identify patterns of evidence that explains how landforms change over time.

-I can make observations and measurements that provide data about the impact of weathering and erosion.

-I can use information from books to explain how humans use energy from natural resources.

### Earth Processes

-I can analyze and interpret data from landform maps.

-I can explain the cause and effect relationship between Earth processes and impact on the environment.

-I can design a solution to slow Earth's natural processes that will meet the criteria.

## Fifth

5-ESS2-2,5-ESS3-2,3-5ETS1-2, 3-5ETS1-1

CCC- Scale, Proportion, Quantity Systems and System Models

Practices-Models, Mathematical and Computational Thinking



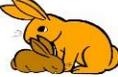
### Where is the Water

-I can obtain information from books to explain phenomena about where water is throughout the Earth's systems.

-I can describe and graph quantities such as area and volume to address scientific questions about Earth's water.

-I can develop a model to represent events and design solutions related to protecting the Earth's resources.

# March/April

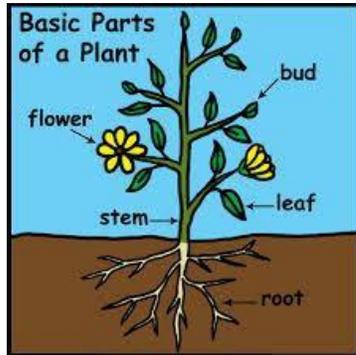
<p><b>Kindergarten</b> K-ESS2-2, K-ESS3-1, K-ESS3-3, K-ETS1-2 <u>CCC</u>-Cause and Effect, Systems and System Models, Patterns <u>Practices</u>-Asking Questions, Developing and Using Models, Information (obtaining, evaluating, communicating)</p> 	<p><u>Animals Have Needs Too</u> -I can use patterns from observations as evidence to make a claim about what an animal needs to survive in an area. -I can use evidence to make a claim that animals can change their environment to meet their needs. -I can use a model to represent the relationship between animals and the place they live. -I can communicate solutions that will reduce the impact of humans on their environment.</p>
<p><b>First</b> 1-LS1-2, 1-LS3-1 <u>CCC</u>-Patterns, Structure and Function <u>Practices</u>-Explaining and Designing Solutions, Communicating</p> 	<p><u>Characteristics of Living Things</u> -I can read text and use media to identify patterns survival behaviors in animals. -I can use observations to make an evidence-based account comparing patterns in parents and offspring.</p>
<p><b>Second</b> 2-LS4-1, LS2-2 <u>CCC</u>-Cause and Effect, Structure and Function <u>Practices</u>- Models, Investigation</p> 	<p><u>Structure and Function of Plants</u> -I can plan and carry out investigation using cause and effect to determine the need for sunlight and water in a plant. -I can develop and use a model to mimic the function of an animal dispersing seed or pollinating a plant.</p>
<p><b>Third</b> 3-LS2-1, 3-LS4-3, 3-5-ETS1-2, 3-LS4-2 <u>CCC</u>-Cause and Effect, Scale, Proportion, and Quantity, Systems and Models <u>Practices</u>-Data, Explanations, Arguing from Evidence</p>	<p><u>Survival within an Environment</u> -I can engage in argument from evidence that some animals can survive habitats while other cannot. -I can construct explanations that animals have a variety of characteristics that help them survive, find mates, and reproduce.</p>

## Fourth

4-LS1-1, 4-LS1-2, 4-PS4-2

CCC-Systems and System Models

Practices-Models, Argument



## Structure and Function

-I can construct an argument with evidence, data, or a model that plants and animals have internal and external structures that have a specific purpose.

-I can describe a system in terms of components and their interactions.

## How Organisms Process Information

-I can use a model to test interactions concerning the function of a natural system.

-I can identify cause and effect relationships between organism structures and their functions.

## Fifth

5-ESS2-1, 5-ESS3-1, 3-5-ETS1-2, 3-

5-ETS1-3, 3-5-ETS1-1

CCC-Scale, Proportion, Quality

Practices-Models, Mathematical

Thinking



## Earth's Systems and Interactions

-I can describe a system that illustrates interactions between Earth's geosphere, atmosphere, hydrosphere, and atmosphere.

# May

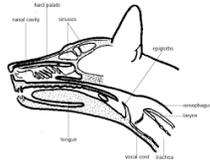
<p><b>Kindergarten</b> K-ESS2-2, K-ESS3-1, K-ESS3-3, K-ETS1-2 <u>CCC</u>-Cause and Effect, Systems and System Models, Patterns <u>Practices</u>-Asking Questions, Developing and Using Models, Information (obtaining, evaluating, communicating)</p> 	<p><u>Animals Have Needs Too</u> -I can use patterns from observations as evidence to make a claim about what an animal needs to survive in an area. -I can use evidence to make a claim that animals can change their environment to meet their needs. -I can use a model to represent the relationship between animals and the place they live. -I can communicate solutions that will reduce the impact of humans on their environment.</p>
<p><b>First</b> 1-LS1-1, K-2-ETS1-1, K-2-ETS1-2 <u>CCC</u>-Structure and Function <u>Practices</u>-Constructing Explanations and Developing Solutions</p> 	<p><u>Mimicking Organisms to Solve Problems</u> - I can learn from plants and animals to design solutions to human problems. -I can research situations to solve a simple problem by developing a tool. -I can design a simple sketch or model to illustrate that an objects shape functions to solve a problem.</p>
<p><b>Second</b> 2-LS4-1 <u>CCC</u>-Structure and Function <u>Practices</u>- Investigation</p>	<p><u>Relationships in Habitats</u> -I can make observations to plan and carry out an investigation to compare the diversity of plant and animal habitats.</p>
<p><b>Third</b> 3-LS4-1, 3-LS4-4,3-5-ETS1-1 <u>CCC</u>-Cause and Effect, Scale, Systems <u>Practices</u>-Data, Explanation, Argument</p> 	<p><u>Changes in Environment</u> -I can analyze and interpret data about scale, proportion, and quantity of fossils to learn about the past. -I can engage in argument from evidence about the cause and effect relationship between environmental changes and changes in organisms.</p>

## Fourth

4-LS1-1, 4-LS1-2, 4-PS4-2

CCC-Systems and System Models

Practices-Models, Argument



## How Organisms Process Information

- I can use a model to test interactions concerning the function of a natural system.
- I can identify cause and effect relationships between organism structures and their functions.

## Fifth

5-PS2-1, 5-ESS1-1, 5-ESS1-2, 3-5ETS1-3

CCC-Patterns, Scale, Proportion, Quantity

Practices-Data, Argument



## Patterns in Earth, Sun, Moon System

- I can use cause and effect patterns to support an argument that the Earth has a gravitational pull on an object.
- I can support an argument with evidence that the Earth pulls toward the center.
- I can support an argument with evidence, data, or models the brightness of the sun is due to its relative distance to the Earth.
- I can represent data in a graphical way to display patterns and relationships between Earth's seasons.

