

K-5 NYSSLS Progressions: Crosscutting Concepts (CCC)

→ INCREASING SOPHISTICATION OF STUDENT THINKING →

1. Patterns – Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them.	
K-2 Crosscutting Statements	3-5 Crosscutting Statements
<ul style="list-style-type: none"> Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. <p>BOCES 4 Science Unit: Weather for Kindergarten (Grade K) BOCES 4 Science Unit: Worm Scouts (Grade K) BOCES 4 Science Unit: A Bunny's Life (Grade 1) BOCES 4 Science Unit: Sky Patterns (Grade 1) BOCES 4 Science Unit: Sending Messages with Light and Sound (Grade 1)* BOCES 4 Science Unit: Made of Matter (Grade 2) BOCES 4 Science Unit: Earth's Features (Grade 2) BOCES 4 Science Unit: Save the Bees (Grade 2)</p>	<ul style="list-style-type: none"> Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena and designed products. <p>BOCES 4 Science Unit: Where are the Wolves? (Grade 3)* BOCES 4 Science Unit: Invisible Forces (Grade 3) BOCES 4 Science Unit: Generations of Butterflies (Grade 3) BOCES 4 Science Unit: Investigating Weather and Climate (Grade 3) BOCES 4 Science Unit: Riding the Waves of Information (Grade 4) BOCES 4 Science Unit: Earth and Space Explorers (Grade 5) BOCES 4 Science Unit: Toys Matter (Grade 5)*</p> <ul style="list-style-type: none"> Patterns of change can be used to make predictions. <p>BOCES 4 Science Unit: Invisible Forces (Grade 3) BOCES 4 Science Unit: Generations of Butterflies (Grade 3) BOCES 4 Science Unit: Investigating Weather and Climate (Grade 3) BOCES 4 Science Unit: Earth and Space Explorers (Grade 5)</p> <ul style="list-style-type: none"> Patterns can be used as evidence to support an explanation. <p>BOCES 4 Science Unit: Invisible Forces (Grade 3) BOCES 4 Science Unit: Generations of Butterflies (Grade 3) BOCES 4 Science Unit: Investigating Weather and Climate (Grade 3) BOCES 4 Science Unit: Earth's Processes in New York State (Grade 4) BOCES 4 Science Unit: Powering Thru the Fair (Grade 4)* BOCES 4 Science Unit: A Walk in the Park (Grade 4)* BOCES 4 Science Unit: Earth and Space Explorers (Grade 5) BOCES 4 Science Unit: Toys Matter (Grade 5)* BOCES 4 Science Unit: Deer, Deer Everywhere! (Grade 5)*</p>

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2. Cause and Effect: Mechanism and Prediction – Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.

K-2 Crosscutting Statements	3-5 Crosscutting Statements
<ul style="list-style-type: none"> Events have causes that generate observable patterns. BOCES 4 Science Unit: Worm Scouts (Grade K) BOCES 4 Science Unit: Weather for Kindergarten (Grade K) BOCES 4 Science Unit: Sky Patterns (Grade 1) BOCES 4 Science Unit: Sending Messages with Light and Sound (Grade 1) BOCES 4 Science Unit: Made of Matter (Grade 2)* BOCES 4 Science Unit: Earth's Features (Grade 2)* BOCES 4 Science Unit: Save the Bees (Grade 2) Simple tests can be designed to gather evidence to support or refute student ideas about causes. BOCES 4 Science Unit: Pushes and Pulls (Grade K) BOCES 4 Science Unit: Sky Patterns (Grade 1) BOCES 4 Science Unit: Sending Messages with Light and Sound (Grade 1) BOCES 4 Science Unit: Made of Matter (Grade 2)* 	<ul style="list-style-type: none"> Cause and effect relationships are routinely identified, tested, and used to explain change. BOCES 4 Science Unit: Invisible Forces (Grade 3) BOCES 4 Science Unit: Generations of Butterflies (Grade 3) BOCES 4 Science Unit: Investigating Weather and Climate (Grade 3) BOCES 4 Science Unit: Where are the Wolves? (Grade 3) BOCES 4 Science Unit: Earth's Processes in New York State (Grade 4) BOCES 4 Science Unit: Powering Thru the Fair (Grade 4) BOCES 4 Science Unit: A Walk in the Park (Grade 4) BOCES 4 Science Unit: Earth and Space Explorers (Grade 5) BOCES 4 Science Unit: Toys Matter (Grade 5) BOCES 4 Science Unit: Deer, Deer Everywhere! (Grade 5)* BOCES 4 Science Unit: Got Water? (Grade 5)* Events that occur together with regularity might or might not be a cause and effect relationship. BOCES 4 Science Unit: Deer, Deer Everywhere! (Grade 5)* BOCES 4 Science Unit: Got Water? (Grade 5)*

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3. Scale, Proportion, and Quantity – In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change.	
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<ul style="list-style-type: none"> Relative scales allow objects and events to be compared and described (e.g., bigger and smaller; hotter and colder; faster and slower). BOCES 4 Science Unit: Sky Patterns (Grade 1)* BOCES 4 Science Unit: A Bunny's Life (Grade 1)* <p>Standard units are used to measure length.</p>	<ul style="list-style-type: none"> Natural objects and/or observable phenomena exist from the very small to the immensely large or from very short to very long time periods. BOCES 4 Science Unit: Where are the Wolves? (Grade 3) BOCES 4 Science Unit: Earth's Processes in New York State (Grade 4)* BOCES 4 Science Unit: Earth and Space Explorers (Grade 5) BOCES 4 Science Unit: Toys Matter (Grade 5) Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. BOCES 4 Science Unit: Investigating Weather and Climate (Grade 3)* BOCES 4 Science Unit: Got Water? (Grade 5)
4. Systems and System Models – A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.	
K-2 Crosscutting Statements	3-5 Crosscutting Statements
<ul style="list-style-type: none"> Objects and organisms can be described in terms of their parts. BOCES 4 Science Unit: Sky Patterns (Grade 1)* Systems in the natural and designed world have parts that work together. BOCES 4 Science Unit: Worm Scouts (Grade K) BOCES 4 Science Unit: A Bunny's Life (Grade 1)* BOCES 4 Science Unit: Sending Messages with Light and Sound (Grade 1)* BOCES 4 Science Unit: Save the Bees (Grade 2)* 	<ul style="list-style-type: none"> A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. BOCES 4 Science Unit: Invisible Forces (Grade 3)* BOCES 4 Science Unit: A Walk in the Park (Grade 4) BOCES 4 Science Unit: Got Water? (Grade 5) A system can be described in terms of its components and their interactions. BOCES 4 Science Unit: Investigating Weather and Climate (Grade 3)* BOCES 4 Science Unit: Where are the Wolves? (Grade 3) BOCES 4 Science Unit: Earth's Processes in New York State (Grade 4)* BOCES 4 Science Unit: A Walk in the Park (Grade 4) BOCES 4 Science Unit: Earth and Space Explorers (Grade 5)* BOCES 4 Science Unit: Deer, Deer Everywhere! (Grade 5) BOCES 4 Science Unit: Got Water? (Grade 5)

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5. Energy and Matter: Flows, Cycles, and Conservation – Tracking energy and matter flows, into, out of, and within systems helps one understand their system’s behavior.	
K-2 Crosscutting Statements	3-5 Crosscutting Statements
<ul style="list-style-type: none"> Objects may break into smaller pieces, be put together into larger pieces, or change shapes. BOCES 4 Science Unit: Made of Matter (Grade 2) BOCES 4 Science Unit: Save the Bees (Grade 2)*	<ul style="list-style-type: none"> Matter is made of particles. BOCES 4 Science Unit: Toys Matter (Grade 5)* Matter flows and cycles can be tracked in terms of the weight of the substances before and after a process occurs. The total weight of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems. BOCES 4 Science Unit: Toys Matter (Grade 5)* BOCES 4 Science Unit: Deer, Deer Everywhere! (Grade 5) Energy can be transferred in various ways and between objects. BOCES 4 Science Unit: Powering Thru the Fair (Grade 4) BOCES 4 Science Unit: Deer, Deer Everywhere! (Grade 5)

6. Structure and Function – The way an object is shaped or structured determines many of its properties and functions.	
K-2 Crosscutting Statements	3-5 Crosscutting Statements
<ul style="list-style-type: none"> The shape and stability of structures of natural and designed objects are related to their function(s). BOCES 4 Science Unit: A Bunny’s Life (Grade 1) BOCES 4 Science Unit: Sending Messages with Light and Sound (Grade 1)* BOCES 4 Science Unit: Save the Bees (Grade 2)	<ul style="list-style-type: none"> Different materials have different substructures, which can sometimes be observed. BOCES 4 Science Unit: Generations of Butterflies (Grade 3)* BOCES 4 Science Unit: Toys Matter (Grade 5)* Substructures have shapes and parts that serve functions. BOCES 4 Science Unit: Generations of Butterflies (Grade 3)* BOCES 4 Science Unit: Where are the Wolves? (Grade 3)* BOCES 4 Science Unit: A Walk in the Park (Grade 4)* BOCES 4 Science Unit: Toys Matter (Grade 5)* BOCES 4 Science Unit: Deer, Deer Everywhere! (Grade 5)*

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7. Stability and Change – For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.	
K-2 Crosscutting Statements	3-5 Crosscutting Statements
<ul style="list-style-type: none">▪ Some things stay the same while other things change.▪ Things may change slowly or rapidly. BOCES 4 Science Unit: Earth's Features (Grade 2)	<ul style="list-style-type: none">▪ Change is measured in terms of differences over time and may occur at different rates. BOCES 4 Science Unit: Earth's Processes in New York State (Grade 4)* BOCES 4 Science Unit: Toys Matter (Grade 5)* BOCES 4 Science Unit: Deer, Deer Everywhere! (Grade 5)*▪ Some systems appear stable, but over long periods of time will eventually change. BOCES 4 Science Unit: Deer, Deer Everywhere! (Grade 5)*