

Ark Community Charter School Science Curriculum Framework – Grade 3

<u>Suggested Pacing</u>	<u>Units</u>	<u>New York State Standards</u>	<u>New York State Skills Standards</u>	<u>New York State Performance Indicators</u>	<u>Assessments (Formal/ including state assessments and Informal)</u>
When and in what order will the standards be taught and assessed?	What are your unit titles	What should students know? Optional: You can also identify essential questions based on the content standards.)	What should students be able to do? (Indicate which skill is a benchmark standard that will be assessed at this grade level (A) which will be bolded below , and which skills are introduced (I) and/or practiced (P) at this grade level	What qualities of the physical and living environment will the students will be able to observe or describe? A benchmark standard that will be assessed at this grade level (A) which will be bolded below , and which skills are introduced (I) and/or practiced (P) at this grade level. <i>Italicized</i> items have been assessed in grade levels before so only need to be reviewed.	What specific tools will be used to assess which content bolded standard or skills standard at this grade level?
Scientific Procedure will be practiced in all units. Bolded standards/ PI will be assessed in the Weather Unit and Butterfly Unit	Science Centers Making Bread	STANDARD 1- Analysis, Inquiry, and Design: SCIENTIFIC INQUIRY:	<i>Key Idea 1:</i> The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process. S1.1 Ask " why " questions in attempts to seek greater understanding concerning objects and events they have observed and heard about. S1.1a Observe and discuss objects and events and record observations S1.1b Articulate appropriate questions based on observations S1.2 Question the explanations they hear from others and read about, seeking clarification and comparing them with their own observations and understandings. S1.2a Identify similarities and differences		Assessed (written and/or oral) for use and understanding of Question, Hypothesis

<u>Suggested Pacing</u>	<u>Units</u>	<u>New York State Standards</u>	<u>New York State Skills Standards</u>	<u>New York State Performance Indicators</u>	<u>Assessments (Formal/ including state assessments and Informal)</u>
			<p>between explanations received from others or in print and personal observations or understandings</p> <p>S1.3 Develop relationships among observations to construct descriptions of objects and events and to form their own tentative explanations of what they have observed.</p> <p>S1.3a Clearly express a tentative explanation or description which can be tested</p> <p><i>Key Idea 2:</i></p> <p>Beyond the use of reasoning and consensus, scientific inquiry involves the testing of proposed explanations involving the use of conventional techniques and procedures and usually requiring considerable ingenuity.</p> <p>S2.1 Develop written plans for exploring phenomena or for evaluating explanations guided by questions or proposed explanations they have helped formulate.</p> <p>S2.1a Indicate materials to be used and steps to follow to conduct the investigation and describe how data will be recorded (journal, dates and times, etc.)</p> <p>S2.2 Share their research plans with others and revise them based on their suggestions.</p> <p>S2.2a Explain the steps of a plan to others, actively listening to their suggestions for possible modification of the plan, seeking clarification and understanding of the suggestions and modifying the plan where appropriate</p> <p>S2.3 Carry out their plans for exploring</p>	<p>To fulfill S2.3 students be introduced to using the following tools:</p> <ul style="list-style-type: none"> •hand lens •ruler (metric) •thermometer (C °, F °) •measuring cups •graduated cylinder <p>Venn diagram Bar Graphs Tables</p>	

<u>Suggested Pacing</u>	<u>Units</u>	<u>New York State Standards</u>	<u>New York State Skills Standards</u>	<u>New York State Performance Indicators</u>	<u>Assessments (Formal/ including state assessments and Informal)</u>
			<p>phenomena through direct observation and through the use of simple instruments that permit measurement of quantities, such as length, mass, volume, temperature, and time.</p> <p>S2.3a Use appropriate "inquiry and process skills" to collect data</p> <p>S2.3b Record observations accurately and concisely</p> <p><i>Key Idea 3:</i> The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.</p> <p>S3.1 Organize observations and measurements of objects and events through classification and the preparation of simple charts and tables.</p> <p>S3.1a Accurately transfer data from a science journal or notes to appropriate graphic organizer</p> <p>S3.2 Interpret organized observations and measurements, recognizing simple patterns, sequences, and relationships.</p> <p>S3.2a State, orally and in writing, any inferences or generalizations indicated by the data collected</p> <p>S3.3 Share their findings with others and actively seek their interpretations and ideas.</p> <p>S3.3a Explain their findings to others, and actively listen to suggestions for possible interpretations and ideas</p> <p>S3.4 Adjust their explanations and understandings of objects and events based on</p>		

<u>Suggested Pacing</u>	<u>Units</u>	<u>New York State Standards</u>	<u>New York State Skills Standards</u>	<u>New York State Performance Indicators</u>	<u>Assessments (Formal/ including state assessments and Informal)</u>
			<p>their findings and new ideas.</p> <p>S3.4a State, orally and in writing, any inferences or generalizations indicated by the data, with appropriate modifications of their original prediction/explanation</p> <p>S3.4b State, orally and in writing, any new questions that arise from their investigation</p>		
		<p>Standard 6: Interconnectedness: Common Themes</p> <p>Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning..</p>	<p>Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.</p> <p><i>Key Idea 1:</i> Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.</p>	<ul style="list-style-type: none"> •observe and describe interactions among components of simple systems •identify common things that can be considered to be systems (e.g., a plant, a transportation system, human beings) 	
All Units		<p>Standard 7: Interdisciplinary Problem Solving</p> <p>Students will apply the knowledge and</p>	<p>Connections</p> <p><i>Key Idea 1:</i> The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision</p>	<ul style="list-style-type: none"> •analyze science/technology/society problems and issues that affect their home, school, or community, and carry out a remedial course of action •make informed consumer decisions by applying knowledge about the attributes of particular products and making cost/benefit trade-offs to 	

<u>Suggested Pacing</u>	<u>Units</u>	<u>New York State Standards</u>	<u>New York State Skills Standards</u>	<u>New York State Performance Indicators</u>	<u>Assessments (Formal/ including state assessments and Informal)</u>
		<p>thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.</p>	<p>making, design, and inquiry into phenomena.</p> <p>Strategies <i>Key Idea 2:</i> Solving interdisciplinary problems involves a variety of skills and strategies, including effective work habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.</p> <p>Working Effectively –contributing to the work of a brainstorming group, laboratory partnership, cooperative learning group, or project team; planning procedures; identifying and managing responsibilities of team members; and staying on task, whether working alone or as part of a group</p> <p>Gathering and Processing Information – accessing information from printed media, electronic databases, and community resources; using the information to develop a definition of the problem and to research possible solutions</p> <p>Generating and Analyzing Ideas –developing ideas for proposed solutions, investigating ideas, collecting data, and showing relationships and patterns in the data</p> <p>Common Themes –observing examples of common unifying themes, applying them to the problem, and using them to better understand the dimensions of the problem</p> <p>Realizing Ideas –constructing components or models, arriving at a solution, and evaluating the</p>	<p>arrive at an optimal choice</p> <ul style="list-style-type: none"> •design solutions to problems involving a familiar and real context, investigate related science concepts to determine the solution, and use mathematics to model, quantify, measure, and compute •observe phenomena and evaluate them scientifically and mathematically by conducting a fair test of the effect of variables and using mathematical knowledge and technological tools to collect, analyze, and present data and conclusions 	

<u>Suggested Pacing</u>	<u>Units</u>	<u>New York State Standards</u>	<u>New York State Skills Standards</u>	<u>New York State Performance Indicators</u>	<u>Assessments (Formal/ including state assessments and Informal)</u>
			<p>results</p> <p>Presenting Results – using a variety of media to present the solution and to communicate the results</p>		
All year	Biomes	Standard 4	<p>Key Idea 1: Living things are both similar to and different from each other and from nonliving things. There are basic characteristics, needs, and functions common to all living things. Nonliving things are present in nature or are made by living things. Younger students’ ideas about the characteristics of organisms develop from their basic concepts of living and nonliving things. As students are given opportunities to observe and classify living and nonliving things, they should be reminded that living and nonliving things are sometimes given attributes they do not really have. Understanding the variety and complexity of life and its processes can help students develop respect for their own and for all life. It should also lead them to better realize the value of all life on this fragile planet.</p> <p>Key Idea 2: Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring. As students investigate the continuity of life, emphasis should be placed on how plants and</p>	<p><i>Describe the characteristics of and variations between living and nonliving things.</i></p> <p><i>1.1a Animals need air, water, and food in order to live and thrive.</i></p> <p><i>1.1b Plants require air, water, nutrients, and light in order to live and thrive.</i></p> <p><i>1.1c Nonliving things do not live and thrive.</i></p> <p><i>1.1d Nonliving things can be human-created or naturally occurring.</i></p> <p><i>Describe the life processes common to all living things.</i></p> <p><i>1.2a Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die.</i></p> <p>.</p> <p>Recognize that traits of living things are both inherited and acquired or learned.</p> <p>2.1a Some traits of living things have been inherited (e.g., color of flowers and number of limbs of animals).</p> <p>2.1b Some characteristics result from an individual’s interactions with the environment</p>	

<u>Suggested Pacing</u>	<u>Units</u>	<u>New York State Standards</u>	<u>New York State Skills Standards</u>	<u>New York State Performance Indicators</u>	<u>Assessments (Formal/ including state assessments and Informal)</u>
			<p>animals reproduce their own kind. Teachers should lead students to make observations about how the offspring of familiar animals compare to one another and to their parents. Students know that animals reproduce their own kind—rabbits have rabbits (but you can usually tell one baby from another), cats have kittens that have different markings (but cats never have puppies), and so forth. This idea should be strengthened by a large number of examples, both plant and animal, upon which the students can draw.</p> <p>Students should move from describing individuals directly (e.g., she has blue eyes) to naming traits and classifying individuals with respect to those traits (e.g., eye color: blue). Students can be encouraged to keep lists of things that animals and plants get from their parents, things that they don't get, and things that the students are not sure about either way</p> <p>Key Idea 3: Individual organisms and species change over time.</p> <p>Throughout time, plants and animals have changed depending on their environment. In learning how organisms have been successful in their habitats, students should observe and record information about plants and animals. They should begin to recognize how differences among individuals within a species can help an organism or population to survive. Students at</p>	<p>and cannot be inherited by the next generation (e.g., having scars; riding a bicycle).</p> <p>Recognize that for humans and other living things there is genetic continuity between generations.</p> <p>2.2a Plants and animals closely resemble their parents and other individuals in their species.</p> <p>2.2b Plants and animals can transfer specific traits to their offspring when they reproduce.</p> <p>Describe how the structures of plants and animals complement the environment of the plant or animal.</p> <p>3.1a Each animal has different structures that serve different functions in growth, survival, and reproduction.</p> <ul style="list-style-type: none"> • wings, legs, or fins enable some animals to seek shelter and escape predators • the mouth, including teeth, jaws, and tongue, enables some animals to eat and Drink • eyes, nose, ears, tongue, and skin of some animals enable the animals to sense their 	

<u>Suggested Pacing</u>	<u>Units</u>	<u>New York State Standards</u>	<u>New York State Skills Standards</u>	<u>New York State Performance Indicators</u>	<u>Assessments (Formal/ including state assessments and Informal)</u>
			<p>this level will identify the behaviors and physical adaptations that allow organisms to survive in their environment</p>	<p>surroundings</p> <ul style="list-style-type: none"> • claws, shells, spines, feathers, fur, scales, and color of body covering enable some animals to protect themselves from predators and other environmental conditions, or enable them to obtain food • some animals have parts that are used to produce sounds and smells to help the animal meet its needs • the characteristics of some animals change as seasonal conditions change (e.g., fur grows and is shed to help regulate body heat; body fat is a form of stored energy and it changes as the seasons change) <p><i>3.1b Each plant has different structures that serve different functions in growth, survival, and reproduction.</i></p> <ul style="list-style-type: none"> • <i>roots help support the plant and take in water and nutrients</i> • <i>leaves help plants utilize sunlight to make food for the plant</i> • <i>stems, stalks, trunks, and other similar structures provide support for the plant</i> • <i>some plants have flowers</i> • <i>flowers are reproductive structures of plants that produce fruit which contains seeds</i> • <i>seeds contain stored food that aids in germination and the growth of young plants</i> <p><i>3.1c In order to survive in their environment, plants and animals must be adapted to that environment.</i></p>	

<u>Suggested Pacing</u>	<u>Units</u>	<u>New York State Standards</u>	<u>New York State Skills Standards</u>	<u>New York State Performance Indicators</u>	<u>Assessments (Formal/ including state assessments and Informal)</u>
			<p>Key Idea 5: Organisms maintain a dynamic equilibrium that sustains life. Students need many opportunities to observe a variety of organisms for the patterns of similarities and differences of the life functions used to sustain life. All organisms carry out basic life functions in order to sustain life. These life functions include growing, taking in nutrients, breathing, reproducing, and</p>	<ul style="list-style-type: none"> • <i>seeds disperse by a plant’s own mechanism and/or in a variety of ways that can include wind, water, and animals</i> • <i>leaf, flower, stem, and root adaptations may include variations in size, shape, thickness, color, smell, and texture</i> • <i>animal adaptations include coloration for warning or attraction, camouflage, defense mechanisms, movement, hibernation, and migration</i> <p>Observe that differences within a species may give individuals an advantage in surviving and reproducing. 3.2a Individuals within a species may compete with each other for food, mates, space, water, and shelter in their environment. 3.2b All individuals have variations, and because of these variations, individuals of a species may have an advantage in surviving and reproducing.</p> <p>Describe basic life functions of common living specimens (e.g., guppies, mealworms, gerbils). <i>5.1a All living things grow, take in nutrients, breathe, reproduce, and eliminate waste.</i> <i>5.1b An organism’s external physical features can enable it to carry out life functions in its particular environment.</i> <i>5.2a Plants respond to changes in their environment. For example, the leaves of some green plants change position as the direction of</i></p>	

<u>Suggested Pacing</u>	<u>Units</u>	<u>New York State Standards</u>	<u>New York State Skills Standards</u>	<u>New York State Performance Indicators</u>	<u>Assessments (Formal/ including state assessments and Informal)</u>
			<p>eliminating waste. Students need many opportunities to observe and compare these similarities and differences in a variety of organisms. Specimens that could provide these opportunities may include guppies, mealworms, and gerbils, as well as fish, insects, mammals, birds, amphibians, reptiles, plants, and fungi.</p>	<p><i>light changes; the parts of some plants undergo seasonal changes that enable the plant to grow; seeds germinate, and leaves form and grow.</i></p> <p>5.2b Animals respond to change in their environment, (e.g., perspiration, heart rate, breathing rate, eye blinking, shivering, and salivating).</p> <p>5.2c Senses can provide essential information (regarding danger, food, mates, etc.) to animals about their environment.</p> <p>5.2d Some animals, including humans, move from place to place to meet their needs.</p> <p>5.2e Particular animal characteristics are influenced by changing environmental conditions including: fat storage in winter, coat thickness in winter, camouflage, shedding of fur.</p> <p>5.2f Some animal behaviors are influenced by environmental conditions. These behaviors may include: nest building, hibernating, hunting, migrating, and communicating.</p> <p>5.2g The health, growth, and development of organisms are affected by environmental conditions such as the availability of food, air, water, space, shelter, heat, and sunlight.</p> <p>Describe the factors that help promote good health and growth in humans.</p> <p>5.3a Humans need a variety of healthy foods, exercise, and rest in order to grow and maintain good health.</p> <p>5.3b Good health habits include hand washing and</p>	

<u>Suggested Pacing</u>	<u>Units</u>	<u>New York State Standards</u>	<u>New York State Skills Standards</u>	<u>New York State Performance Indicators</u>	<u>Assessments (Formal/ including state assessments and Informal)</u>
			<p>Key Idea 6: Plants and animals depend on each other and their physical environment. Plants and animals interact in a number of ways that affect their survival. The survival of plants and animals varies, in response to their particular environment. As the physical environment changes over time, plants and animals change. Younger students should focus on simple, observable associations of organisms with their environments. Their studies of interactions among organisms within an environment should start with relationships they can directly observe. Note: Although the concept of plants making their own food may be difficult for elementary students to grasp, they should understand that the Sun is the ultimate source of energy for life and physical cycles on Earth.</p>	<p>personal cleanliness; avoiding harmful substances (including alcohol, tobacco, illicit drugs); eating a balanced diet; engaging in regular exercise.</p> <p>Describe how plants and animals, including humans, depend upon each other and the nonliving environment.</p> <p>6.1a Green plants are producers because they provide the basic food supply for themselves and animals.</p> <p>6.1b All animals depend on plants. Some animals (predators) eat other animals (prey).</p> <p>6.1c Animals that eat plants for food may in turn become food for other animals. This sequence is called a food chain.</p> <p>6.1d Decomposers are living things that play a vital role in recycling nutrients.</p> <p>6.1e An organism’s pattern of behavior is related to the nature of that organism’s environment, including the kinds and numbers of other organisms present, the availability of food and other resources, and the physical characteristics of the environment.</p> <p>6.1f When the environment changes, some plants and animals survive and reproduce, and others die or move to new locations.</p> <p>Describe the relationship of the Sun as an energy source for living and nonliving cycles.</p> <p>6.2a Plants manufacture food by utilizing air, water, and energy from the Sun.</p> <p>6.2b The Sun’s energy is transferred on Earth from plants to animals through the food chain.</p>	

<u>Suggested Pacing</u>	<u>Units</u>	<u>New York State Standards</u>	<u>New York State Skills Standards</u>	<u>New York State Performance Indicators</u>	<u>Assessments (Formal/ including state assessments and Informal)</u>
			<p>Key Idea 7: Human decisions and activities have had a profound impact on the physical and living environments. Humans are dependent upon and have an impact on their environment. Students should recognize how human decisions cause environmental changes to occur. Students should be given opportunities to identify and investigate the factors that positively or negatively affect the physical environment and its resources.</p>	<p>Identify ways in which humans have changed their environment and the effects of those changes. 7.1a Humans depend on their natural and constructed environments. 7.1b Over time humans have changed their environment by cultivating crops and raising animals, creating shelter, using energy, manufacturing goods, developing means of transportation, changing populations, and carrying out other activities. 7.1c Humans, as individuals or communities, change environments in ways that can be either helpful or harmful for themselves and other organisms.</p>	