

Ark Community Charter School Science Curriculum Framework – Kindergarten

<u>Suggested Pacing</u>	<u>Units</u>	<u>New York State Content 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 NYS standard are you hitting?	<p>What should students be able to do? (Indicate which skill is a benchmark standard that will be assessed at this grade level (A), and which skills are introduced (I) and/or practiced (P) at this grade level</p> <p>All Key Ideas are (I) and (P) and (A) are marked in bold</p>	Indices of quality – What is the nature of the evidence required to demonstrate the standard has been met and the quality of the performance that will be deemed acceptable?	What specific tools will be used to assess which content bolded standard or skills standard at this grade level?
Scientific Procedure will introduced in first quarter with 5 senses unit then in each unit program thereafter all skills will be practiced and bolded skills will be assessed in group	The Five Senses Weather, Water/Ocean, Plants	STANDARD 1- Analysis, Inquiry, and Design: SCIENTIFIC INQUIRY:	<p><i>Key Idea 1:</i> The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.</p> <p>S1.1 Ask "why" questions in attempts to seek greater understanding concerning objects and events they have observed and heard about.</p> <p>S1.1a Observe and discuss objects and events and record observations</p> <p>S1.1b Articulate appropriate questions based on observations</p> <p>S1.2 Question the explanations they hear from others and read about, seeking clarification and comparing them with their own observations and understandings.</p> <p>S1.2a Identify similarities and differences between</p>		Assessed (written and/or oral) for use and understanding of Question and Hypothesis

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discussions and individual experimentation			<p>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> 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 phenomena through direct observation and through the use of simple instruments that permit</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 	

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			<p>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 their findings and new ideas.</p> <p>S3.4a State, orally and in writing, any inferences or generalizations indicated by the data, with</p>		

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			appropriate modifications of their original prediction/explanation S3.4b State, orally and in writing, any new questions that arise from their investigation		
		Standard 6: Interconnectedness: Common Themes 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..	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. <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.	<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) 	
		Standard 7: Interdisciplinary Problem Solving Students will apply the knowledge and thinking skills of mathematics,	Connections <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 making, design, and inquiry into phenomena.	<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 arrive at an optimal choice •design solutions to problems involving a familiar and real context, investigate related science 	

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		<p>science, and technology to address real-life problems and make informed decisions.</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 results</p>	<p>concepts to determine the solution, and use mathematics to model, quantify, measure, and compute</p> <ul style="list-style-type: none"> •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 	

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			Presenting Results – using a variety of media to present the solution and to communicate the results		
All year	Weather	Standard 4	Physical	<p>1.1a Natural cycles and patterns include:</p> <ul style="list-style-type: none"> • Earth spinning around once every 24 hours (rotation), resulting in day and night • Earth moving in a path around the Sun (revolution), resulting in one Earth year • the length of daylight and darkness varying with the seasons • weather changing from day to day and through the seasons • the appearance of the Moon changing as it moves in a path around Earth to complete a single cycle <p>1.1b Humans organize time into units based on natural motions of Earth:</p> <ul style="list-style-type: none"> • second, minute, hour • week, month <p>1.1c The Sun and other stars appear to move in a recognizable pattern both daily and seasonally.</p> <p>2.1a Weather is the condition of the outside air at a particular moment.</p> <p>2.1b Weather can be described and measured by:</p> <ul style="list-style-type: none"> • temperature • wind speed and direction • form and amount of precipitation • general sky conditions (cloudy, sunny, partly cloudy) <p>2.1c Water is recycled by natural processes on Earth.</p> <ul style="list-style-type: none"> • evaporation: changing of water (liquid) into 	

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				water vapor (gas) <ul style="list-style-type: none"> • condensation: changing of water vapor (gas) into water (liquid) • precipitation: rain, sleet, snow, hail • runoff: water flowing on Earth's surface • groundwater: water that moves downward into the ground 	
Sept - Dec	Five Senses	Standard 4	Physical	4: 3.1b Matter has properties that can be observed through the senses 5.2c Senses can provide essential information to animals about their environment.	Teacher-developed checklist used during conferences after each sense lesson Collage Rubric concept of what are the body parts we use to sense and corresponding examples of what we do sense
Jan-March	Water/Ocean	Standard 4	Physical 3. Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity. Environment 1. Living things are both similar to and different	3.2a Matter exists in three states: solid, liquid, gas. <ul style="list-style-type: none"> • solids have a definite shape and volume • liquids do not have a definite shape but have a definite volume • gases do not hold their shape or volume 3.2c Changes in the properties or materials of objects can be observed and described. 1.1a Animals need air, water, and food in order to live and thrive.	Teacher-developed checklist used during conferences Writing sample scored with a rubric/checklist

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			<p>from each other and nonliving things.</p> <p>3. Individual organisms and species change over time.</p> <p>4. The continuity of life is sustained through reproduction and development.</p> <p>5. Organisms maintain a dynamic equilibrium that sustains life.</p>	<p>1.1b Plants require air, water, nutrients, and light in order to live and thrive.</p> <p>1.1c Nonliving things do not live and thrive.</p> <p>1.1d Nonliving things can be human-created or naturally occurring.</p> <p>1.2a Living things grow, take in nutrients, breathe, reproduce, eliminate waste, and die.</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 surroundings <p>3.1c In order to survive in their environment, plants and animals must be adapted to that environment.</p> <p>3.2a Individuals within a species may compete with each other for food, mates, space, water, and shelter in their environment.</p> <p>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>4.2b Food supplies the energy and materials necessary for growth and repair.</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>Social Studies or Science Research Project - Rubric for each ELA Performance Indicator</p>

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			<p>6. Plants and animals depend on each other and their physical environment.</p> <p>7. Human decisions and activities have had a profound impact on the physical and living environment.</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>7.1c Humans, as individuals or communities, change environments in ways that can be either helpful or harmful for themselves and other organisms.</p>	
April- June	Plants	Standard 4	<p>Living</p> <p>3. Individual organisms and species change over time.</p>	<p>3.1b Each plant has different structures that serve different functions in growth, survival, and reproduction.</p> <ul style="list-style-type: none"> • roots help support the plant and take in water and nutrients • leaves help plants utilize sunlight to make food for the plant • stems, stalks, trunks, and other similar structures provide support for the plant • some plants have flowers • flowers are reproductive structures of plants that produce fruit which contains seeds • seeds contain stored food that aids in germination and the growth of young plants <p>3.1c In order to survive in their environment, plants and animals must be adapted to that environment.</p> <ul style="list-style-type: none"> • seeds disperse by a plant's own mechanism and/or in a variety of ways that can include wind, water, and animals • leaf, flower, stem, and root adaptations may include variations in size, shape, thickness, color, smell, and texture 	<p>Observational drawings of life cycle of a plant and plant structures</p>

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			<p>4. The continuity of life is sustained through reproduction and development..</p> <p>5. Organisms maintain a dynamic equilibrium that sustains life.</p> <p>6. Plants and animals depend on each other and their physical environment.</p>	<p>4.1a Plants and animals have life cycles. These may include beginning of a life, development into an adult, reproduction as an adult, and eventually death.</p> <p>4.1b Each kind of plant goes through its own stages of growth and development that may include seed, young plant, and mature plant.</p> <p>4.1c The length of time from beginning of development to death of the plant is called its life span.</p> <p>4.1d Life cycles of some plants include changes from seed to mature plant.</p> <p>5.1a All living things grow, take in nutrients, breathe, reproduce, and eliminate waste.</p> <p>5.1b An organism’s external physical features can enable it to carry out life functions in its particular environment.</p> <p>5.2a Plants respond to changes in their environment. For example, the leaves of some green plants change position as the direction of light changes; the parts of some plants undergo seasonal changes that enable the plant to grow; seeds germinate, and leaves form and grow.</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>6.2a Plants manufacture food by utilizing air, water, and energy from the Sun.</p>	