

Kindergarten Science Pacing Guide

August 2016

1st Nine Weeks

2nd Nine Weeks

3rd Nine Weeks

4th Nine Weeks

Scientific Investigation, Reasoning, and Logic

Overview

Standard K.1 is intended to develop investigative and inquiry skills and an understanding of the nature of science. Standard K.1 describes the range of inquiry skills and the level of proficiency in using those skills students should achieve, and the components of the nature of science that should be developed and reinforced in the context of science concepts developed in kindergarten. **Standard K.1 does not require a discrete unit be taught on scientific investigation and the nature of science because the skills that make up the standard should be incorporated in all the other kindergarten science standards.** It is also intended that by participating in activities and experiences that develop these skills, students will achieve a preliminary understanding of scientific inquiry and the nature of science and more fully grasp the content-related concepts.

The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which

- a) basic characteristics or properties of objects are identified by direct observation;
- b) observations are made from multiple positions to achieve different perspectives;
- c) a set of objects is sequenced according to size;
- d) a set of objects is separated into two groups based on a single physical characteristic;
- e) nonstandard units are used to measure the length, mass, and volume of common objects;
- f) observations and predictions are made for an unseen member in a sequence of objects;
- g) a question is developed and predictions are made from one or more observations;
- h) observations are recorded;
- i) picture graphs are constructed;
- j) unusual or unexpected results in an activity are recognized; and
- k) objects are described both pictorially and verbally.

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<ul style="list-style-type: none"> • Directly observe objects and identify their basic characteristics or properties. These include color , shape (circle, triangle, square, and rectangle) size (big, little, large, small), texture (rough, smooth, hard, soft), and weight (heavy , light) (K.1a) • Observe an object or objects from multiple positions to achieve different perspectives. Look at object from top, bottom, front, and back. (K.1b) • Describe objects both pictorially and verbally (K.1k) • Arrange a set of objects in sequence according to size (K.1c) 	<ul style="list-style-type: none"> • Record observations. (K.1h) • Construct picture graphs.(k.1i) • Observe and predict an unseen member in a sequence of objects to (K.1f) • Identify and describe the five senses: taste, touch, smell, hearing, and sight. (K.2a) • Match each sensing organ (eyes-sight, ears-hearing, nose-smell, tongue-taste-to, and skin-touch) with its associated sense. (K.2a) • Match sensory descriptors used to describe common objects and phenomena with the senses. (K.2b) 	<ul style="list-style-type: none"> • Measure the length, mass, and volume of common objects with nonstandard units. Examples include hands, pennies, and paperclips. (K.1e) • Compare objects using the concepts of heavy/light, thin/wide, long/short, big/little, large/small etc. (K.4d) • Identify and classify the different phases of water (solid, liquid, or gas). (K.5a) • Describe the natural flow of water (K.5b) • Predict where a stream of water will flow (K.5b) • Predict whether items will float or sink in water. Items to use include wood, metal, fruits, paper, and plastics. (K.5c) 	<ul style="list-style-type: none"> • Describe the life needs of animals: adequate food, water, shelter, air, and space. (K.7a) • Describe the life needs of plants: nutrients, water, air, light, and place to grow. (K.7b) • Predict what will happen to animals and plants if life needs are not met (K.7a and b) • Describe some simple changes animals and plants undergo during the life cycle. For animals this may include changes in color, body covering, and overall size. For plants this may include size, presence of leaves and branches, and ability to produce flowers and fruits. (K.7c) • Compare and contrast young plants and animals with their parents or to one another, using pictures or live organisms. (K.7d)

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<ul style="list-style-type: none"> • A set of objects is separated into two groups based on a single physical characteristics, including size, color, texture, and weight. (K.1d) • Develop a question and make a prediction from one or more observations (K.1g) • Identify unusual or unexpected events in an activity (K.1j) • Identify and name the eight basic colors (red, orange, yellow, green, blue, black white) (K.4a) • Identify and name a circle, triangle, square, and rectangle. (K.4b) • Identify the position of an object using position words: over/under, in/out, above/below, and left/right. (K.4e) 	<ul style="list-style-type: none"> • In their own words and using essential vocabulary, explain magnetism and its effects, including the concept of attraction/non-attraction, push/pull, attract/repel, metal/nonmetal. (K.3a) • Classify objects as being attracted or not attracted to magnets, such as iron nail, iron-bearing paperclip, cereal, and book. (K.3a) • Predict and test which common objects will be attracted to magnets and which will not be attracted to magnets. (K.3a) • Evaluate/illustrate/discuss the importance of magnets in the home (K.3b) • Identify useful application of magnets (ex: can opener, magnetized screwdrivers, magnetic games, and refrigerator magnets) (K.3b) 	<ul style="list-style-type: none"> • Identify a shadow or a variety of shadows (K.8a) • Describe how to make a shadow (K.8b) • Identify and describe sources of light-sun, electric lights, and flashlights that can produce shadows (K.8b) • Match objects with the shadows they would create (K.8b) • Analyze how shadows change as the direction of the light source changes. (K.8b) 	<ul style="list-style-type: none"> • Identify materials that can be reused. (K.11a) • Describe the difference between recycle and reuse. (K.11a) • Predict what would happen if recycling and reusing were not practiced. (K.11a and b) • Give examples of objects, such as paper, plastic containers, and glass container that can be recycled. (K.11b) • Describe how to recycle a given material: paper, oil, aluminum, glass and plastics. (K.11b) • Name ways to conserve water and energy to help ensure resources are available for future use. (K.11c)

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<ul style="list-style-type: none"> • Group objects according to their speed: fast/slow (K.4e) • Observe and identify daily weather conditions (sunny, rainy, cloudy, snowy, windy, warm, hot, cool, cold) (K.9a) • Predict daily weather based on basic observable conditions (K.9a) • Chart daily weather conditions. (K.9a) • Identify simple patterns in natural objects, veins in a leaf, spiral patterns in cones, shapes and colors of common seeds. (K.9b) • Identify and describe the basic characteristics of living things (growth, movement, response to the environment, having offspring, and the need for food, air, and water. (K.6b) • Identify living organisms and nonliving objects at home and at school. (K.6a and b) 	<ul style="list-style-type: none"> • Compare and contrast objects that are stiff, flexible, straight, and curved (K.4b) • Compare and contrast the texture of objects that are rough, smooth, hard, and soft. (K.4c) • Measure objects using non-standard units. (K.4d) 		

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<ul style="list-style-type: none">• Classify items by living or nonliving. (K.6a)• Describe how animals and plants change as they grow. (K.7c and K.9c)• Identify some changes that people experience over time: height, weight, and color of hair. (K.10a)• Predict how their own height and weight will change over the school year (K.10a)• Describe how things change naturally. This includes seasonal changes, the growth in seeds and common plants, common animals, including the butterfly, and the weather. (K.10a)• Identify examples of fast changes and slow changes. Slow changes should be the kinds of familiar changes that occur over weeks, months, or seasons. (K.10b)			

Kindergarten Science Vocabulary

1 st Nine Weeks	2 nd Nine Weeks	3 rd Nine Weeks	4 th Nine Weeks
K.1a observe K.1c describe K.1g develop K.1d separate K.1j identify K.1k arrange K.1i construct K.1f predict K.1 investigate K.1h record K.9 pattern K.9 weather K.9a sunny rainy cloudy snowy windy warm/cool hot/cold K.4b shape circle/square triangle/rectangle	K.2a match K.3a classify K.3a explain K.4 compare/contrast K.1e measure K.3 magnet K.3a attraction non attraction push pull attract repel metal nonmetal magnetism K.2 senses K.2 touch (skin) K.2b smooth hard/soft cold warm hot	K.51 solid liquid gas K.5c sink float k.8 shadow	K.11c reduce K.11a reuse K.11b recycle K.11c conserve K.7 life needs K.7a food water air K.7b nutrients K.7c life cycle

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K.4d size big/little large/small wide/thin heavy/light K.4c texture rough/smooth hard/soft K.4e position top/bottom front/back over/under in/out above/below left/right K.4a colors red orange yellow green blue purple	K.2a hearing (ears) K.2b loud soft high low K.2a taste (tongue) K.2b sweet sour bitter salty K.2a sight (eyes) K.2b bright dull colors K.2a smell (nose)		

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K.4a black White K.6 living nonliving			