

Science Curriculum

Kindergarten

In science, children investigate and understand simple patterns in their daily lives by recognizing classroom routines, and observing and discussing daily weather patterns and seasonal changes. Children begin to investigate and understand the needs and life processes of plants and animals. Activities with shapes, magnets, sand, and water encourage further discovery, investigation, and problem solving.



SCI.K

Standard 1

CONDUCT INVESTIGATIONS

The student will conduct investigations.



Benchmark 1.a

Identify Basic Properties of Objects by Direct Observation

The student will conduct investigations in which basic properties of objects are identified by direct observation.



Indicator 1.a.1

Observe objects & describe their properties: color, shape, size, etc.

Observe objects and describe their basic properties. These include color, shape (circle, triangle, square, and rectangle), size (big, little, large, small), texture (rough, smooth, hard, soft), and weight (heavy, light).



Benchmark 1.b

Make Observations From Multiple Positions for Different Perspectives

The student will conduct investigations in which observations are made from multiple positions to achieve different perspectives.



Indicator 1.b.1

Observe an object from multiple positions for different perspectives

Observe an object or objects from multiple positions to achieve different perspectives. In order to accomplish this, the student should look at the object from top, bottom, front, and back.



Benchmark 1.c

Describe Objects Both Pictorially and Verbally

The student will conduct investigations in which objects are described both pictorially and verbally.



Indicator 1.c.1

Describe objects both pictorially and verbally

Describe objects both pictorially and verbally.



Benchmark 1.d

Sequence a Set of Objects According to Size

The student will conduct investigations in which a set of objects is sequenced according to size.



Indicator 1.d.1

Arrange a set of objects in sequence according to size

Arrange a set of objects in sequence according to size.



Benchmark 1.e

Separate a Set of Objects Into 2 Groups Based on a Physical Attribute

The student will conduct investigations in which a set of objects is separated into two groups based on a single physical attribute.



Indicator 1.e.1

Sort a set of objects into two groups based on one physical attribute

Sort a set of objects into two groups based on a single physical attribute, (e.g., size, color, texture, and weight).



Benchmark 1.f

Use Nonstandard Units to Measure Common Objects

The student will conduct investigations in which nonstandard units are used to measure common objects.



Indicator 1.f.1

Measure common objects with nonstandard units: hands, pennies, etc.

Measure common objects with nonstandard units. Examples of nonstandard units include hands, pennies, and paper clips.



Benchmark 1.g

Develop a Question From One or More Observations

The student will conduct investigations in which a question is developed from one or more observations.



Indicator 1.g.1

Develop a question from one or more observations

Develop a question from one or more observations.



Benchmark 1.h

Construct Picture Graphs Using Ten or Fewer Units

The student will conduct investigations in which picture graphs are constructed using 10 or fewer units.



Indicator 1.h.1

Construct picture graphs using 10 or fewer units

Construct picture graphs using 10 or fewer units.



Benchmark 1.i

Predict an Unseen Member in a Sequence of Objects

The student will conduct investigations in which an unseen member in a sequence of objects is predicted.



Indicator 1.i.1

Predict an unseen member in a sequence of objects to complete pattern


Predict an unseen member in a sequence of objects to complete a pattern.




Benchmark 1.j


Recognize Unusual or Unexpected Results in an Activity


The student will conduct investigations in which unusual or unexpected results in an activity are recognized.


-  **Indicator 1.j.1**
Identify unusual or unexpected results in an activity
Identify unusual or unexpected results in an activity.


 **SCI.K**
Standard 2
UNDERSTAND THE SENSES


The student will investigate and understand that humans have senses that allow one to seek, find, take in, and react or respond to information in order to learn about one's surroundings.


-  **Benchmark 2.a**
Understand the Five Senses and Corresponding Sensing Organ
The student will investigate and understand the five senses and corresponding sensing organ (taste – tongue, touch – skin, smell – nose, hearing – ears, and sight – eyes).


-  **Indicator 2.a.1**
Identify & describe the 5 senses: taste, touch, smell, hearing, sight
Identify and describe the five senses: taste, touch, smell, hearing, and sight.


-  **Indicator 2.a.2**
Match each sensing organ with its associated sense
Match each sensing organ (eyes, ears, nose, tongue, and skin) with its associated sense.


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-  **Benchmark 2.b**
Understand Sensory Descriptors
The student will investigate and understand sensory descriptors (sweet, sour, bitter, salty, rough/smooth, hard/soft, cold, warm, hot, loud/soft, high/low, bright/dull).

-  **Indicator 2.b.1**
Match sensory descriptors with the sense of taste
Match sensory descriptors with the sense of taste: sweet, sour, bitter, and salty.

-  **Indicator 2.b.2**
Match sensory descriptors with the sense of touch
Match sensory descriptors with the sense of touch: smooth, hard, soft, cold, warm, and hot.

-  **Indicator 2.b.3**
Match sensory descriptors with the sense of hearing
Match sensory descriptors with the sense of hearing: loud, soft, high, and low.

-  **Indicator 2.b.4**
Match sensory descriptors with the sense of sight
Match sensory descriptors with the sense of sight: bright, dull, color, black, and white.

-  **Indicator 2.b.5**
Match objects and scents
Match objects and scents.

 **SCI.K**
Standard 3

UNDERSTAND MAGNETS

The student will investigate and understand that magnets have an effect on some materials, make some things move without touching them, and have useful applications.

Benchmark 3.a

Identify Properties of Magnets: Attraction, Repulsion, Metals, etc.

The student will investigate and understand attraction/nonattraction, push/pull, attract/repel, and metal/nonmetal.

Indicator 3.a.1

Predict and test which common objects will be attracted to magnets

Predict and test which common objects will be attracted to magnets and which will not be attracted to magnets.

Indicator 3.a.2

Classify objects as being attracted or not attracted to magnets

Classify objects as being attracted or not attracted to magnets, such as an iron nail, iron-bearing paper clip, cereal, and book.

Indicator 3.a.3

Explain in their own words essential vocabulary related to magnets

Explain in their own words essential vocabulary, including the concepts of attraction/nonattraction, push/pull, attract/repel, and metal/nonmetal.

Benchmark 3.b

Understand Useful Applications of Magnets

The student will investigate and understand useful applications of magnets (refrigerator magnet, can opener, magnetized screwdriver, and magnetic games).

Indicator 3.b.1

Identify items in the home that contain a magnet or magnets

Identify items in the home that contain a magnet or magnets, such as can openers, magnetized screwdrivers, magnetic games, and refrigerator magnets.

Indicator 3.b.2

Evaluate the importance and usefulness of magnets in the home

Evaluate the importance and usefulness of magnets in the home.

SCI.K

Standard 4

DESCRIBE AN OBJECT'S POSITION, MOTION AND PHYSICAL PROPERTIES

The student will investigate and understand that the position, motion, and physical properties of an object can be described.

Benchmark 4.a

Recognize: Red, Orange, Yellow, Green, Blue, Purple, White, Black

The student will investigate and understand colors (red, orange, yellow, green, blue, purple), white, and black.

Indicator 4.a.1

Identify and name eight basic colors

Identify and name eight basic colors, including red, orange, yellow, green, blue, and purple. (Indigo and violet are not required at the kindergarten level.) Black and white are not spectral colors, but students should recognize them by name.



Indicator 4.a.2

Observe and describe color words in the environment

Observe and describe color words in the environment.



Benchmark 4.b

Understand Shapes and Forms

The student will investigate and understand shapes (circle, triangle, square, and rectangle) and forms (flexible/stiff, straight/curved).



Indicator 4.b.1

Identify and name a circle, triangle, square, and rectangle

Identify and name a circle, triangle, square, and rectangle.



Indicator 4.b.2

Compare & contrast objects that are flexible, stiff, straight & curved

Compare and contrast objects that are flexible, stiff, straight, and curved.



Indicator 4.b.3

Illustrate the familiar shapes within their physical world

Illustrate the familiar shapes within their physical world (circle, triangle, square and rectangle).



Benchmark 4.c

Understand Textures and Feel

The student will investigate and understand textures (rough/smooth) and feel (hard/soft).



Indicator 4.c.1

Compare and contrast objects that are rough, smooth, hard, and soft

Compare and contrast objects that are rough, smooth, hard, and soft.



Benchmark 4.d

Understand Relative Size and Weight

The student will investigate and understand relative size and weight (big/little, large/small, heavy/light, wide/thin, long/short).



Indicator 4.d.1

Compare objects using the concepts of heavy/light, long/short, etc.

Compare objects using the concepts of heavy/light, long/short, wide/thin, big/little, and large/small.



Indicator 4.d.2

Measure objects, using nonstandard units

Measure objects, using nonstandard units.



Benchmark 4.e

Understand Position and Speed

The student will investigate and understand position (over/under, in/out, above/below, left/right) and speed (fast/slow).



Indicator 4.e.1

Identify the position of an object: over/under, in/out, etc.

Identify the position of an object, using the position words over/under, in/out, above/below, and left/right.



Indicator 4.e.2

Group objects according to their speed — fast or slow

Group objects according to their speed — fast or slow.



SCI.K

Standard 5

UNDERSTAND THAT WATER FLOWS AND HAS OBSERVABLE PROPERTIES

The student will investigate and understand that water flows and has properties that can be observed and tested.



Benchmark 5.a

Understand that Water Occurs in Different States: Solid, Liquid, Gas

The student will investigate and understand that water occurs in different states (solid, liquid, gas).



Indicator 5.a.1

Identify examples of the different states of water: solid, liquid, gas

Identify examples of the different states of water (solid, liquid, and gas).



Indicator 5.a.2

Classify examples of different states of matter: solid, liquid, gas

Classify examples of different states of matter as solid, liquid, or gas.



Benchmark 5.b

Understand that the Natural Flow of Water is Downhill

The student will investigate and understand that the natural flow of water is downhill.



Indicator 5.b.1

Describe the natural flow of water

Describe the natural flow of water.



Indicator 5.b.2

Predict where a stream of water will flow

Predict where a stream of water will flow.



Benchmark 5.c

Understand that Some Materials Float In Water While Others Sink

The student will investigate and understand that some materials float in water, while others sink.



Indicator 5.c.1

Predict whether items will float or sink when placed in water

Predict whether items will float or sink when placed in water. Items to use include wood, metal, fruits, paper, and plastics.



SCI.K

Standard 6

UNDERSTAND THE BASIC NEEDS AND LIFE PROCESSES OF PLANTS AND ANIMALS

The student will investigate and understand the basic needs and life processes of plants and animals.

 **Benchmark 6.a**

Understand that Living Things Change and They Need Food, Water & Air

The student will investigate and understand that living things change as they grow, and they need food, water and air to survive.



Indicator 6.a.1

Describe the life needs of animals and plants: food, water, and air

Describe the life needs of animals and plants: food, water, and air.



Indicator 6.a.2

Predict what will happen to animals & plants if life needs are not met

Predict what will happen to animals and plants if life needs are not met.



Indicator 6.a.3

Identify and discuss squirrels & ants: habitat, food, characteristics

Identify and discuss the habitat, food and physical characteristics of squirrels and ants.

 **Benchmark 6.b**

Understand that Plants and Animals Live and Die

The student will investigate and understand that plants and animals live and die (go through a life cycle).



Indicator 6.b.1

Describe some simple changes animals undergo during the life cycle

Describe some simple changes animals undergo during the life cycle. This may include changes in color, body covering, and overall size.



Indicator 6.b.2

Describe some simple changes plants undergo during the life cycle

Describe some simple changes plants undergo during the life cycle. This may include size, presence of leaves and branches, and ability to produce flowers and fruits.



Indicator 6.b.3

Sequence the life cycle of a pumpkin from a seed to mature plant

Sequence the life cycle of a pumpkin from a seed to mature plant.



Indicator 6.b.4

Identify and discuss the life cycle of an ant from egg to adult

Identify and discuss the life cycle of an ant from egg to adult.

 **Benchmark 6.c**

Understand that Offspring are Similar (Not Identical) to Their Parents

The student will investigate and understand that offspring of plants and animals are similar but not identical to their parents and to one another.



Indicator 6.c.1

Compare and contrast young plants and animals with their parents

Compare and contrast young plants and animals with their parents, using pictures and/or live organisms.

 **Standard 7****UNDERSTAND THAT SHADOWS OCCUR WHEN LIGHT IS BLOCKED BY AN OBJECT**


The student will investigate and understand that shadows occur when light is blocked by an object.

 **Benchmark 7.a****Understand that Shadows Occur in Nature When Sunlight is Blocked**


The student will investigate and understand that shadows occur in nature when sunlight is blocked by an object.

 **Indicator 7.a.1****Identify a shadow or variety of shadows**


Identify a shadow or variety of shadows.

 **Indicator 7.a.2****Identify the sun as a source of light that can produce shadows**


Identify and describe the sun as a source of light that can produce shadows.

 **Indicator 7.a.3****Analyze how shadows change as the light source direction changes**

Analyze how shadows change as the direction of the light source changes.

 **Benchmark 7.b****Understand that Shadows Can be Produced by Blocking Artificial Light**


The student will investigate and understand that shadows can be produced by blocking artificial light sources.

 **Indicator 7.b.1****Describe how to make a shadow**

Describe how to make a shadow.

 **Indicator 7.b.2****Identify lights & flashlights as sources of light that produce shadows**

Identify and describe electric lights and flashlights as sources of light that can produce shadows.

 **Indicator 7.b.3****Match objects with the shadow they would create**


Match objects with the shadow they would create.

 **SCI.K
Standard 8****UNDERSTAND SIMPLE PATTERNS IN HIS OR HER DAILY LIFE**

The student will investigate and understand simple patterns in his/her daily life.

 **Benchmark 8.a**
Understand Weather Observations

The student will investigate and understand weather observations.

 **Indicator 8.a.1****Observe and identify daily weather conditions**

Observe and identify daily weather conditions — sunny, rainy, cloudy, snowy, windy, warm, hot, cool, and cold.

**Indicator 8.a.2****Predict daily weather based on basic observable conditions**

Predict daily weather based on basic observable conditions.

**Indicator 8.a.3****Chart daily weather conditions**

Chart daily weather conditions.

**Benchmark 8.b****Understand the Shapes and Forms of Many Common Natural Objects**

The student will investigate and understand the shapes and forms of many common natural objects including seeds, cones, and leaves.

**Indicator 8.b.1****Identify simple patterns in natural objects**

Identify simple patterns in natural objects — veins in a leaf, spiral patterns in cones, shapes and colors of common seeds.

**Indicator 8.b.2****Classify and sort natural objects according to color, shape and size**

Classify and sort natural objects according to color, shape and size.

**Benchmark 8.c****Understand Animal and Plant Growth**

The student will investigate and understand animal and plant growth.

**Indicator 8.c.1****Describe how animals and plants change as they grow**

Describe how animals and plants change as they grow. This is related to Standard K.6.

**Benchmark 8.d****Understand Home and School Routines**

The student will investigate and understand home and school routines.

**Indicator 8.d.1****Identify and describe patterns in their daily schedule at home**

Identify and describe patterns in their daily schedule at home.

**Indicator 8.d.2****Identify and describe patterns in their daily schedule at school**

Identify and describe patterns in their daily schedule at school.

**Indicator 8.d.3****Distinguish between the patterns in home activities & those in school**

Distinguish between the patterns in home activities and those in school activities.

**SCI.K****Standard 9****UNDERSTAND THAT CHANGE OCCURS OVER TIME AND MAY BE FAST OR SLOW**

The student will investigate and understand that change occurs over time and rates may be fast or slow.



Benchmark 9.a

Understand that Natural and Human-Made Things May Change Over Time

The student will investigate and understand that natural and human-made things may change over time.



Indicator 9.a.1

Identify some changes that people experience over time

Identify some changes that people experience over time — e.g., height, weight, and color of hair.



Indicator 9.a.2

Predict how their own height & weight will change over the school year

Predict how their own height and weight will change over the school year.



Indicator 9.a.3

Describe how people cause things to change

Describe how people cause things to change — e.g., demolition of buildings, construction of buildings, cutting down trees, planting trees, and building highways.



Benchmark 9.b

Understand that Changes Can be Noted and Measured

The student will investigate and understand that changes can be noted and measured.



Indicator 9.b.1

Describe how things change naturally

Describe how things change naturally. This includes seasonal changes, the growth in seeds and common plants, common animals, including the butterfly, and the weather.



Indicator 9.b.2

Identify examples of fast changes and slow changes

Identify examples of fast changes and slow changes. Slow changes should be the kinds of familiar changes that occur over weeks, months, or seasons. Students are not responsible for long-term changes.



Indicator 9.b.3

Recognize that changes can be noted and measured

Recognize that changes can be noted and measured.



SCI.K

Standard 10

UNDERSTAND THAT MATERIALS CAN BE REUSED, RECYCLED AND CONSERVED

The student will investigate and understand that materials can be reused, recycled and conserved.



Benchmark 10.a

Understand that Materials and Objects Can Be Used Over and Over Again

The student will investigate and understand that materials and objects can be used over and over again.



Indicator 10.a.1

Give examples of objects that can be recycled

Give examples of objects, such as paper, plastic containers, and glass containers, that can be recycled.

Indicator 10.a.2



Identify materials that can be reused

Identify materials that can be reused.



Benchmark 10.b

Understand that Everyday Materials Can Be Recycled

The student will investigate and understand that everyday materials can be recycled.



Indicator 10.b.1

Describe the difference between recycle and reuse

Describe the difference between recycle and reuse.



Indicator 10.b.2

Describe how to recycle a given material

Describe how to recycle a given material — paper, oil, aluminum, glass and plastics.



Benchmark 10.c

Understand that Conservation Helps Preserve Resources for Future Use

The student will investigate and understand that water and energy conservation at home and in school helps preserve resources for future use.



Indicator 10.c.1

Name ways to conserve water and energy

Name ways to conserve water and energy.



Indicator 10.c.2

Predict what would happen if recycling and reusing were not practiced

Predict what would happen if recycling and reusing were not practiced.



Indicator 10.c.3

Observe & discuss how to protect the environment at home and at school

Observe and discuss how to protect the environment at home and at school.