

Ant Homes Under the Ground

Grades PreK-K-1

National Science Education Standards

SCIENCE AS INQUIRY STANDARDS

LEVELS K-4

Abilities necessary to do scientific inquiry

Understanding about scientific inquiry

PHYSICAL SCIENCE STANDARDS

LEVELS K-4

Properties of objects and materials

Position and motion of objects

LIFE SCIENCE STANDARDS

LEVELS K-4

Characteristics of organisms

Life cycles of organisms

Organisms and environments

EARTH AND SPACE SCIENCE STANDARDS

LEVELS K-4

Properties of earth materials

SCIENCE AND TECHNOLOGY STANDARDS

LEVELS K-4

Abilities to distinguish between natural objects and objects made by humans

Abilities of technological design

SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES

LEVELS K-4

Characteristics and changes in populations

Types of resources

Changes in environments

HISTORY AND NATURE OF SCIENCE STANDARDS

LEVELS K-4

Science as a human endeavor

Texas Essential Knowledge and Skills

Kindergarten Science

(a) Introduction.

- (1) In Kindergarten, science introduces the use of simple investigations and fieldwork to help students develop the skills of asking questions, gathering information, communicating findings, and making informed decisions. Using their own senses and common tools such as a hand lens, students make observations and collect information. Students also use computers and information technology tools to support their investigations.
- (2) As students learn science skills, they identify component of the natural world including rocks, soil, and water. Students observe the seasons and growth as examples of change. In addition, Kindergarten science includes the identification of objects and their parts. Students learn how to group living and nonliving things and explore the basic needs of living things.
- (3) Science is a way of learning about the natural world. Students should know how science has built a vast body of changing and increasing knowledge described by physical, mathematical, and conceptual models, and also should know that science may not answer all questions.
- (4) A system is a collection of cycles, structures, and processes that interact. Students should understand a whole in terms of its components and how these components relate to each other and to the whole. All systems have basic properties that can be described in terms of space, time, energy, and matter. Change and constancy occur in systems and can be observed and measured as patterns. These patterns help to predict what will happen next and can change over time.
- (5) Investigations are used to learn about the natural world. Students should understand that certain types of questions can be answered by investigations, and that methods, models, and conclusions build from these investigations change as new observations are made. Models of objects and events are tools for understanding the natural world and can show how systems work. They have limitations and based on new discoveries are constantly being modified to more closely reflect the natural world.

(b) Knowledge and skills

(K.1) Scientific processes. The student participates in classroom and field investigations following home and school safety procedures.

The student is expected to:

- (A) demonstrate safe practices during classroom and field investigations; and
- (B) learn how to use and conserve resources and materials.

- (K.2) Scientific processes. The student develops abilities necessary to do science inquiry in both the field and the classroom.
- The student is expected to:
- (A) ask questions about organisms, objects and events;
 - (B) plan and conduct simple descriptive investigations;
 - (C) gather information using simple equipment and tools to extend the senses;
 - (D) construct reasonable explanations using information; and
 - (E) communicate findings about simple investigations.
- (K.3) Scientific processes. The student knows that information and critical thinking are used in making decisions.
- The student is expected to:
- (A) make decisions using information, and
 - (B) discuss and justify the merits of decisions.
- (K.4) Scientific processes. The student uses age-appropriate tools and models to verify that objects and parts of objects can be observed, described, and measured.
- The student is expected to:
- (A) identify and use senses as tools of observation; and
 - (B) make observations using tools including hand lenses, balances, cups, bowls, and computers.
- (K.5) Science concepts. The student knows that objects have properties and patterns.
- The student is expected to:
- (A) describe properties of objects and characteristics of organisms;
 - (B) observe and identify patterns including seasons, growth, and day and night and predict what happens next; and
 - (C) recognize and copy patterns seen in chart and graphs.
- (K.6) Science concepts. The student knows that systems have parts and are composed of organisms and objects.
- The student is expected to:
- (A) sort organisms and objects into groups according to their parts and describe how the groups are formed; and
 - (C) observe and record parts of animals including wings, feet, heads, and tails.
- (K.7) Science concepts. The student knows that many types of change occur.
- The student is expected to:
- (A) observe, describe, and record changes in size, mass, color, position, quantity, time, temperature, sound, and movement;
 - (B) identify that heat causes change, such as ice melting or the Sun warming the air and compare objects according to temperature;
 - (C) observe and record weather changes from day to day and over seasons; and
 - (D) observe and record stages in the life cycle or organisms in their natural environment.

(K.8) Science concepts. The student knows the difference between living organisms and nonliving objects. The student is expected to:
(A) identify a particular organism or object as living or nonliving, and
(B) group organisms and objects as living or nonliving.

(K.9) Science concepts. The student knows that living organisms have basic needs. The student is expected to:
(A) identify basic needs of living organisms;
(B) give examples of how living organisms depend on each other, and
(C) identify ways that the Earth provides resources for life.

Grade 1 Science

(a) Introduction.

- (1) In Grade 1, science introduces the use of simple investigations and fieldwork to help students develop the skills of asking questions, gathering information, making measurements using non-standard units, using tools such as a thermometer, to extend their senses, constructing explanations, and drawing conclusions. Students also use computers and information technology tools to support their investigations.
- (2) As students learn science skills, they identify component of the natural world including rocks, soil, and natural resources. Students observe that heat from the sun or friction, is an example of something that causes change. In addition, Grade 1 students identify basic needs of living things, explore ways that living things depend on each other, and group living an nonliving things. Students identify parts that can be put together with other parts to do new things.
- (3) Science is a way of learning about the natural world. Students should know how science has built a vast body of changing and increasing knowledge described by physical, mathematical, and conceptual models, and also should know that science may not answer all questions.
- (4) A system is a collection of cycles, structures, and processes that interact. Students should understand a whole in terms of its components and how these components relate to each other and to the whole. All systems have basic properties that can be described in terms of space, time, energy, and matter. Change and constancy occur in systems and can be observed and measured as patterns. These patterns help to predict what will happen next and can change over time.
- (5) Investigations are used to learn about the natural world. Students should understand that certain types of questions can be answered by investigations, and that methods, models, and conclusions build from these investigations change as new observations are made. Models of objects and events are tools for understanding the natural world and can show how systems work. They have limitations and based on new discoveries are constantly being modified to more closely reflect the natural world.

(b) Knowledge and skills

(1.1) Scientific processes. The student participates in classroom and field investigations following home and school safety procedures. The student is expected to:
(A) demonstrate safe practices during classroom and field investigations; and
(B) learn how to use and conserve resources and materials.

(1.2) Scientific processes. The student develops abilities necessary to do science inquiry in both the field and the classroom.

The student is expected to:
(A) ask questions about organisms, objects and events;
(B) plan and conduct simple descriptive investigations;
(C) gather information using simple equipment and tools to extend the senses;
(D) construct reasonable explanations using information; and
(E) communicate findings about simple investigations.

(1.3) Scientific processes. The student knows that information and critical thinking are used in making decisions.

The student is expected to:
(A) make decisions using information, and
(B) discuss and justify the merits of decisions.

(1.4) Scientific processes. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured.

The student is expected to:
(A) collect information using tools including hand lenses, clocks, computers, thermometers, and balances;
(B) record and compare collected information.

(1.5) Science concepts. The student knows that organisms, objects, and events have properties and patterns.

The student is expected to:
(A) sort objects and events based on properties and patterns; and
(B) identify, predict, and create patterns including those seen in charts, graphs, and numbers.

(1.6) Science concepts. The student knows that systems have parts and are composed of organisms and objects.

The student is expected to:
(A) sort organisms and objects according to their parts and characteristics; and
(B) observe and describe the parts of plants and animals.

(1.7) Science concepts. The student knows that many types of change occur.

The student is expected to:
(A) observe, measure, and record changes in size, mass, color, position, quantity, sound, and movement;
(B) identify and test ways that heat may cause change such as when ice melts;
(C) observe and changes in weather from day to day and over seasons; and
(D) observe and record stages in the life cycle of organisms.

(1.8) Science concepts. The student distinguishes between living organisms and nonliving objects.

The student is expected to:
(A) group living organisms and nonliving objects; and
(B) compare living organisms and nonliving objects.

(1.9) Science concepts. The student knows that living organisms have basic needs.

The student is expected to:
(A) identify characteristics of living organisms that allow their basic needs to be met; and
(B) compare and give examples of how living organisms depend on each other for their basic needs.