Science
Review Notes
for
Parents and Students

Grade 2
3rd Nine Weeks
2017-2018

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for Parents and Students
Grade 2 Science: Third Nine Weeks
2017 – 2018

This resource is intended to be a guide for parents and students to improve content knowledge and understanding. The information below is detailed information about the Standards of Learning taught during the 3rd grading period and comes from the Science Standards of Learning Curriculum Framework, Grade 2 issued by the Virginia Department of Education. The Curriculum Framework may be found in its entirety at the following website.
http://www.doe.virginia.gov/testing/sol/standards_docs/science/2010/curriculum_framewk/science2.pdf

Standard 2.1

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

a) observations and predictions are made and questions are formed;
b) observations are differentiated from personal interpretation;
c) observations are repeated to ensure accuracy;
d) two or more characteristics or properties are used to classify items;
e) length, volume, mass, and temperature are measured in metric units and standard English units using the proper tools;
f) time is measured using the proper tools;
g) conditions that influence a change are identified and inferences are made;
h) data are collected and recorded, and bar graphs are constructed using numbered axes;
i) data are analyzed, and unexpected or unusual quantitative data are recognized;
j) conclusions are drawn;
k) observations and data are communicated;
l) simple physical models are designed and constructed to clarify explanations and show relationships; and
m) current applications are used to reinforce science concepts.

Overview

Standard 2.1 is intended to develop investigative and inquiry skills and the understanding of the nature of science for all of the other second-grade standards. Standard 2.1 requires students to continue developing a range of inquiry skills and achieve proficiency with those skills, and develop and reinforce their understanding of the nature of science in the context of the concepts developed in second grade.

- The nature of science refers to the foundational concepts that govern the way scientists formulate explanations about the natural world. The nature of science includes the following concepts:
    a) the natural world is understandable;
    b) science is based on evidence, both observational and experimental;
    c) science is a blend of logic and innovation;
    d) scientific ideas are durable yet subject to change as new data are collected;
    e) science is a complex social endeavor; and
    f) scientists try to remain objective and engage in peer review to help avoid bias.

- Science assumes that the natural world is understandable. Scientific inquiry can provide explanations about nature. This expands students' thinking from just a knowledge of facts to understanding how facts are relevant to everyday life.

- Science demands evidence. Scientists develop their ideas based on evidence and they change their ideas when new evidence becomes available or the old evidence is viewed in a different way.

- Science is a complex social endeavor. It is a complex social process for producing knowledge about the natural world. Scientific knowledge represents the current consensus as to what is the best explanation for phenomena in the natural world. This consensus does not arise automatically, since scientists with different backgrounds from all over the world may interpret the same data differently. To build a consensus, scientists communicate their findings to other scientists and attempt to replicate one another's findings. In order to model the work of professional scientists, it is essential for second-grade students to engage in frequent discussions with peers about their understanding of their investigations.

- In order to communicate accurately, it is necessary to provide a clear description of exactly what is observed. There is a difference between what one can observe and what can be interpreted from an observation.

- An observation is what you actually see, feel, taste, hear, or smell.

- The more times an observation is repeated, the greater the chance of ensuring the accuracy of the observation.

- It is easier to see how things are related if objects are classified according to their common characteristics.

- By constructing and studying simple models, it is sometimes easier to understand how real things work.

- Scientific investigations require standard measures, proper tools (e.g., balance, thermometer, ruler, magnifying glasses), and organized collection and reporting of data. The way the data are displayed can make it easier to interpret important information.
- When using any standard measurement scale, measure to the marked increment and

estimate one more decimal place. Scientists do not round their measurements as this would be inaccurate.

- Students should communicate observations and data publicly.

Standard 2.4

The student will investigate and understand that plants and animals undergo a series of orderly changes as they mature and grow. Key concepts include

a) animal life cycles; and
b) plant life cycles.

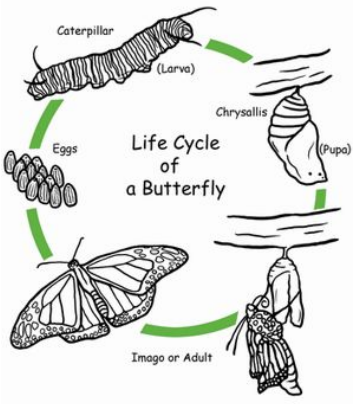
Overview

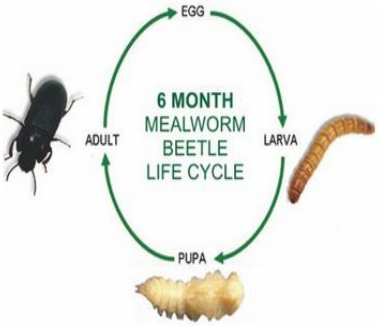
In 2.4 students investigate and understand that plants and animals undergo change throughout their lives.

- Throughout their lives, plants and animals undergo a series of orderly and identifiable changes.

- Changes in organisms over time occur in cycles and differ among the various plants and animals.

- Some animals, such as mealworms, pill bugs, frogs, and butterflies go through distinct stages as they mature to adults. Other animals, such as crickets, praying mantises, gray squirrels, and white-tailed deer, resemble their parents from birth to maturity and do not have distinct stages.





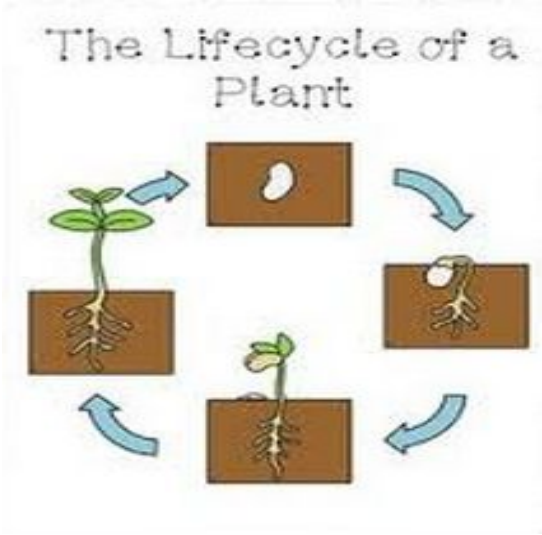
- White-tailed deer are the largest herbivores in Virginia. They are found in all areas of Virginia including forests, open fields, mountain tops, coastal islands, and in cities and towns. Their diet consists of grasses, leaves, nuts, fruits, and fungi. Virginia's white-tailed deer have few predators. Fawns may be taken by bobcat. Other mortality factors include hunting, motor vehicles, poaching, and trains.

- Newborn white-tailed deer are called fawns. They become yearlings at 14 to 18 months of age. As adults, males are called bucks and females are called does. White-tailed deer are tan or reddish brown in the summer and grayish brown in the winter. The underside and throat are white, and the tail is brown above and white below.

- A white-tailed deer's life span averages eight years.

			
Fawn	**Yearling**	**Buck**	**Doe**

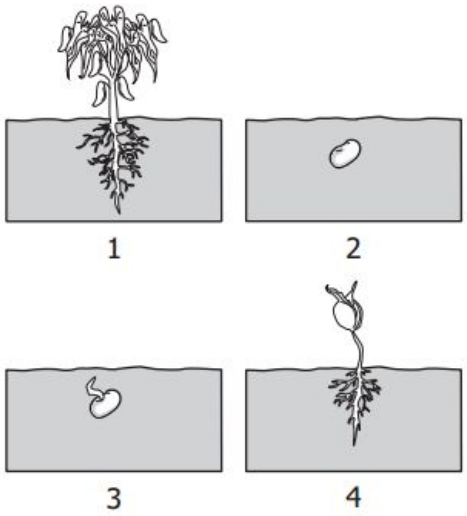
- Of the more than 200,000 kinds of vascular plants in the world today over 95 percent flower at some time in their lives. The best-known flowers are bright and colorful but others, like those of grasses, are small and inconspicuous.
- The basic stages in the life cycle of flowering plants include: seeds, germination of the seed, growth of the stem and roots, growth of leaves, growth of flowers, fertilization (pollination) of the flowers, production of fruit/new seeds, and death.



Released Practice Test Items

Which lists the correct order of changes that happen to a plant in spring?

A. Buds form, flowers open, fruits grow
B. Flowers die, fruits grow, buds form
C. Seeds drop, flowers open, buds form
D. Seeds drop, flowers die, fruits grow



Which of the following BEST shows the order of events in the life cycle of a bean plant?

A. 2, 3, 4, 1
B. 3, 4, 2, 1
C. 1, 2, 4, 3
D. 1, 4, 3, 2

http://www.doe.virginia.gov/testing/sol/practice_items/index.shtml#science

Standard 2.5

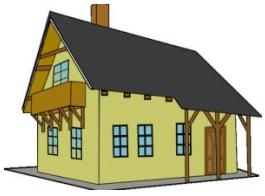
The student will investigate and understand that living things are part of a system. Key concepts include

a) living organisms are interdependent with their living and nonliving surroundings;
b) an animal's habitat includes adequate food, water, shelter or cover, and space;
c) habitats change over time due to many influences; and
d) fossils provide information about living systems that were on Earth years ago.

Overview

Students are introduced to living systems in 2.5 and investigate and understand that living organisms interact with other living organisms and their surroundings. The formal word system is introduced in this standard. The expectation is that students understand the concept in terms of the interactions between living and nonliving things.

- Living organisms are dependent on other living organisms and their nonliving surroundings for survival.
- All of the interactions between and among living organisms and their nonliving surroundings are referred to as a system.
- Shelter may be living (coral, tree) or nonliving (caves, houses).

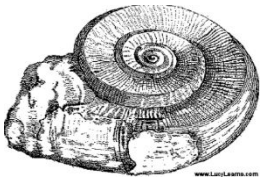
Living		**Nonliving**	
			
Coral	**Tree**	**Cave**	**House**

- The habitat of an animal includes adequate food, water, shelter or cover, and space. If any of the basic elements of an animal's habitat are absent, the animal's survival is threatened. The animal may adapt or leave the area.

- The habitats of living organisms, such as forests, grasslands, rivers, and streams, change due to many human or natural influences (e.g., forest fires, hurricanes, and droughts). Habitats change from season to season.

		
Forests	**Grasslands**	**Rivers**

- Fossils found provide scientists with information about plants and animals that lived on Earth many years ago. (e.g., The rise and fall of sea level is recorded in the richly fossiliferous rocks of Virginia's coastal plain. An abundance of marine fossils – fossil clams, snails, sand dollars, shark's teeth, and whalebones – can be found in Virginia's coastal plains.)


Virginia's state fossil, *Chesapecten jeffersonius*, is a large extinct species of scallop that dates to approximately 4.5 million years ago. It was the first fossil ever described in North America and is named after Thomas Jefferson, one of our founding fathers, and an amateur paleontologist.

Released Practice Test Items

http://www.doe.virginia.gov/testing/sol/practice_items/index.shtml#science

This picture BEST shows how –

A. animals use plants for food
B. animals use plants for homes
C. plants get in the way of animals
D. plants keep animals warm in winter

Which of these is a nonliving part of a forest?

A. Tree
B. Soil
C. Worm
D. Mushroom

Which of the following is one nonliving part in the habitat of a bluebird?

A. Insects they eat
B. Air they breathe
C. Hawks that eat them
D. Plants they use for nests

Larva **2.4**	The larva is the stage in a butterfly life-cycle when it grows and grows.
Caterpillar **2.4**	A caterpillar is the larva stage of the butterfly.
Pupa **2.4**	The pupa is the stage in a butterfly life-cycle when it has grown as much as it can. It is when they form a chrysalis.
Chrysalis **2.4**	The chrysalis is like a cozy wrapper where the caterpillar sheds its skin and is busy changing into something very different.
Adult butterfly **2.4**	The adult butterfly comes out of the chrysalis. This is when it begins to drink nectar from flowers.
Metamorphosis **2.4**	Metamorphosis is a major change in the form or structure of some animals or insects that happen as the animal or insect becomes an adult.
White-tailed deer **2.4**	White-tailed deer are so common in our state that they are often called Virginia deer.
Fawn **2.4**	A fawn is a baby deer.
Yearling **2.4**	A yearling is when a deer becomes a "teenager". It takes about one year to become a yearling.
Doe **2.4**	A doe is a mother deer.

Buck **2.4**	A buck is a male deer.
Seed **2.4**	A seed is the beginning stage of a plant life cycle.
Stem **2.4**	A stem is the part of a plant that gives support and helps to carry water and nutrients to through the plant.
Roots **2.4**	Roots are the part of the plant that helps to anchor the plant into the ground. They also help get water and nutrients to the plant.
Leaves **2.4**	Leaves of a plant help make food for the plant.
Flowers **2.4**	Flowers are the part of the plant that attracts birds, insects and other animals to the plant.
Germination **2.4**	Germination is when a seed begins to grow.
Pollination **2.4**	Pollination is the transfer of pollen from one flower to another.

Habitat **2.5**	A habitat is a place which provides you food water, shelter, and space to hang out.
Living organism **2.5**	A living organism has a beginning and an end. They sleep and breathe. They can make new organisms.

Nonliving parts of natural habitats **2.5**	Nonliving parts of a natural habitat are air, water, rocks, mud, and sand.
Adaptation **2.5**	An adaptation is a change in a plant or animal that makes it better able to live in a particular place or situation.
Space **2.5**	Space is room to roam.
Food **2.5**	Food helps organisms grow and stay strong.
Water **2.5**	Water is something that no living thing can survive without.
Shelter **2.5**	Shelter is a place that keeps you safe.
Forest fires **2.5**	Forest fires can be started by careless people or by lightning strikes.
Hurricanes **2.5**	Hurricanes are storms with strong winds, and heavy rains that can wash away habitats.
Drought **2.5**	Droughts are long periods without rain.
Fossil **2.5**	Fossils are pieces of broken shells or chunks of rock or even bones left from the past as clues. We can learn about life, weather, climate and the environment by studying fossils.