

**Science  
Review Notes  
for  
Parents and Students**

Grade 3  
2nd Nine Weeks  
2017-2018



**SUFFOLK**  
PUBLIC SCHOOLS

**Science Review Notes  
for Parents and Students  
Grade 3 Science: Second 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 2<sup>nd</sup> grading period and comes from the *Science Standards of Learning Curriculum Framework, Grade 3* 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/index.shtml](http://www.doe.virginia.gov/testing/sol/standards_docs/science/index.shtml)

**Standard 3.1**

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

- a) observations are made and are repeated to ensure accuracy;
- b) predictions are formulated using a variety of sources of information;
- c) objects with similar characteristics or properties are classified into at least two sets and two subsets;
- d) natural events are sequenced chronologically;
- e) length, volume, mass, and temperature are estimated and measured in metric and standard English units using proper tools and techniques;
- f) time is measured to the nearest minute using proper tools and techniques;
- g) questions are developed to formulate hypotheses;
- h) data are gathered, charted, graphed, and analyzed;
- i) unexpected or unusual quantitative data are recognized;
- j) inferences are made and conclusions are drawn;
- k) data are communicated;
- l) models are designed and built; and
- m) current applications are used to reinforce science concepts.

## Overview

The skills defined in standard 3.1 are intended to define the “investigate” component and the understanding of the nature of science for all of the other third-grade standards. The intent of standard 3.1 is that students will continue to develop a range of inquiry skills and achieve proficiency with those skills in the context of the concepts developed at the third grade, and continue to strengthen their understanding of the components of the nature of science.

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

- Questions frequently arise from observations. A **Hypothesis** can be developed from those questions. A hypothesis is a statement written in a manner that describes the cause and effect relationship between the independent and dependent variables in an experiment. A method for helping students understand how to develop a hypothesis is to have them build “**if/then**” statements (e.g., If heat is added to ice, then the ice will melt.).
- Complete observations are made using all of the senses. Simple instruments can help extend the senses (e.g., magnifying glass enhances the vision of an item).
- **Predictions** are statements of what is expected to happen in the future based on past experiences and observations.
- **An inference** is a tentative explanation based on background knowledge and available data.
- **A conclusion** is a summary statement based on the results of an investigation.
- Putting **natural events** in a sequence allows us to notice change over time.
- Scientists use a variety of modes to communicate about their work. Examples of ways they communicate include oral presentations; graphs and charts created to visualize, analyze and present information about their data; and written reports.
- In science, it is important that experiments and the observations recorded are replicable. There are two different types of data – qualitative and quantitative. **Qualitative data** deal with descriptions and data that can be observed, but not measured precisely. **Quantitative data** are data that can be counted or measured and the results can be recorded using numbers. **Quantitative data** can be represented visually in graphs and charts. **Quantitative data** define, whereas **qualitative data** describe. **Quantitative data** are more valuable in science because they allow direct comparisons between observations made by different people or at different times.

Example of Qualitative Data vs. Quantitative Data	
Third-Grade Class	
Qualitative Data	Quantitative Data
<ul style="list-style-type: none"> <li>• Friendly</li> <li>• Like science</li> <li>• Positive about schoolwork</li> </ul>	<ul style="list-style-type: none"> <li>• 25 students</li> <li>• 10 girls, 15 boys</li> <li>• 68 percent have perfect attendance</li> </ul> <p>*Numbers can be written in either standard number form or written form.</p>

### Standard 3.4

**The student will investigate and understand that adaptations allow animals to satisfy life needs and respond to the environment. Key concepts include**

- a) behavioral adaptations; and**
- b) physical adaptations.**

#### **Overview**

Students will compare and contrast the physical and behavioral characteristics of different animals that allow the animals to adapt and respond to life needs. The students will need to describe specific examples of how animals gather food, find shelter, defend themselves, and rear young. The concepts of hibernation, migration, camouflage, mimicry, instinct, and learned behavior are specific ways in which animals respond to their environment.

In order to survive, animals act in different ways to gather and store food, find shelter, defend themselves, and rear their young.

**What are behavioral adaptations of animals?**

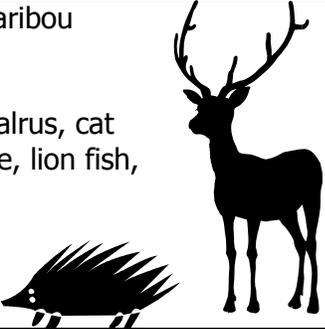
- Behavioral adaptations allow animals to respond to life needs.
- Examples: hibernation, migration, instinct, and learned behavior

**What are physical adaptations?**

- Physical adaptations help animals survive in their environment
- Examples: camouflage and mimicry

Physical Adaptation	Camouflage	Mimicry												
<b>Definition</b>	<b>Camouflage</b> is when animals blend into their environments to protect themselves from enemies or predators.	<b>Mimicry</b> is when animals look like other animals to avoid being eaten. This adaptation helps protect them from their predators.												
<b>Example(s)</b>	 <p><b>(a frog blending into the leaves)</b></p>  <p><b>(an octopus blending into the ocean floor)</b></p>	<table border="1" data-bbox="941 1144 1396 1617"> <thead> <tr> <th data-bbox="941 1144 1169 1207">Coral Snake</th> <th data-bbox="1169 1144 1396 1207">Scarlet King Snake</th> </tr> </thead> <tbody> <tr> <td data-bbox="941 1207 1169 1249">burrowing snake</td> <td data-bbox="1169 1207 1396 1249">burrowing snake</td> </tr> <tr> <td data-bbox="941 1249 1169 1312">grows up to 2.5 feet long</td> <td data-bbox="1169 1249 1396 1312">grows 3 to 5 feet long</td> </tr> <tr> <td data-bbox="941 1312 1169 1375">red touches yellow strip</td> <td data-bbox="1169 1312 1396 1375">red touches black strip</td> </tr> <tr> <td data-bbox="941 1375 1169 1512">venom can kill other living things, including humans</td> <td data-bbox="1169 1375 1396 1512">constrictor that is not harmful to humans</td> </tr> <tr> <td data-bbox="941 1512 1169 1617">feeds on other snakes and lizards</td> <td data-bbox="1169 1512 1396 1617">feeds on rodents, birds, and other snakes</td> </tr> </tbody> </table> <p>The <b>Scarlet King Snake</b> mimics the <b>Coral Snake</b>. It looks just like it so predators will leave it alone because they think it is poisonous.</p>	Coral Snake	Scarlet King Snake	burrowing snake	burrowing snake	grows up to 2.5 feet long	grows 3 to 5 feet long	red touches yellow strip	red touches black strip	venom can kill other living things, including humans	constrictor that is not harmful to humans	feeds on other snakes and lizards	feeds on rodents, birds, and other snakes
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**Animals also use their physical adaptations as a defense. See the chart below for examples.**

Defense	Animal
<p><b>Venom</b></p>	<p>bee, some snakes, scorpion, spiders, puffer fish, Portuguese man-of-war</p> 
<p><b>Skin</b></p>	<p>armadillo, rhinoceros</p>
<p><b>Weapons</b></p>	<p>antlers: deer, moose, elk, caribou                      hooves: deer                      claws: cat, kangaroo                      teeth: raccoon, elephant, walrus, cat                      spines: hedgehog, porcupine, lion fish, caterpillar</p> 
<p><b>Play Dead</b></p>	<p>Opposum, hognose snake</p>

Behavioral Adaptation	Hibernation	Migration	Instinct	Learned Behavior	Dormancy
<p><b>Definition</b></p>	<p>Hibernation is when animals go into a deep sleep in which their body activities slow down and they can live off stored food.</p>	<p>Migration is when animals go on a long distance or journey from one place to another as seasons change.</p>	<p>An instinct is when an animal is born with natural behaviors in order to survive in their environments.</p>	<p>A learned behavior needs to be taught in order for the animal to survive.</p>	<p>Dormancy is a period of an organism's life cycle when growth, development, and physical activity temporarily stop.</p>
<p><b>Example(s)</b></p>	<p><u>Animals that Hibernate:</u>                      groundhogs                      frogs                      gophers                      bears                      fish                      salamanders                      insects</p>	<p><u>Animals that Migrate:</u>                      bluebirds                      monarch butterfly                      caribou                      green sea turtles                      sandpipers                      robins                      hummingbirds</p>	<p>A spider spinning a web                      A beaver building a dam</p>	<p>Some behaviors need to be taught                      For example: a bear cub must learn to hunt</p>	<p>Trees have no leaves in the winter.</p>

# Released Practice Items

## Virginia Standards of Learning Grade 3 Science Test

Follow this link to find practice tests:

[http://www.doe.virginia.gov/testing/sol/practice\\_items/index.shtml#science](http://www.doe.virginia.gov/testing/sol/practice_items/index.shtml#science)

1. Which of these adaptations helps animals survive freezing weather?

- A) Mimicry
- B) Pollination
- C) Hibernation
- D) camouflage

2. Loggerhead turtles lay their eggs on Virginia beaches and return to the sea. Tiny turtles hatch from the eggs and find their way to the ocean water. This is an example of —

- A) A learned behavior
- B) An instinct
- C) Camouflage
- D) Mimicry

### Standard 3.5

The student will investigate and understand relationships among organisms in aquatic and terrestrial food chains. Key concepts include:

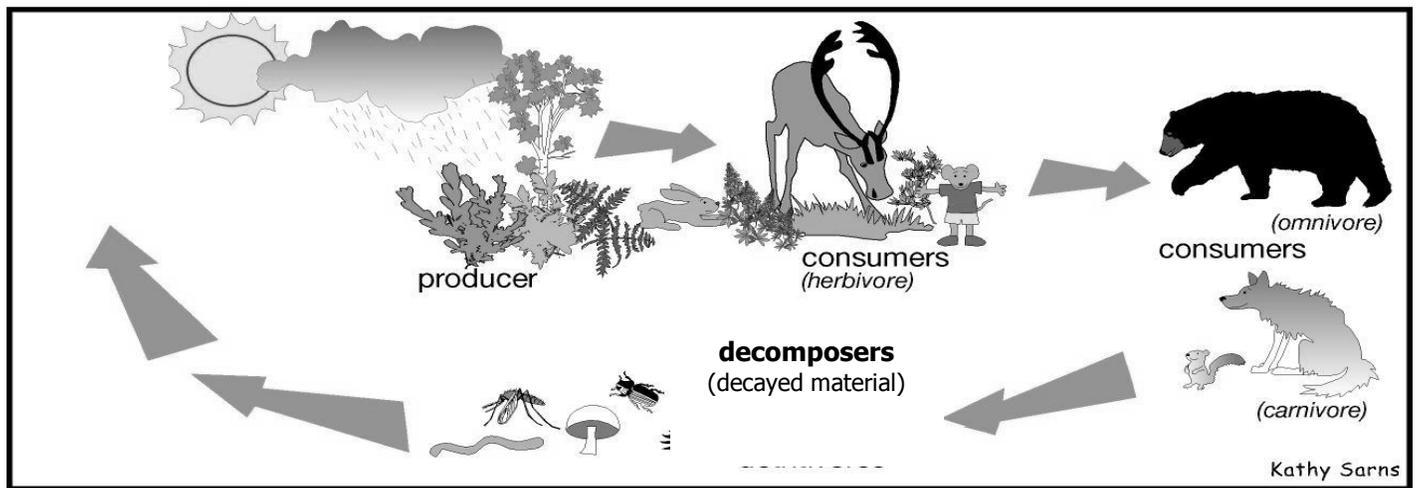
- a) producer, consumer, decomposer;
- b) herbivore, carnivore, omnivore; and
- c) predator and prey.

#### Overview

This standard focuses on student understanding of the food chain in water and land environments. It focuses on the types of relationships among living organisms and their dependence on each other for survival. The strand focuses on the life processes of plants and animals and the specific needs of each. The major topics developed in the strand include the basic needs and life processes of organisms, their physical characteristics, orderly changes in life cycles, behavioral and physical adaptations, and survival and perpetuation of species.

## What does a food chain show?

- A **food chain** shows a food relationship among plants and animals in a specific area or environment?



Producer	Consumer	Predator	Prey
A <b>producer</b> is a plant that creates its own food from sunlight, air, and water.	A <b>consumer</b> is an animal that eats living organisms (plant or animal)	Hunts for other animals 	Hunted by other animals 

Carnivore	Herbivore	Omnivore
		
<b>Meat Eater</b>	<b>Plant Eater</b>	<b>Meat and Plant Eater</b>

# Practice Test Items

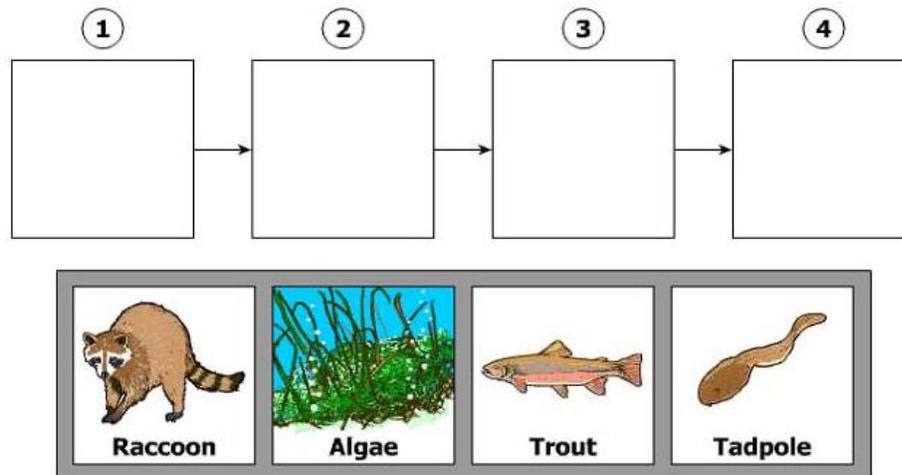
## Virginia Standards of Learning Grade 3 Science Test

Follow this link to find practice test items:

[http://www.doe.virginia.gov/testing/sol/practice\\_items/index.shtml#science](http://www.doe.virginia.gov/testing/sol/practice_items/index.shtml#science)

Place these living organisms in the correct box to complete this food chain.

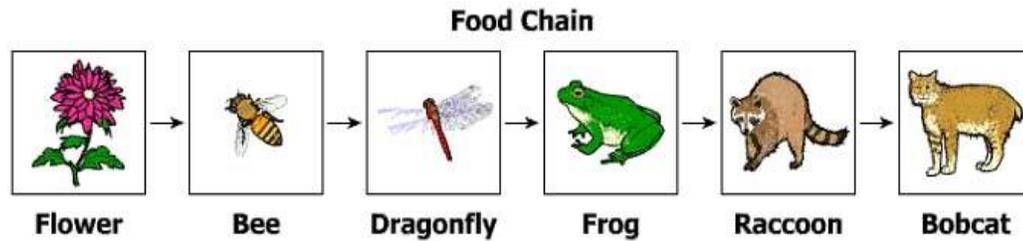
Pond Food Chain



**Answer:**

algae – tadpole – trout -- raccoon

Identify a predator with its prey shown by this food chain.



**Possible Answers:**

- Dragonfly – bee
- Frog – dragonfly
- Raccoon – frog
- Bobcat -- raccoon

### Standard 3.6

**The student will investigate and understand that ecosystems support a diversity of plants and animals that share limited resources. Key concepts include:**

- a) aquatic ecosystems;**
- b) terrestrial ecosystems;**
- c) populations and communities; and**
- d) the human role in conserving limited resources.**

#### Overview

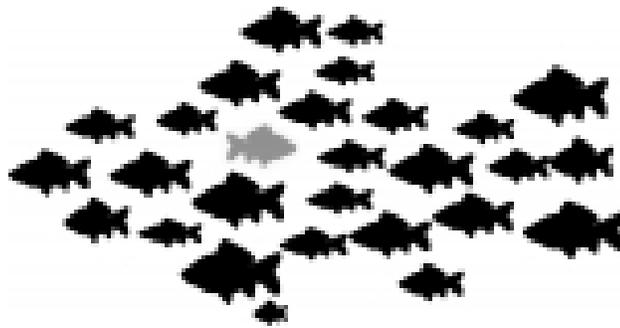
Students should become familiar with several specific examples of aquatic and terrestrial ecosystems and the plants and animals unique to them. The water-related ecosystems to be discussed are the pond, marshland, swamp, stream, river, and ocean, and the dry-land ecosystems to be discussed are the desert, grassland, rain forest, and forest. Water-related and dry-land ecosystems contain many types of plants and animals that often compete for the same natural resources. These resources are often shared. Students will also explore the human role in protecting and conserving limited resources in the various ecosystems.

<b>Water-related (aquatic) environments</b>	<b>Plants</b>	<b>Animals</b>
pond	water lilies, tall grasses	small fish, tad poles, frogs, eels
marshland	grasses, shrubs, trees	frogs, beaver, turtles, muskrat
swamp	grasses, shrubs, trees	frogs, snakes, beaver, turtle
stream	grasses	fish
river	grasses	fish, snake
ocean	seaweed, coral	large fish, dolphin, shark, crab

<b>Land-related (Terrestrial) environments</b>	<b>Plants</b>	<b>Animals</b>
desert	cactus	camel, snakes
grassland	tall grasses, very little trees	cheetahs, zebras, lions, giraffes
rainforest	tall trees that cover the forest	snakes, toucan, birds, monkeys
forest	tall grasses and trees	snakes, bears, deer, wolves, rabbits, owls, beavers

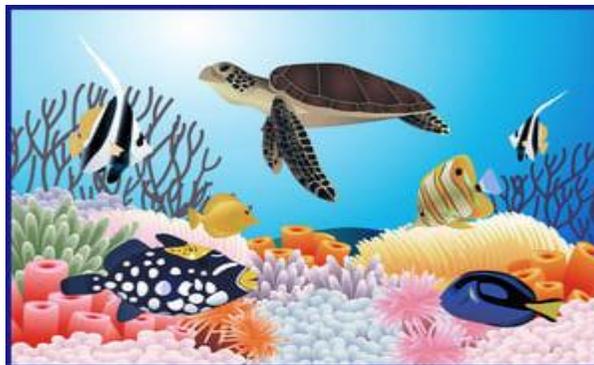
## Population

- A **population** is a group of organisms of the same kind that lives in the same place.
- Examples of a population are a group of swans in a pond, a school of fish in a river, and a herd of cattle in the grassland.



## Community

- A **community** is all of the populations that live together in the same place.
- An example of a dry-land community would be a forest made up of trees, squirrels, worms, rabbits, and hawks. An example of a water-related community would be an ocean made up of fish, sea turtles, and coral.



# Practice Test Items

## Virginia Standards of Learning Grade 3 Science Test

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**1. This picture is an example of what type of environment?**

- A** a rain forest
- B** a grassland
- C** an ocean
- D** a marshland

**2. A wetland habitat can continue to support the birds and fish that live there if people —**

- A** drain the water away
- B** flood the highest parts of the land
- C** leave the land alone
- D** use the land for planting crops

<p><b>hypothesis</b></p> <p>3.1</p>	<p>A hypothesis is a statement written in a manner that describes the cause and effect relationship between the independent and dependent variables in an experiment.</p>
<p><b>inference</b></p> <p>3.1</p>	<p>A tentative explanation based on background knowledge and available data.</p>
<p><b>predictions</b></p> <p>3.1</p>	<p>Statements of what is expected to happen in the future based on past experiences and observations.</p>
<p><b>conclusion</b></p> <p>3.1</p>	<p>A summary statement based on the results of an investigation.</p>
<p><b>quantitative data</b></p> <p>3.1</p>	<p>Data that can be counted or measured and the results can be recorded using numbers.</p>
<p><b>qualitative data</b></p> <p>3.1</p>	<p>Data that deals with descriptions, and data that can be observed, but not measured precisely.</p>
<p><b>volume</b></p> <p>3.1</p>	<p>The amount a container can hold; the amount of space occupied by an object.</p>

<p><b>length</b></p> <p>3.1</p>	<p>The distance between two points.</p>
<p><b>mass</b></p> <p>3.1</p>	<p>A body of matter with no specific shape.</p>
<p><b>gram</b></p> <p>3.1</p>	<p>A metric unit of mass equal to 1 thousandth of a kilogram.</p>
<p><b>temperature</b></p> <p>3.1</p>	<p>The measure of the amount of thermal energy in the atmosphere.</p>
<p><b>Celsius</b></p> <p>3.1</p>	<p>Metric unit for measuring temperature; on this scale water freezes at 0 ° and boils at 100°.</p>
<p><b>time</b></p> <p>3.1</p>	<p>A number representing a specific point in hours, minutes, and seconds.</p>
<p><b>minute</b></p> <p>3.1</p>	<p>A unit of time equal to 1 sixtieth of an hour; 60 seconds.</p>
<p><b>natural events sequenced chronologically</b></p> <p>3.1</p>	<p>This is when we put natural events in a sequence that allows us to notice change over time. (life cycles, moon phases, tidal changes)</p>

<p>3.4</p> <p><b>mimicry</b></p>	<p>Mimicry is the ability of some creatures to imitate others, either by sound or appearance, or to merge with their environment for protective purposes</p>
<p>3.4</p> <p><b>physical adaptations</b></p>	<p>A part of an organism's body that helps it to survive in its environment. Example: camouflage and mimicry</p>
<p>3.4</p> <p><b>environment</b></p>	<p>An environment consists of everything that surrounds a living thing.</p>
<p>3.4</p> <p><b>camouflage</b></p>	<p>Camouflage is how animals hide by blending in with their surroundings to protect themselves from enemies.</p>
<p>3.4</p> <p><b>learned behavior</b></p>	<p>Learned behaviors are behaviors that need to be taught in order for the animal to survive. Such as a bear cub learning to hunt</p>
<p>3.4</p> <p><b>behavioral adaptations</b></p>	<p>A change in the way an organism acts or performs to meet a life need. Examples: hibernation, migration, instinct, and learned behavior</p>
<p>3.4</p> <p><b>hibernation</b></p>	<p>Hibernation is when some animals go into a deep winter sleep in which their body activities slow down and they can live off stored food.</p>

<p><b>dormancy</b></p> <p>3.4</p>	<p>Dormancy is a period of an organism's life cycle when growth, development, and physical activity temporarily stop.</p>
<p><b>instinct</b></p> <p>3.4</p>	<p>An instinct is any behavior that is performed without being based on prior experience.</p>
<p><b>producer</b></p> <p>3.5</p>	<p>A producer is an organism that makes its own food.</p>
<p><b>consumer</b></p> <p>3.5</p>	<p>A consumer is an animal that eats living organisms.</p>
<p><b>decomposer</b></p> <p>3.5</p>	<p>Decomposers are organisms that break down decayed plants and animals into smaller pieces that can be used again by living things.</p>
<p><b>herbivore</b></p> <p>3.5</p>	<p>A herbivore is an animal that eat only plants.</p>
<p><b>omnivore</b></p> <p>3.5</p>	<p>An omnivore is an animal that eats both plants and animals</p>
<p><b>carnivore</b></p> <p>3.5</p>	<p>A carnivore is an animal that eats only other animals.</p>
<p><b>predator</b></p> <p>3.5</p>	<p>A predator is an animal that hunts other animals to get its food.</p>
<p><b>prey</b></p> <p>3.5</p>	<p>Prey is an animal that is hunted by other animals for food.</p>

<b>population</b> 3.6	A population is a group of organisms of the same kind that lives in the same place. Example: group of swans in a pond
<b>water- related ecosystems (Aquatic)</b> 3.6	Water-related ecosystems include fresh water or salt water. ( Examples include ponds, marshes, swamps, streams, rivers, and oceans)
<b>dry- land ecosystems (Terrestrial)</b> 3.6	Dry-land ecosystems include deserts, grasslands, rain forest, and forests
<b>community</b> 3.6	A community is all of the populations that live together in the same place.