

Grade 2 Science
Content Review Notes for
Parents and Students

2nd Nine Weeks
2017-2018



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**Science Review Notes
for Parents and Students
Grade 2 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 2nd 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_framework/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 2.6

The student will investigate and understand basic types, changes, and patterns of weather. Key concepts include

- identification of common storms and other weather phenomena;
- the uses and importance of measuring, recording, and interpreting weather data; and
- the uses and importance of tracking weather data over time.

Overview

In 2.6 students investigate and understand types of weather and weather patterns and measure and record current weather data. Students also explore the uses of tracking weather data over time.

- Earth's weather changes continuously from day to day.
- Changes in the weather are characterized by daily differences in wind, temperature, and precipitation.
- Precipitation occurs when water, previously evaporated, condenses out of the air and changes its phase from a gas to a liquid (rain) or to a solid (snow or sleet).



Evaporation	When the sun heats the water and the water turns from a liquid to a gas called water vapor. Water vapor is all around us, yet invisible.	A diagram showing the sun in the upper right corner. Below it, the word 'EVAPORATION' is written. Five wavy arrows point upwards from a blue wavy line labeled 'ocean' towards the sun.
Condensation	When cold air and warm air meet, a gas changes to a liquid. So as the water vapor in the air rises, it meets cold air and condenses into drops that come together with dust to create clouds. Examples are: dew, clouds, "sweating glass".	A green leaf with two clear water droplets on its surface.
Precipitation	Water that falls from the sky in the form of rain (liquid water), snow, sleet, or hail (frozen water)	Two clouds are shown. The one on the left is grey and has snowflakes falling from it. The one on the right is blue and has rain falling from it.

- Extremes in the weather, such as too little or too much precipitation, can result in droughts or floods.

- Storms have powerful winds, which may be accompanied by rain, snow, or other kinds of precipitation.

<p>Thunderstorm</p> 	<p>A storm with strong winds, heavy rain, thunder, and lightning.</p>	<p>Hurricane</p> 	<p>A storm with strong winds that move in a huge circle.</p>
<p>Drought</p> 	<p>A long period of time with little or no rain.</p>	<p>Tornado</p> 	<p>A storm that is like a hurricane, but it is smaller.</p>
<p>blizzard</p> 		<p>A violent winter storm that can last for several hours or several days.</p>	

- Weather data are collected and recorded using instruments. This information is very useful for predicting weather and determining weather patterns.

Weather Instruments



THERMOMETER

An instrument to measure temperature.



WIND VANE

It shows the direction of the wind – north, south, east and west



RAIN GAUGE

It is an instrument to measure rain.

- Weather influences human activity.
- Scientists collect weather data over time to study trends and patterns. These trends and patterns help them to make future weather predictions.

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

1.

Match the type of weather with the words describing each condition.

Tornado

Drought

Snowstorm

Thunderstorm

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Flash flooding, Strong winds, Heavy rains

Low Temperatures, Strong winds, Solid precipitation

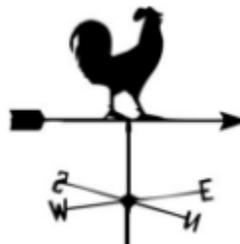
Uproots trees, Tears down buildings, Moves large objects

Soil Cracks, Water dries up, Plants wilt

2.

What does a weather vane show?

- A Wind direction**
- B Air temperature**
- C Cloud cover**
- D Air pressure**



Standard 2.7

The student will investigate and understand that weather and seasonal changes affect plants, animals, and their surroundings. Key concepts include

- a) effects of weather and seasonal changes on the growth and behavior of living things; and
- b) weathering and erosion of land surfaces.

Overview

In 2.7 the students investigate and understand that weather and seasons affect plants, animals, and their surroundings. The effects of weather and seasonal changes on weathering and erosion of the land surface are also included in 2.7.

- Living organisms respond to weather and seasonal changes. This can be reflected in changes in growth and behavior.
- Adverse conditions of weather may slow the growth and development of plants and animals, whereas optimal weather conditions may accelerate the growth and development of plants and animals.
- Dormancy is a state of reduced metabolic activity adopted by many organisms (both plants and animals) under conditions of environmental stress or when such stressful conditions are likely to appear, such as in winter.

<p>Dormancy</p> 	<p>A time of rest for plants and animals.</p>
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- Many trees produce new leaves in the spring and lose them in the fall due to seasonal changes in temperature and light.
- The outward coloration and coloration patterns of many animals are similar in appearance to the plants in the places in which they live. This similarity to background is referred to as camouflage, and it enables animals to hide and avoid those that may eat or harm them.

<p>Camouflage</p> 	<p>Something that protects an animal from attack by making it difficult to see in the area around it</p>
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- Some animals (e.g., geese, monarch butterflies, tundra swans) travel from one place to another and back again (migration) in search of a new temporary habitat because of climate, availability of food, season of the year, or reproduction.

<p>Migrate</p> 	<p>To travel from one place to another because of changes in a habitat</p>
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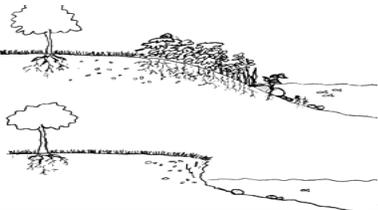
- Some animals (e.g., groundhogs and black bears) go into a deep sleep-like state (hibernation) due to seasonal changes. Hibernation is a condition of biological rest or inactivity where growth, development, and metabolic processes slow down.

<p>Hibernate</p> 	<p>To spend winter in a deep sleep-like state</p>
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- Some animals undergo physical changes (e.g., thickening of dog fur in the winter and shedding in the summer) from season to season.
- Land surfaces are subject to the agents of weathering and erosion. Land surfaces that are not covered with or protected by plants are more likely to be subject to the loss of soil by wind and water.
- Weathering is the breaking down of rocks, which usually happens over long periods of time.

<p>Weathering</p> 	<p>Breaking down rocks</p>
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- Erosion is the process by which the products of weathering are moved from one place to another. Erosion may happen quickly (e.g., during a flood or a hurricane) or over a long period of time.

<p>Erosion</p> 	<p>The process of soil or small rocks being washed or worn away by wind or rain</p>
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<p>A company plants trees on a bare hillside. Which of these is the BEST reason for planting the trees?</p> <p>A The trees provide oxygen for the soil. B The trees prevent soil from washing away. C The trees make shade for animals living there. D The trees cause animals to move to other places.</p>	<p>Which of these may have caused the boulders to break away from the cliff?</p> <div data-bbox="1029 495 1256 873" data-label="Image"></div> <p>A Weathering B Evaporating C Depositing D Grinding</p>
<p>Camouflage MOST helps an animal with which of these life needs?</p> <p>A Finding shelter B Hiding from predators C Gathering enough food D Raising young</p>	<p>Which of these adaptations helps animals survive freezing weather?</p> <p>A Mimicry B Pollination C Camouflage D Hibernation</p>

<p>evaporation</p> <p>2.6</p>	<p>Evaporation happens when the sun heats the water and the water turns from a liquid to a gas called water vapor. Water vapor is all around us, yet invisible.</p>
<p>condensation</p> <p>2.6</p>	<p>Condensation happens when cold air and warm air meet, a gas changes to a liquid. So as the water vapor in the air rises, it meets cold air and condenses into drops that come together with dust to create clouds. Examples are: dew, clouds, "sweating glass".</p>
<p>precipitation</p> <p>2.6, 3.1</p>	<p>Precipitation is water that falls from the sky in the form of rain (liquid water), snow, sleet, or hail (frozen water).</p>
<p>thermometer</p> <p>2.6</p>	<p>A thermometer measures the temperature of the air (Fahrenheit or Celsius).</p>
<p>rain gauge</p> <p>2.6</p>	<p>A rain gauge measures the amount of rain or snow (precipitation).</p>
<p>weather vane</p> <p>2.6</p>	<p>A weather vane shows the direction the wind is blowing from (wind vane).</p>
<p>weathering</p> <p>2.6</p>	<p>Weathering is the breaking down of earth materials (rocks, soil) into smaller pieces by wind and water.</p>
<p>erosion</p> <p>2.6</p>	<p>Erosion is the picking up and carrying away of soil and rocks.</p>

<p>thunderstorm</p> <p>2.6</p>	<p>A thunderstorm is a storm that may cause flash flooding, high winds, lightning, and thunder.</p>
<p>tornado</p> <p>2.6</p>	<p>A tornado is a powerful swirling storm with damaging winds that will uproot trees and destroys everything in its path.</p>
<p>hurricane</p> <p>2.6</p>	<p>A hurricane is a storm that has heavy rain, and damaging winds.</p>
<p>blizzard</p> <p>2.6</p>	<p>A blizzard is a storm with heavy snow, strong winds, and freezing temperatures.</p>
<p>flood</p> <p>2.6</p>	<p>A flood is caused by lots of rain falling in a short amount of time.</p>
<p>drought</p> <p>2.6</p>	<p>A drought is a long period of time without rain.</p>
<p>adapt</p> <p>2.7</p>	<p>Living things adapt or change as they interact with their surroundings, and they change when their environment changes. As the seasons change plants and animals change their behaviors.</p>
<p>camouflage</p> <p>2.7</p>	<p>Camouflage means to blend in with the surroundings or the environment for protection or as a disguise to eat other animals .</p>
<p>dormancy</p> <p>2.7</p>	<p>Dormancy is a period of inactivity.</p>
<p>hibernation</p> <p>2.7</p>	<p>Hibernation is when animals go into inactive periods in the cold temperatures of winter. They go into a deep sleep to survive the winter without food.</p>

migration

2.7

Migration is when animals **move from one place to another** as a result of temperature changes.