

Grade 3	Grade 4	Grade 5
<p>Standard 1 - The Nature of Science and Technology</p> <p><i>Students, working collaboratively, carry out investigations. They question, observe, and make accurate measurements. Students increase their use of tools, record data in journals, and communicate results through chart, graph, written, and verbal forms.</i></p>	<p>Standard 1 - The Nature of Science and Technology</p> <p><i>Students, working collaboratively, carry out investigations. They observe and make accurate measurements, increase their use of tools and instruments, record data in journals, and communicate results through chart, graph, written, and verbal forms.</i></p>	
<p>The Scientific View of the World</p> <p>3.1.1 Recognize and explain that when a scientific investigation is repeated, a similar result is expected.</p> <p>Scientific Inquiry</p> <p>3.1.2 Participate in different types of guided scientific investigations, such as observing objects and events and collecting specimens for analysis.</p> <p>3.1.3 Keep and report records of investigations and observations* using tools, such as journals, charts, graphs, and computers.</p> <p>3.1.4 Discuss the results of investigations and consider the explanations of others.</p> <p>* observation: gaining information through the use of one or more of the senses, such as sight, smell, etc.</p> <p>The Scientific Enterprise</p> <p>3.1.5 Demonstrate the ability to work cooperatively</p>	<p>The Scientific View of the World</p> <p>4.1.1 Observe and describe that scientific investigations generally work the same way in different places.</p> <p>Scientific Inquiry</p> <p>4.1.2 Recognize and describe that results of scientific investigations are seldom exactly the same. If differences occur, such as a large variation in the measurement of plant growth, propose reasons for why these differences exist, using recorded information about investigations.</p> <p>The Scientific Enterprise</p> <p>4.1.3 Explain that clear communication is an essential part of doing science since it enables scientists to inform others about their work, to expose their ideas to evaluation by other scientists, and to allow scientists to stay informed about scientific discoveries around the world.</p> <p>4.1.4 Describe how people all over the world have taken part in scientific investigation for many centuries.</p>	

<p>while respecting the ideas of others and communicating one's own conclusions about findings.</p> <p>Technology and Science</p> <p>3.1.6 Give examples of how tools, such as automobiles, computers, and electric motors, have affected the way we live.</p> <p>3.1.7 Recognize that and explain how an invention can be used in different ways, such as a radio being used to get information and for entertainment.</p> <p>3.1.8 Describe how discarded products contribute to the problem of waste disposal and that recycling can help solve this problem.</p>	<p>Technology and Science</p> <p>4.1.5 Demonstrate how measuring instruments, such as microscopes, telescopes, and cameras, can be used to gather accurate information for making scientific comparisons of objects and events. Note that measuring instruments, such as rulers, can also be used for designing and constructing things that will work properly.</p> <p>4.1.6 Explain that even a good design may fail even though steps are taken ahead of time to reduce the likelihood of failure.</p> <p>4.1.7 Discuss and give examples of how technology, such as computers and medicines, has improved the lives of many people, although the benefits are not equally available to all.</p> <p>4.1.8 Recognize and explain that any invention may lead to other inventions.</p> <p>4.1.9 Explain how some products and materials are easier to recycle than others.</p>	
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<p>Standard 2 - Scientific Thinking</p> <p><i>Students use a variety of skills and techniques when attempting to answer questions and solve problems. They describe their observations accurately and clearly, using numbers, words, and sketches, and are able to communicate their thinking to others.</i></p>	<p>Standard 2 - Scientific Thinking</p> <p><i>Students use a variety of skills and techniques when attempting to answer questions and solve problems. They describe their observations* accurately and clearly, using numbers, words, and sketches, and are able to communicate their thinking to others. They compare, explain, and justify both information and numerical functions.</i></p>	
<p>Computation and Estimation</p> <p>3.2.1 Add and subtract whole numbers* mentally, on paper, and with a calculator.</p> <p>* whole number: 0, 1, 2, 3, etc.</p> <p>Manipulation and Observation</p> <p>3.2.2 Measure and mix dry and liquid materials in prescribed amounts, following reasonable safety precautions.</p> <p>3.2.3 Keep a notebook that describes observations and is understandable weeks or months later.</p> <p>3.2.4 Appropriately use simple tools, such as clamps, rulers, scissors, hand lenses, and other technology, such as calculators and computers, to help solve problems.</p> <p>3.2.5 Construct something used for performing a task out of paper, cardboard, wood, plastic, metal, or existing objects.</p> <p>Communication Skills</p>	<p>Computation and Estimation</p> <p>4.2.1 Judge whether measurements and computations of quantities, such as length, area*, volume*, weight, or time, are reasonable.</p> <p>4.2.2 State the purpose, orally or in writing, of each step in a computation.</p> <p>* observation: gaining information through the use of one or more of the senses, such as sight, smell, etc.</p> <p>* area: a measure of the size of a two-dimensional region</p> <p>* volume: a measure of the size of a three-dimensional object</p> <p>Manipulation and Observation</p> <p>4.2.3 Make simple and safe electrical connections with various plugs, sockets, and terminals.</p> <p>Communication Skills</p> <p>4.2.4 Use numerical data to describe and compare</p>	

<p>3.2.6 Make sketches and write descriptions to aid in explaining procedures or ideas.</p> <p>Critical Response Skills</p> <p>3.2.7 Ask “How do you know?” in appropriate situations and attempt reasonable answers when others ask the same question.</p>	<p>objects and events.</p> <p>4.2.5 Write descriptions of investigations, using observations and other evidence as support for explanations.</p> <p>Critical Response Skills</p> <p>4.2.6 Support statements with facts found in print and electronic media, identify the sources used, and expect others to do the same.</p> <p>4.2.7 Identify better reasons for believing something than “Everybody knows that ...” or “I just know,” and discount such reasons when given by others.</p>	
<p>Standard 3 - The Physical Setting</p> <p><i>Students observe changes of Earth and the sky. They continue to explore the concepts of energy* and motion*.</i></p>	<p>Standard 3 - The Physical Setting</p> <p><i>Students continue to investigate changes of Earth and the sky and begin to understand the composition and size of the universe. They explore, describe, and classify materials, motion*, and energy*.</i></p>	
<p>The Universe</p> <p>3.3.1 Observe and describe the apparent motion of the sun and moon over a time span of one day.</p> <p>3.3.2 Observe and describe that there are more stars in the sky than anyone can easily count, but they are not scattered evenly.</p> <p>3.3.3 Observe and describe that the sun can be seen only in the daytime.</p> <p>3.3.4 Observe and describe that the moon looks a little different every day, but looks the same again about every four weeks.</p>	<p>The Universe</p> <p>4.3.1 Observe and report that the moon can be seen sometimes at night and sometimes during the day.</p> <p>* motion: the change in position of an object in a certain amount of time</p> <p>* energy: what is needed to make things move</p> <p>Earth and the Processes That Shape It</p>	

<ul style="list-style-type: none"> * energy: what is needed to make things move * motion: the change in position of an object in a certain amount of time 	<p>4.3.2 Begin to investigate and explain that air is a substance that surrounds us and takes up space, and whose movements we feel as wind.</p> <p>4.3.3 Identify salt as the major difference between fresh and ocean waters.</p> <p>4.3.4 Describe some of the effects of oceans on climate.</p> <p>4.3.5 Describe how waves, wind, water, and glacial ice shape and reshape Earth's land surface by the erosion* of rock and soil in some areas and depositing them in other areas.</p> <p>4.3.6 Recognize and describe that rock is composed of different combinations of minerals.</p> <p>4.3.7 Explain that smaller rocks come from the breakage and weathering of bedrock and larger rocks and that soil is made partly from weathered rock, partly from plant remains, and also contains many living organisms.</p> <p>4.3.8 Explain that the rotation of Earth on its axis every 24 hours produces the night-and-day cycle.</p> <p>4.3.9 Draw or correctly select drawings of shadows and their direction and length at different times of day.</p>	
<p>Earth and the Processes That Shape It</p> <p>3.3.5 Give examples of how change, such as weather patterns, is a continual process occurring on Earth.</p> <p>3.3.6 Describe ways human beings protect themselves from adverse weather conditions.</p> <p>3.3.7 Identify and explain some effects human activities have on weather.</p>		
<p>Matter* and Energy</p> <p>3.3.8 Investigate and describe how moving air and water can be used to run machines like windmills and waterwheels.</p> <ul style="list-style-type: none"> * matter: anything that has mass* and takes up space * mass: a measure of how much matter is in an object 	<p>* erosion: the process by which the products of weathering* are moved from one place to another</p> <p>* weathering: breaking down of rocks and other materials on Earth's surface by such processes as rain or wind</p>	
<p>Forces of Nature</p> <p>3.3.9 Demonstrate that things that make sound do so by vibrating, such as vocal cords and musical instruments.</p>	<p>Matter* and Energy</p> <p>4.3.10 Demonstrate that the mass* of a whole object is always the same as the sum of the masses of its parts.</p> <p>4.3.11 Investigate, observe, and explain that things that</p>	

	<p>give off light often also give off heat*.</p> <p>4.3.12 Investigate, observe, and explain that heat is produced when one object rubs against another, such as one's hands rubbing together.</p> <p>4.3.13 Observe and describe the things that give off heat, such as people, animals, and the sun.</p> <p>4.3.14 Explain that energy in fossil fuels* comes from plants that grew long ago.</p> <p>* matter: anything that has mass* and takes up space</p> <p>* mass: a measure of how much matter is in an object</p> <p>* heat: a form of energy characterized by random motion at the molecular level</p> <p>* fossil fuels: a fuel, such as natural gas or coal, that was formed a long time ago from decayed plants and animals</p> <p>Forces of Nature</p> <p>4.3.15 Demonstrate that without touching them, a magnet pulls all things made of iron and either pushes or pulls other magnets.</p> <p>4.3.16 Investigate and describe that without touching them, material that has been electrically charged pulls all other materials and may either push or pull other charged material.</p>	
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Standard 4 - The Living Environment

Students learn about an increasing variety of organisms. They use appropriate tools and identify similarities and differences among them. Students explore how organisms satisfy their needs in typical environments.

Diversity of Life

- 3.4.1 Demonstrate that a great variety of living things can be sorted into groups in many ways using various features, such as how they look, where they live, and how they act, to decide which things belong to which group.
- 3.4.2 Explain that features used for grouping depend on the purpose of the grouping.
- 3.4.3 Observe that and describe how offspring are very much, but not exactly, like their parents and like one another.

Interdependence of Life

- 3.4.4 Describe that almost all kinds of animals' food can be traced back to plants.
- 3.4.5 Give examples of some kinds of organisms that have completely disappeared and explain how these organisms were similar to some organisms living today.

Human Identity

- 3.4.6 Explain that people need water, food, air, waste removal, and a particular range of temperatures, just as other animals do.
- 3.4.7 Explain that eating a variety of healthful foods and

<p>getting enough exercise and rest help people stay healthy.</p> <p>3.4.8 Explain that some things people take into their bodies from the environment can hurt them and give examples of such things.</p> <p>3.4.9 Explain that some diseases are caused by germs and some are not. Note that diseases caused by germs may be spread to other people. Also understand that washing hands with soap and water reduces the number of germs that can get into the body or that can be passed on to other people</p>		
<p>Standard 5 - The Mathematical World</p> <p><i>Students apply mathematics in scientific contexts. Students make more precise and varied measurements when gathering data. Based upon collected data, they pose questions and solve problems. Students use numbers to record data and construct graphs and tables to communicate their findings.</i></p>		
<p>Numbers</p> <p>3.5.1 Select and use appropriate measuring units, such as centimeters (cm) and meters (m), grams (g) and kilograms (kg), and degrees Celsius (°C).</p> <p>3.5.2 Observe that and describe how some measurements are likely to be slightly different, even if what is being measured stays the same.</p> <p>Shapes and Symbolic Relationships</p> <p>3.5.3 Construct tables and graphs to show how values of one quantity are related to values of another.</p> <p>3.5.4 Illustrate that if 0 and 1 are located on a line, any</p>		

other number can be depicted as a position on the line.

Reasoning and Uncertainty

3.5.5 Explain that one way to make sense of something is to think of how it relates to something more familiar.

Standard 6 - Patterns in Science

Students work with an increasing variety of systems and begin to modify parts in systems and models and notice the changes that result. They question why change occurs.

Systems

- 3.6.1 Investigate how and describe that when parts are put together, they can do things that they could not do by themselves.
- 3.6.2 Investigate how and describe that something may not work if some of its parts are missing.

Models and Scale

- 3.6.3 Explain how a model of something is different from the real thing but can be used to learn something about the real thing.

Constancy and Change

- 3.6.4 Take, record, and display counts and simple measurements of things over time, such as plant or student growth.
- 3.6.5 Observe that and describe how some changes are very slow and some are very fast and that some of these changes may be hard to see and/or record.

