

ELEMENTARY SCIENCE GRADE 6 CURRICULUM

Course 50620

Sixth grade students will learn the principles and practices of science in an integrated program. They study topics from Biology, Physical science, Earth science, and Ecology. Student will conduct investigations posing hypotheses, making observations, using scientific tools to collect data, analyze data, represent findings in models and draw conclusions. Major topics to be studied are: Earth structures, rocks, movement of the Earth's crust, earthquakes, volcanos, cells and cell structure, heredity, matter, atoms, and chemical bonding.

SIXTH GRADE SCIENCE OUTLINE:

Goals	Skills	Summative Assessments	Time Frame	Main Resources
<ul style="list-style-type: none"> • Learn about the structure of the Earth. • Explore movement and processes of the Earth's crust like earthquakes and volcanos. • Identify the basic parts of a cell and describe their functions. • Know the processes by which cells maintain constant conditions of life. • Be able to explain how cells reproduce themselves. • Describe the characteristics and states of matter. • Learn the basics of atoms, elements, chemical bonds, and chemical reactions. 	<ul style="list-style-type: none"> • Design and conduct a scientific investigation and understand that current scientific knowledge guides scientific investigations. • Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and allows scientists to analyze and quantify results of investigations. • Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories. • Analyze alternative explanations and understand that science advances through legitimate skepticism. • Use mathematics in all aspects of scientific inquiry. • Understand that scientific investigations may result in new ideas for study, or procedures for an investigation or new technologies. 	Chapter Tests	1-year	Pearson: Interactive Science

SIXTH GRADE SCIENCE MAP:

TIME FRAME	BIG IDEAS	CONCEPTS	ESSENTIAL QUESTIONS	STANDARDS	OBJECTIVES	DIFFERENTIATION	ASSESSMENT
Unit 1/ Book 1 (Weeks 1-12)	<ul style="list-style-type: none"> • Scientists use scientific inquiry to explain the natural world. • Scientists use mathematics in many ways. • The Earth is a continually changing planet. • The history of the Earth is contained in its rocks. • Earth's land, water, air and life form a system. 	<p>Chapter 1 –</p> <ol style="list-style-type: none"> 1. The Earth System 2. Earth's Interior 3. Convection and the Mantle 4. Exploring Earth's Surface 5. Models of Earth 6. Topographic Maps <p>Chapter 2 -</p> <ol style="list-style-type: none"> 7. Properties of Minerals 8. Classifying Rocks 9. Igneous Rocks 10. d. Sedimentary Rocks 11. Metamorphic Rocks 12. The Rocks Cycle <p>Chapter 3 –</p> <ol style="list-style-type: none"> 13. Drifting Continents 14. Sea-Flooring Spreading 15. The Theory of Plate Tectonics <p>Chapter 4 –</p> <ol style="list-style-type: none"> 16. Forces in Earth's Crust 17. Earthquakes and Seismic Waves 18. Monitoring Earthquakes <p>Chapter 5 –</p> <ol style="list-style-type: none"> 19. Volcanoes and Plate Tectonics 	<ul style="list-style-type: none"> • Chapter 1 - What is the structure of the Earth? • Chapter 2 - How do rocks form? • Chapter 3 - How do moving plates change Earth's crust? • Chapter 4 - Why do earthquakes occur more often in some places than in others? • Chapter 5 - How does a volcano erupt? 	<p>3.1.6.B6 Understand how theories are developed. Identify questions that can be answered through scientific investigations and evaluate the appropriateness of questions. Design and conduct a scientific investigation and understand that current scientific knowledge guides scientific investigations. Describe relationships using inference and prediction. Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and allows scientists to analyze and quantify results of investigations. Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments, and are based on scientific principles, models, and theories. Analyze alternative explanations and understanding that science advances through legitimate skepticism. Use mathematics in all aspects of scientific inquiry. Understand that scientific investigations may result in new ideas for study, new methods, or procedures for an investigation or new technologies to improve data collection.</p> <p>S6.A.1.1.2 Use evidence to support inferences and claims about an investigation or relationship (e.g., common usage of simple machines).</p>	<ul style="list-style-type: none"> • Chapter 1 - Students will draw conclusions, interpret data, communicate, classify, measure, and make models of Earth. • Chapter 2 - Students will form operational definitions, observe, interpret data, infer, observe, and classify minerals and rocks. • Chapter 3 - Students will infer, develop hypotheses, and calculate plate tectonics. • Chapter 4 - Students will make models, infer, and predict earthquakes. • Chapter 5 - Students will develop hypotheses, communicate, and predict volcanoes. 	<p>Providing extended time as needed, on hand resources such as guided notes, study guides and one-on-one tutoring.</p>	<p>Students will be assessed at the end of each lesson with a quiz, and a final chapter test.</p>

		<p>20. Volcanic Eruptions 21. Volcanic Landforms</p>		<p>S6.A.1.1.3 Predict the outcome of an experiment based on previously collected data.</p> <p>S6.A.1.2.1 Use evidence, observations, or explanations to make inferences about changes in systems over time.</p> <p>S6.A.2.1.1 Use evidence, observations, or a variety of scales to describe relationships.</p> <p>S6.D.1.1.2 Identify the three basic rock types and describe their formation (i.e., igneous [granite, basalt, obsidian, and pumice]; sedimentary [limestone, sandstone, shale, and coal]; and metamorphic [slate, quartzite, marble, and gneiss]).</p>			
<p>Unit 2/ Book 2 (Weeks 13-24)</p>	<ul style="list-style-type: none"> • Living things are alike yet different. • Living things are made of cells. • Genetic information passes from parents to offspring. • Structures in living things are related to their functions. • Living things maintain constant conditions inside their bodies. 	<p>Chapter 1 – 1. What is life? 2. Classifying Life 3. Domains and Kingdoms 4. Evolution and Classification</p> <p>Chapter 2 – 5. Discovering Cells 6. Looking inside cells 7. Chemical compounds in cells 8. The cell in its environment</p> <p>Chapter 3 – 9. Photosynthesis 10. Cellular respiration 11. Cell division</p>	<ul style="list-style-type: none"> • Chapter 1 - How are living things alike yet different? • Chapter 2 - What are cells made of? • Chapter 3 - How do living things get energy? • Chapter 4 - Why don't offspring always look like their parents? • Chapter 5 - What does DNA do? 	<p>3.1.6.A9 Understand how theories are developed. Identify questions that can be answered through scientific investigations and evaluate the appropriateness of questions. Design and conduct a scientific investigation and understand that current scientific knowledge guides scientific investigations. Describe relationships using inference and prediction. Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and allows scientists to analyze and quantify results of investigations. Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments,</p>	<ul style="list-style-type: none"> • Chapter 1 - Students will control variables, observe, classify, and make inferences about living things. • Chapter 2 - Students will measure, make models, draw conclusions, and make predictions about cells. • Chapter 3 - Students will classify, control variables, and interpret data about cells and energy. • Chapter 4 - Students will predict, draw 	<p>Providing extended time as needed, on hand resources such as guided notes, study guides and one-on-one tutoring.</p>	<p>Students will be assessed at the end of each lesson with a quiz, and a final chapter test.</p>

		<p>Chapter 4 – 12.What is heredity? 13.Probability and Heredity 14.Patterns of inheritance 15.Chromosomes and Inheritance.</p> <p>Chapter 5- 16.The genetic code 17.How cells make proteins? 18.Mutations 19.Human Inheritance 20.Advance in genetics</p>		<p>and are based on scientific principles, models, and theories. Analyze alternative explanations and understanding that science advances through legitimate skepticism. Use mathematics in all aspects of scientific inquiry. Understand that scientific investigations may result in new ideas for study, new methods, or procedures for an investigation or new technologies to improve data collection.</p> <p>S6.A.1.1.1 Explain how certain questions can be answered through scientific inquiry and/or technological design (e.g., consumer product testing, common usage of simple machines, modern inventions).</p> <p>S6.A.1.1.2 Use evidence to support inferences and claims about an investigation or relationship (e.g., common usage of simple machines).</p> <p>S6.A.1.1.3 Predict the outcome of an experiment based on previously collected data.</p> <p>S6.A.1.2.1 Use evidence, observations, or explanations to make inferences about changes in systems over time.</p> <p>S6.A.1.2.2 Identify variables that cause changes in natural or human-made systems.</p> <p>S6.A.2.1.1 Use evidence, observations, or a variety of scales to describe relationships.</p>	<p>conclusions, interpret data, design experiments based on genetics and heredity.</p> <ul style="list-style-type: none"> Chapter 5 - Students will make inferences, design experiments, calculate, and draw conclusions about DNA. 		
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Unit 3/ Book 3 (Weeks 25-36)	<ul style="list-style-type: none"> Scientists use scientific inquiry to explain the natural world. 	Chapter 1 – 1. Describing matter 2. Classifying matter	<ul style="list-style-type: none"> Chapter 1 - How is matter described? 	3.2.6.A3. Explain and give examples of how mass is conserved in a closed system.	<ul style="list-style-type: none"> Chapter 1 - Students will classify, make inferences, 	Providing extended time as needed, on hand resources such as guided notes,	Students will be assessed at the end of each lesson with a

	<ul style="list-style-type: none"> • Scientists use mathematics in many ways. • Atoms are the building blocks of matter. • Mass and energy are conserved during physical and chemical changes. 	<p>3. Measuring matter 4. Changes in matter</p> <p>Chapter 2 – 5. States of matter 6. Changes of state 7. Gas behavior</p> <p>Chapter 3 – 8. Introduction to atoms 9. Organizing the elements 10. Metals 11. Nonmetals and metalloids 12. Radioactive Elements</p> <p>Chapter 4 – 13. Atoms, bonding, and the Periodic table 14. Ionic bonds 15. Covalent bonds 16. Bonding in metals.</p>	<ul style="list-style-type: none"> • Chapter 2 - Why does a substance change states? • Chapter 3 - How is the periodic table organized? • Chapter 4 - How can bonding determine the properties of a substance? • Chapter 5 - How is matter conserved in a chemical reaction? 	<p>3.2.6.A4. Differentiate between physical changes and chemical changes.</p> <p>3.2.6.A5. CONSTANCY AND CHANGE Identify characteristic properties of matter that can be used to separate one substance from the other.</p> <p>3.2.6.A6. See Science as Inquiry in the Introduction for grade level indicators.</p>	<p>calculate, and draw conclusions about matter.</p> <ul style="list-style-type: none"> • Chapter 2 - Students will make inferences, predict, and graph data about solids, liquids, and gases. • Chapter 3 - Students will make models, predict, make inferences, classify and calculate elements in the periodic table. • Chapter 4 - Students will predict, interpret data, graph and classify atoms. • Chapter 5 - Students will graph, make models, and predict chemical reactions. 	<p>study guides and one-on-one tutoring.</p>	<p>quiz, and a final chapter test.</p>
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