

HADDONFIELD PUBLIC SCHOOLS
Curriculum Map for Science, Grade 3, Chemical Tests

<i>8 Week Unit of Study</i>			
<p>Targeted Standard(s): NJCCCS 5.1. All students will develop problem-solving, decision-making and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. 5.6. All students will gain an understanding of the structure and behavior of matter Interdisciplinary: NJCCCS Technological Literacy 8.1.4A, 8.1.4B; Career Education and Life Skills/Critical Thinking 9.2.4A, 9.2.4C, 9.2.4D</p>			
<p>Enduring Understandings: Students will use critical thinking skills to solve mysteries related to five unknown solids. By conducting a variety of physical and chemical tests, students explore some concepts basic to general chemistry.</p>			
<p>Essential Questions: What are chemicals? How do we find out about an unknown? How do the test results vary? How do the results change when chemicals are tested with vinegar, iodine, red cabbage juice and heat? What is the process of evaporation and filtration?</p>			
Core Content/Objectives		Instructional Actions	
Concepts <i>What students will know</i>	Skills <i>What students will be able to do</i>	Activities/Strategies <i>Learning Activities/ Differentiation Interdisciplinary Connections</i>	Assessment <i>How learning will be assessed</i>
<ul style="list-style-type: none"> • Common household chemicals have different physical and chemical properties. • Chemicals undergo changes in form, color, or texture when they are mixed together, separated, or heated. • Some chemicals can be identified by their interaction with water, vinegar, iodine, red cabbage juice, and heat. • Different types of mixtures, such as solutions or suspensions, are created when solids are combined with water. • Evaporation and filtration are methods for separating mixtures of solids and liquids. • Some chemicals can be classified as acids, bases, or neutral 	<ul style="list-style-type: none"> • Raise questions about the world around them and be willing to seek answers through making careful observations and experimentation. • Observe and describe properties of materials. • Learn to perform different physical and chemical tests. (Develop strategies and skills for information-gathering and problem-solving, using appropriate tools and technologies.) • Observe and describe Predict, observe, describe, and record results of tests. (Keep records that describe observations, 	<ul style="list-style-type: none"> • Students discuss what they know about chemicals. • Students learn about the importance of safety in the science lab. • Observe and record properties of an unknown. • Complete a class properties table. • Test the unknowns with water, vinegar, iodine, red cabbage juice, and heat. • Filter the water mixtures. (Observe that water can be a liquid or a solid and can change from one form to the other and the mass remains the same. Recognize that water, as an example of matter, can exist as a solid, liquid or gas and can be transformed from one state to another by heating or cooling.) 	<ul style="list-style-type: none"> • Teacher observations • Science journals • Record sheets • Class discussions • Final test results table • Post unit student survey • Post-Unit Assessment and/or Additional Assessments which are benchmarked to the curriculum map's standards.

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<p>substances by their reactions with red cabbage juice.</p>	<p>carefully distinguish actual observations from ideas and speculations, and are understandable weeks and months later. Show that not all materials respond the same way to what is done to them. Combine two or more materials and show that the new material may have properties that are different from the original material.)</p> <ul style="list-style-type: none"> • Analyze and draw conclusions from the results of tests. • Compare and contrast test results to define the properties of household chemicals so they can be identified. • Support conclusions with reasons based on experiences. (Identify the evidence used in an explanation.) • Communicate results and reflect on experiences through writing and discussion. (Know that when solving a problem it is important to plan and get ideas and help from other people.) • Apply previously learned knowledge and skills to new situations to solve a problem. (Recognize that when a science investigation is replicated, very similar results are expected.) • Read to enhance understanding of chemistry concepts. • Develop proper lab techniques to ensure safety and avoid contamination. 	<ul style="list-style-type: none"> • Examine crystals with a magnifying glass. (Sort materials based on physical characteristics that can be seen by using magnification.) • Record results on a test results table. • Identify the unknown chemicals. 	
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	<ul style="list-style-type: none">• Recognize that conducting science activities requires an awareness of potential hazards and the need for safe practices.• Understand and practice safety procedures for conducting science investigations.		
Resources/Technology Carolina Biological Kit: <i>Chemical Tests</i>			



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Curriculum Map for Science, Grade 3, Plant Growth and Development

<i>8 Week Unit of Study</i>			
<p>Targeted Standard(s): NJCCCS Science 5.1 All students will develop problem-solving, decision-making and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. 5.5 All students will gain an understanding of the structure, characteristics, and basic needs of organisms and will investigate the diversity of life. Interdisciplinary: NJCCCS Technological Literacy 8.1.4A, 8.1.4B; Career Education and Life Skills/Critical Thinking 9.2.4A, 9.2.4C, 9.2.4D</p>			
<p>Enduring Understandings: Students will experience the complete life cycle of a plant in a very short time and learn that the cycle includes germination, growth, development of specialized parts, and even death with the promise of new life in the seed.</p>			
<p>Essential Questions: What is inside a seed? What is the purpose of thinning and transplanting? How does a plant grow? Why are bees important? How do bees pollinate?</p>			
Core Content/Objectives		Instructional Actions	
Concepts <i>What students will know</i>	Skills <i>What students will be able to do</i>	Activities/Strategies <i>Learning Activities/ Differentiation Interdisciplinary Connections</i>	Assessment <i>How learning will be assessed</i>
<ul style="list-style-type: none"> • Many plants follow a life cycle that begins with growth from a seed and proceeds through the production of seeds. • Plants have distinct stages in their life cycle. • To live and grow, plants need light, water and nutrients from the soil. • Flowering plants must be pollinated in order to produce seeds. • Many plants are pollinated by bees. • A flower's pollen sticks to a bee, but some rubs off when the bee feeds at other flowers. • One seed produces one plant; one plant can produce many seeds. 	<ul style="list-style-type: none"> • Raise questions about the world around them and be willing to seek answers through making careful observations and experimentation. • Recognize that conducting science activities requires an awareness of potential hazards and the need for safe practices. • Understand and practice safety procedures for conducting science investigations. • Plant and care for <i>Brassica rapa</i>. • Develop strategies and skills for information-gathering and problem-solving, using appropriate tools and technologies. (thinning and transplanting) 	<ul style="list-style-type: none"> • Students discuss what they know about plants. • Compare a dry and soaked lima bean seed. • Draw and label parts of a bean seed. • Plant Wisconsin Fast Plants Seeds. • Conduct the process of thinning and transplanting of seeds. • Measure plant growth to the nearest centimeter. • Analyze data on growth spurt. • Observe true leaves and flower buds. • Observe dried bees. Draw, label and make bee sticks as a tool for pollination. • Dissect a flower. 	<ul style="list-style-type: none"> • Teacher observations • Science journals • Record sheets • Class discussions • Plant life cycle sequence worksheet • Post unit student survey • Post-Unit Assessment and/or Additional Assessments which are benchmarked to the curriculum map's standards.

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	<ul style="list-style-type: none"> • Observe, describe, and record changes in plants. (Keep records that describe observations, carefully distinguish actual observations from ideas and speculations, and are understandable weeks and months later.) • Compare and discuss changes occurring in plants over time. • Measure and record the growth of plants. • Use graphs to display and compare growth patterns. (Identify the evidence used in an explanation.) • Predict future growth from observations and measurements. • Recognize that when a science investigation is replicated, very similar results are expected. • Know that when solving a problem it is important to plan and get ideas and help from other people. • Read to learn more about plants. • Identify the roles that organisms may serve in a food chain. • Communicate results and reflect on experiences through writing, drawing and discussion. 		
<p>Resources/Technology Carolina Biological Kit: <i>Plant Growth and Development</i></p>			

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Curriculum Map for Science, Grade 3, The Solar System

8 Week Unit of Study			
<p>Targeted Standard(s): NJCCCS Science</p> <p>5.1 All students will develop problem-solving, decision-making and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results.</p> <p>5.2 All students will develop an understanding of how people of various cultures have contributed to the advancement of science and technology, and how major discoveries and events have advanced science and technology.</p> <p>5.3 All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.</p> <p>5.7 All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations.</p> <p>5.9 All students will gain an understanding of the origin, evolution, and structure of the universe.</p> <p>Interdisciplinary: NJCCCS Technological Literacy 8.1.4A, 8.1.4B; Career Education and Life Skills/Critical Thinking 9.2.4A, 9.2.4C, 9.2.4D</p>			
<p>Enduring Understandings (<i>The big ideas</i>):</p> <p>Students will explore the basic principles about how the sun, moon and planets move.</p>			
<p>Essential Questions:</p> <p>What is the earth's size in relation to the universe?</p> <p>What observations can be made about the sky, sun and moon?</p> <p>How can you tell earth's shape?</p> <p>What are the names of the planets and how are they classified?</p> <p>What holds our solar system together?</p> <p>What changes as the earth revolves and rotates?</p> <p>What are the phases of the moon?</p> <p>How does the earth's temperature support life and the moon's doesn't?</p>			
Core Content/Objectives		Instructional Actions	
Concepts <i>What students will know</i>	Skills <i>What students will be able to do</i>	Activities/Strategies <i>Learning Activities/ Differentiation Interdisciplinary Connections</i>	Assessment <i>How learning will be assessed</i>
<ul style="list-style-type: none"> Comparing objects of ever-increasing size helps us to imagine the immensity of the universe. The sun is a star, a huge ball of glowing gases that gives off heat and light. Earth's moon is a rocky ball that orbits earth and reflects sunlight. Earth is a spherical planet. Earth is one of eight planets that revolve around the sun. 	<ul style="list-style-type: none"> Read the book, <u>The Blue Whale is The Biggest Thing There Is.</u> Construct a sundial. Compare two different size balls. Make a model of the moon. Make a scale model of the planets distances from the sun. Read the book, <u>The Magic School Bus- Lost In The</u> 	<ul style="list-style-type: none"> Students will discuss and compare the sizes of objects in the universe. Students will use materials to construct a sundial and observe the sun's position. Students will compare two different size balls at different distances. Students will make a model of the moon and recognize the relationship between the sun and earth. 	<ul style="list-style-type: none"> Teacher observations Science journals Record sheets Class discussions Brainstorming lists Post-Unit Assessment and/or Additional Assessments which are benchmarked to the curriculum map's standards.

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<ul style="list-style-type: none"> • The solar system includes: the sun, planets, the planets' moons, and asteroids. • Gravity keeps the whole solar system orbiting the sun. • Seasonal climates are the result of the earth's tilt as it orbits the sun. • Earth rotates from west to east and causes day and night. • Earth revolves around the sun once a year. • The phases of the moon are what we see of the moon's lighted half as it orbits around the earth. • Recognize and describe the phases of the moon. • A planet's atmosphere and distance from the sun affects its temperature. 	<p><u>Solar System.</u></p> <ul style="list-style-type: none"> • Explore how gravity holds the solar system together using a ball and string. • Perform several experiments demonstrating the earth's rotation and orbiting. • Record the various phases of the moon. • Recognize that the various planets have different atmospheres. • Describe Earth as one of several planets that orbit the sun and the moon as a satellite of the Earth. 	<ul style="list-style-type: none"> • Students will arrange planets in correct order of distances from the sun. • Students will discuss the information gained from the reading of <i>The Magic School Bus</i>. • Students will use a ball and string to assist in the comprehension of how the planets move around the sun. • Students will conduct various shadow experiments. • Students will complete a phases of the moon calendar for the month. • Students will conduct an experiment using cups and thermometers. • Observe patterns that result from the Earth's position relative to the sun and rotation of the Earth on its axis. • Observe and record short-term and long-term changes in the night sky. • Visit a planetarium 	
<p>Resources/Technology: Scholastic Pub. Student Resource Book: <i>The Solar System</i></p>			

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Curriculum Map for Science, Grade 3, Sound

<i>8 Week Unit of Study</i>			
<p>Targeted Standard(s): NJCCCS Science 5.1.A, B, C - All students will develop problem-solving, decision-making and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results. 5.7.A - All students will gain an understanding of natural laws as they apply to motion, forces, and energy transformations Interdisciplinary: NJCCCS Technological Literacy 8.1.4A, 8.1.4B; Career Education and Life Skills/Critical Thinking 9.2.4A, 9.2.4C, 9.2.4D</p>			
<p>Enduring Understandings: Students will explore some basic principles about how sound is produced, how sound travels, and how the frequency of vibrations is related to pitch. Students will also investigate the variables that affect the pitch of a sound.</p>			
<p>Essential Questions: What causes different sounds Why do some sounds hurt our ears? How is sound produced? How does sound travel? How is the frequency of vibrations related to pitch?</p>			
Core Content/Objectives		Instructional Actions	
Concepts <i>What students will know</i>	Skills <i>What students will be able to do</i>	Activities/Strategies <i>Learning Activities/ Differentiation Interdisciplinary Connections</i>	Assessment <i>How learning will be assessed</i>
<ul style="list-style-type: none"> • Sounds are produced by vibrating objects and vibrating columns of air. • Pitch and volume are two characteristics of sound. • Changing the way an object vibrates can change the pitch and volume of the sound produced. • Pitch is determined by the frequency of the vibrations; volume is determined by the amplitude of the vibrations. • Changing the length, tension, or thickness of a string affects the frequency of vibration and, therefore, the pitch of the sound produced. • The human ear has a membrane 	<ul style="list-style-type: none"> • Perform experiments with sound. • Describe the results of investigations with sound. • Compare and discuss the volume and pitch of the sounds produced. • Communicate results through writing and with graphs. • Reflect on experiences with sound through writing and discussion. • Use the results of previous experiments with sound to predict outcomes in new situations. (Recognize that when a science investigation is replicated, very similar results 	<ul style="list-style-type: none"> • Students will discuss frequency, pitch, and vibration and investigate these areas using a tuning fork. • Students will explore how sound travels. • Students will make sounds with nails and rulers. • Complete sound tables based on observations of sound and vibrations. (Keep records that describe observations, carefully distinguish actual observations from ideas and speculations, and are understandable weeks and months later.) • Assemble a slide whistle. • Graph observations of slide whistle pitch. • Assemble a straw reed instrument. 	<ul style="list-style-type: none"> • Teacher observations • Science journals • Record sheets • Class discussions • Instrument design • Post unit student survey • Post-Unit Assessment and/or Additional Assessments which are benchmarked to the curriculum map's standards.

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<p>that vibrates when sound reaches it; the ear and the brain translate these vibrations into the sensation of sound.</p> <ul style="list-style-type: none"> • Sound is produced by the human vocal cords as air moves through the tightened cords. • Recognize that changes in the speed or direction of a moving object are caused by force and that the greater the force, the greater the change in motion will be. 	<p>are expected.)</p> <ul style="list-style-type: none"> • Apply previously learned concepts and skills to design new sound-producing devices. • Read to obtain more information about sound, hearing, and the vocal cords. 	<ul style="list-style-type: none"> • Make a model eardrum. • Explore sounds from a string. • Experiment with different strings and observe the differences in sounds produced. • Learn about the human vocal cords. 	
<p>Resources/Technology Carolina Biological Kit: <i>Sound</i></p>			