

Inquiry Investigations™
Chemistry - A Closer Look at Matter MODULE - 1287240
Grades: 7-10

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Colorado K-12 Academic Standards
Science
Grade 7

STANDARD	CO.1. Students apply the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.
STRAND/BENCHMARK	1.2. Use appropriate tools, technologies and metric measurements to gather and organize data and report results <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity

		<p>1: Observing Temperature Change in a Chemical Reaction</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	1.3.	<p>Interpret and evaluate data in order to formulate logical conclusions</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction

		<ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	1.6.	<p>Communicate results of their investigations in appropriate ways (for example: written reports, graphic displays, oral presentations)</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts

		<ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass Virtual Laboratory: Titrating an Acid of Unknown Concentration
STANDARD	CO.2.	Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)
STRAND/BENCHMARK	2.1.	<p>Physical properties of solids, liquids, gases and the plasma state and their changes can be explained using the particulate nature of matter model</p> <ul style="list-style-type: none"> Teacher Resource CD: Matter - Physical Properties and Changes
STRAND/BENCHMARK	2.2.	<p>Mixtures of substances can be separated based on their properties (for example: solubilities, boiling points, magnetic properties, densities and specific heat)</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification
STRAND/BENCHMARK	2.3.	<p>Mass is conserved in a chemical or physical change</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass Teacher Resource CD: Matter - Chemical Properties and Changes
STRAND/BENCHMARK	2.5.	<p>All matter is made up of atoms that are comprised of protons, neutrons and electrons and when a substance is made up of only one type of atom it is an element</p>

		<ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Teacher Resource CD: Matter - Chemical Properties and Changes • Teacher Resource CD: Matter - Physical Properties and Changes
STRAND/BENCHMARK	2.6.	<p>When two or more elements are combined a compound is formed which is made up of molecules</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Teacher Resource CD: Matter - Chemical Properties and Changes • Teacher Resource CD: Matter - Physical Properties and Changes
STRAND/BENCHMARK	2.8.	<p>That there are different forms of energy and those forms of energy can be transferred and stored (for example: kinetic, potential) but</p>

		<p>total energy is conserved</p> <ul style="list-style-type: none"> Teacher Resource CD: Matter - Physical Properties and Changes
STANDARD	CO.3.	Life Science: Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment. (Focus: Biology--Anatomy, Physiology, Botany, Zoology, Ecology)
STRAND/BENCHMARK	3.5.	<p>Photosynthesis and cellular respiration are basic processes of life (for example, set up a terrarium or aquarium and make changes such as blocking out light)</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction
STANDARD	CO.4.	Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)
STRAND/BENCHMARK	4.12.	<p>The ocean has a certain composition and physical characteristics (for example: currents, waves, features of the ocean floor, salinity, and tides)</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts Chemistry - A Closer Look at Matter: Unit 3 Lab 10

		<p>Activity 2: Chemical Reactions of Acids with a Metal</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 3 Lab 10 <p>Activity 3: Production of a Salt - Neutralization Reaction</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 3 Lab 11 <p>Activity 1: The Traffic Light Reaction</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction Chemistry - A Closer Look at Matter: Unit 4 Lab 12 <p>Activity 1: Water Purification</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 4 Lab 12 <p>Activity 2: Demonstrating Conservation of Mass</p> <ul style="list-style-type: none"> Virtual Laboratory: Titrating an Acid of Unknown Concentration
STANDARD	CO.5.	Students understand that the nature of science involves a particular way of building knowledge and making meaning of the natural world.
STRAND/BENCHMARK	5.1.	A controlled experiment must have comparable results when repeated <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction
STRAND/BENCHMARK	5.4.	Models can be used to predict change (for example: computer simulation, video sequence, stream table) <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents

Colorado K-12 Academic Standards
Science
Grade 8

STANDARD	CO.1.	Students apply the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.
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STRAND/BENCHMARK	1.2.	<p>Use appropriate tools, technologies and metric measurements to gather and organize data and report results</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass
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		<ul style="list-style-type: none"> Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	1.3.	<p>Interpret and evaluate data in order to formulate logical conclusions</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction Chemistry - A Closer Look at Matter: Unit 4 Lab 12

		<p>Activity 1: Water Purification</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 4 Lab 12 <p>Activity 2: Demonstrating Conservation of Mass</p> <ul style="list-style-type: none"> Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	1.6.	<p>Communicate results of their investigations in appropriate ways (for example: written reports, graphic displays, oral presentations)</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity

		<p>1: An Exothermic Reaction</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass Virtual Laboratory: Titrating an Acid of Unknown Concentration
STANDARD	CO. 2.	Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)
STRAND/BENCHMARK	2.1.	<p>Physical properties of solids, liquids, gases and the plasma state and their changes can be explained using the particulate nature of matter model</p> <ul style="list-style-type: none"> Teacher Resource CD: Matter - Physical Properties and Changes
STRAND/BENCHMARK	2.2.	<p>Mixtures of substances can be separated based on their properties (for example: solubilities, boiling points, magnetic properties, densities and specific heat)</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification
STRAND/BENCHMARK	2.3.	<p>Mass is conserved in a chemical or physical change</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass Teacher Resource CD: Matter - Chemical Properties and Changes
STRAND/BENCHMARK	2.5.	<p>All matter is made up of atoms that are comprised of protons, neutrons and electrons and when a substance is made up of only one type of atom it is an element</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity

		<p>1: Examining Elements</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction Teacher Resource CD: Matter - Chemical Properties and Changes Teacher Resource CD: Matter - Physical Properties and Changes
STRAND/BENCHMARK	2.6.	<p>When two or more elements are combined a compound is formed which is made up of molecules</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction Teacher Resource CD: Matter - Chemical Properties and Changes Teacher Resource CD: Matter - Physical Properties and Changes
STRAND/BENCHMARK	2.8.	<p>That there are different forms of energy and those forms of energy can be transferred and stored (for example: kinetic, potential) but total energy is conserved</p> <ul style="list-style-type: none"> Teacher Resource CD: Matter - Physical Properties and Changes
STANDARD	CO.3.	<p>Life Science: Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment. (Focus: Biology--Anatomy, Physiology, Botany, Zoology, Ecology)</p>
STRAND/BENCHMARK	3.5.	<p>Photosynthesis and cellular respiration are basic processes of life (for example, set up a terrarium or aquarium and make changes such as blocking out light)</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction

STANDARD	CO.4. Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space. (Focus: Geology, Meteorology, Astronomy, Oceanography)
STRAND/BENCHMARK	<p data-bbox="480 306 1256 380">4.12. The ocean has a certain composition and physical characteristics (for example: currents, waves, features of the ocean floor, salinity, and tides)</p> <ul data-bbox="591 426 1256 1879" style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity

		<p>2: An Endothermic Reaction</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass Virtual Laboratory: Titrating an Acid of Unknown Concentration
STANDARD	CO.5.	Students understand that the nature of science involves a particular way of building knowledge and making meaning of the natural world.
STRAND/BENCHMARK	5.1.	<p>A controlled experiment must have comparable results when repeated</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction
STRAND/BENCHMARK	5.4.	<p>Models can be used to predict change (for example: computer simulation, video sequence, stream table)</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents

Colorado K-12 Academic Standards
Science
Grade 9

STANDARD	CO.1.	Students apply the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.
STRAND/BENCHMARK	1.1.	<p>Ask questions and state hypotheses using prior scientific knowledge to help design and guide development and implementation of a scientific investigation</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds

		<ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	1.2.	<p>Select and use appropriate technologies to gather, process, and analyze data and to report information related to an investigation</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases

		<ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	1.5.	<p>Construct and revise scientific explanations and models, using evidence, logic, and experiments that include identifying and controlling variables</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity

		<p>2: Forming Covalent Bonds</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	1.6.	Communicate and evaluate scientific thinking that leads to particular conclusions

- Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions
- Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds
- Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds
- Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases
- Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt
- Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds
- Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents
- Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter
- Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter
- Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements
- Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table
- Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures
- Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water
- Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction
- Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law
- Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts
- Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal
- Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction
- Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction
- Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction
- Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction
- Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction
- Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction
- Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction
- Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction
- Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification
- Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass
- Virtual Laboratory: Titrating an Acid of Unknown

		Concentration
STANDARD	CO.2.	Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)
STRAND/BENCHMARK	2.1.	<p>Elements can be organized by their physical and chemical properties (Periodic Table)</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Teacher Resource CD: Matter - Physical Properties and Changes
STRAND/BENCHMARK	2.2.	<p>The spatial configuration of atoms and the structure of the atoms in a molecule determine the chemical properties of the substance</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction

		<ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Teacher Resource CD: Matter - Chemical Properties and Changes • Teacher Resource CD: Matter - Physical Properties and Changes • Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	2.3.	<p>There are observable and measurable physical and chemical properties that allow one to compare, contrast, and separate substances (for example: pH, melting point, conductivity, magnetic attraction)</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity

		<p>1: The Traffic Light Reaction</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Teacher Resource CD: Matter - Chemical Properties and Changes • Teacher Resource CD: Matter - Physical Properties and Changes • Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	2.4.	<p>Word and chemical equations are used to relate observed changes in matter to its composition and structure (for example: conservation of matter)</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Teacher Resource CD: Matter - Chemical Properties and Changes
STRAND/BENCHMARK	2.8.	<p>Quantities that demonstrate conservation of mass and conservation of energy in physical interactions can be measured and calculated</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass

		<ul style="list-style-type: none"> Teacher Resource CD: Matter - Chemical Properties and Changes
STANDARD	CO.3.	Life Science: Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment. (Focus: Biology--Anatomy, Physiology, Botany, Zoology, Ecology)
STRAND/BENCHMARK	3.2.	<p>There is a relationship between the processes of photosynthesis and cellular respiration (for example: in terms of energy and products)</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction
STRAND/BENCHMARK	3.8.	<p>Certain properties of water sustain life (for example: polarity, cohesion, solubility)</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification Teacher Resource CD: Matter - Physical Properties and Changes
STANDARD	CO.5.	Students understand that the nature of science involves a particular way of building knowledge and making meaning of the natural world.
STRAND/BENCHMARK	5.2.	<p>The scientific way of knowing uses a critique and consensus process (for example: peer review, openness to criticism, logical arguments, skepticism)</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water

		<ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	5.3.	<p>Graphs, equations or other models are used to analyze systems involving change and constancy (for example: comparing the geologic time scale to shorter time frame, exponential growth, a mathematical expression for gas behavior; constructing a closed ecosystem such as an aquarium)</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction

		<ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification
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Colorado K-12 Academic Standards
Science
Grade 10

STANDARD	CO.1.	Students apply the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.
STRAND/BENCHMARK	1.1.	<p>Ask questions and state hypotheses using prior scientific knowledge to help design and guide development and implementation of a scientific investigation</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction

		<ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	1.2.	<p>Select and use appropriate technologies to gather, process, and analyze data and to report information related to an investigation</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction

		<ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	1.5.	<p>Construct and revise scientific explanations and models, using evidence, logic, and experiments that include identifying and controlling variables</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity

		<p>3: Production of a Salt - Neutralization Reaction</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	1.6.	<p>Communicate and evaluate scientific thinking that leads to particular conclusions</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity

		<p>1: Testing Properties of Acids, Bases, and Salts</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass Virtual Laboratory: Titrating an Acid of Unknown Concentration
STANDARD	CO.2.	Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)
STRAND/BENCHMARK	2.1.	<p>Elements can be organized by their physical and chemical properties (Periodic Table)</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table Teacher Resource CD: Matter - Physical Properties and Changes
STRAND/BENCHMARK	2.2.	<p>The spatial configuration of atoms and the structure of the atoms in a molecule determine the chemical properties of the substance</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt

		<ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Teacher Resource CD: Matter - Chemical Properties and Changes • Teacher Resource CD: Matter - Physical Properties and Changes • Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	2.3.	<p>There are observable and measurable physical and chemical properties that allow one to compare, contrast, and separate substances (for example: pH, melting point, conductivity, magnetic attraction)</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity

		<p>2: Crystal Structure of Common Salt</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Teacher Resource CD: Matter - Chemical Properties and Changes • Teacher Resource CD: Matter - Physical Properties and Changes • Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	2.4.	<p>Word and chemical equations are used to relate observed changes in matter to its composition and structure (for example: conservation of matter)</p> <ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction

		<ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass Teacher Resource CD: Matter - Chemical Properties and Changes
STRAND/BENCHMARK	2.8.	<p>Quantities that demonstrate conservation of mass and conservation of energy in physical interactions can be measured and calculated</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass Teacher Resource CD: Matter - Chemical Properties and Changes
STANDARD	CO.3.	Life Science: Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment. (Focus: Biology--Anatomy, Physiology, Botany, Zoology, Ecology)
STRAND/BENCHMARK	3.2.	<p>There is a relationship between the processes of photosynthesis and cellular respiration (for example: in terms of energy and products)</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction
STRAND/BENCHMARK	3.8.	<p>Certain properties of water sustain life (for example: polarity, cohesion, solubility)</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification Teacher Resource CD: Matter - Physical Properties and Changes
STANDARD	CO.5.	Students understand that the nature of science involves a particular way of building knowledge and making meaning of the natural world.
STRAND/BENCHMARK	5.2.	<p>The scientific way of knowing uses a critique and consensus process (for example: peer review, openness to criticism, logical arguments, skepticism)</p> <ul style="list-style-type: none"> Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions

		<ul style="list-style-type: none"> • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 2: Forming Covalent Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 3: Forming Ionic Bonds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 1: Molecular Structure of Acids and Bases • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 2: Crystal Structure of Common Salt • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 3: Forming Organic Compounds • Chemistry - A Closer Look at Matter: Unit 1 Lab 2 Activity 4: Chemical Structure of Soaps and Detergents • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 1: Classifying Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 3 Activity 2: Exploring Changes in Matter • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 1: Examining Elements • Chemistry - A Closer Look at Matter: Unit 2 Lab 4 Activity 2: A Closer Look at the Periodic Table • Chemistry - A Closer Look at Matter: Unit 2 Lab 5 Activity 1: Investigating Mixtures • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 1: Separating the Compound Water • Chemistry - A Closer Look at Matter: Unit 2 Lab 6 Activity 2: Writing a Description of a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 2 Lab 7 Activity 1: Demonstrating Boyle's Gas Law • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 1: Testing Properties of Acids, Bases, and Salts • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 2: Chemical Reactions of Acids with a Metal • Chemistry - A Closer Look at Matter: Unit 3 Lab 10 Activity 3: Production of a Salt - Neutralization Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 11 Activity 1: The Traffic Light Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 1: Observing Temperature Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 2: Observing Color Change in a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 3: Observing Gas Production During a Chemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 8 Activity 4: Observing a Biochemical Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 1: An Exothermic Reaction • Chemistry - A Closer Look at Matter: Unit 3 Lab 9 Activity 2: An Endothermic Reaction • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 1: Water Purification • Chemistry - A Closer Look at Matter: Unit 4 Lab 12 Activity 2: Demonstrating Conservation of Mass • Virtual Laboratory: Titrating an Acid of Unknown Concentration
STRAND/BENCHMARK	5.3.	Graphs, equations or other models are used to analyze systems

involving change and constancy (for example: comparing the geologic time scale to shorter time frame, exponential growth, a mathematical expression for gas behavior; constructing a closed ecosystem such as an aquarium)

- Chemistry - A Closer Look at Matter: Unit 1 Lab 1 Activity 1: Modeling Atoms and Ions
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