

Science
Unit 1: Chemistry

Essential Understandings	<ul style="list-style-type: none"> ▪ Matter has physical and chemical properties. ▪ Matter can interact with other matter and change as a result of the interaction. ▪ Energy can be transferred through matter but will not be created nor destroyed. ▪ The configuration of matter affects its characteristics. ▪ The category of matter depends on its structure at the atomic level.
Essential Questions	<ul style="list-style-type: none"> ▪ What are physical and chemical properties? ▪ What is the difference between a physical and chemical change? ▪ What are matter and energy? ▪ What are the Laws of Conservation of Matter and Energy? ▪ How are atoms and elements different from molecules and compounds? ▪ What are mixtures and solutions and how are they different? ▪ How do the configuration and structure of matter affect its properties?
Essential Knowledge	<ul style="list-style-type: none"> ▪ Physical and chemical changes are different. ▪ Compounds, mixtures, and solutions are different from each other. ▪ Matter and energy cannot be created nor destroyed; just changed. ▪ Chemical reactions rearrange atoms to form new molecules.
Vocabulary	<ul style="list-style-type: none"> ▪ <u>Terms:</u> <ul style="list-style-type: none"> ○ element, compound, mixture, solution, solute, solvent, dissolve, saturated/unsaturated, Law of Conservation of Matter, Law of Conservation of Energy, molecule, bond, physical and chemical change
Essential Skills	<ul style="list-style-type: none"> ▪ Separate a mixture. ▪ Make a solution. ▪ Identify changes as physical or chemical and provide evidence. ▪ Demonstrate the Law of Conservation of Matter. ▪ Demonstrate the Law of Conservation of Energy.
Related Maine Learning Results	<p><u>Science</u> D. The Physical Setting D3.Matter and Energy Students describe physical and chemical properties of matter, interactions and changes in matter, and transfer of energy through matter.</p> <ul style="list-style-type: none"> c. Describe the difference between physical and chemical change. e. Explain how atoms are packaged together in arrangements that compose all substances including elements, compounds, mixtures, and solutions. g. Use the idea of atoms to explain conservation of matter.

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Sample Lessons And Activities	<ul style="list-style-type: none">▪ Chemistry in a bag.▪ Photosynthesis investigation with a mixture and solution.▪ Identify mysterious powders.▪ Build model molecules.▪ Law of Conservation of Matter Activity.
Sample Classroom Assessment Methods	<ul style="list-style-type: none">▪ Chemistry in a Bag Lab Report▪ Balance chemical equation for photosynthesis▪ Quizzes
Sample Resources	<ul style="list-style-type: none">▪ <u>Publications:</u><ul style="list-style-type: none">○ Maine Forestry Service website○ www.maine.gov/doc/foilage○ www.edinformatics.com/interactive_molecules/○ www.chem4kids.com/▪ <u>Videos:</u><ul style="list-style-type: none">○ Chemistry video in BJHS library