

You Be The Chemist Grades 5-8 – Curriculum Connections Manitoba Curriculum, Grades 5 - 8

Lesson 1: Goofy Putty

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.
- 5-2-03. Investigate to determine how characteristics and properties of substances may change when they interact with one other.
- 5-2-10. Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-13. Differentiate between pure substances and mixtures by using the particle theory of matter.
- 7-2-14. Differentiate between the two types of mixtures, solutions and mechanical mixtures.
- 7-2-15. Classify a variety of substances used in daily life as pure substances, solutions, or mechanical mixtures.

Grade 8: none

Lesson 2: Goldenrod Detector

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.
- 5-2-03. Investigate to determine how characteristics and properties of substances may change when they interact with one other.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-10. Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-14. Differentiate between the two types of mixtures, solutions and mechanical mixtures.

Grade 8: none

Lesson 3: Rusting Wool

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.
- 5-2-03. Investigate to determine how characteristics and properties of substances may change when they interact with one other.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-10. Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.

Grade 8: none

Lesson 4: Buoyant Butter

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.

Grade 6: none

Grade 7: none

Grade 8: FLUIDS

- 8-3-01. Use appropriate vocabulary related to their investigations of fluids.
- 8-3-07. Illustrate, using the particle theory of matter, the effects of temperature change on the density of solids, liquids, and gases.

Lesson 5: Rubber Eggs

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-10. Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-13. Differentiate between pure substances and mixtures by using the particle theory of matter.

- 7-2-15. Classify a variety of substances used in daily life as pure substances, solutions, or mechanical mixtures.

Grade 8: none

Lesson 6: The Moving Molecule Stomp

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.
- 5-2-05. Identify properties of the three states of matter.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-10. Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties.

UNDERSTANDING EARTH AND SPACE SYSTEMS – CONSERVATION OF ENERGY AND RESOURCES

- 2.4 use appropriate science and technology vocabulary, including energy, heat, light, sound, electrical, mechanical, and chemical, in oral and written communication

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-03. Demonstrate the effects of heating and cooling on the volume of solids, liquids, and gases, and give examples from daily life.
- 7-2-06. Describe the particle theory of matter and use it to explain changes of state

Grade 8: none

Lesson 7: Lumpy Liquids

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.
- 5-2-03. Investigate to determine how characteristics and properties of substances may change when they interact with one other.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-10. Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-13. Differentiate between pure substances and mixtures by using the particle theory of matter.
- 7-2-14. Differentiate between the two types of mixtures, solutions and mechanical mixtures.
- 7-2-17. Describe solutions by using the particle theory of matter.

- 7-2-18. Demonstrate different methods of separating the components of both solutions and mechanical mixtures.
- 7-2-19. Identify a separation technique used in industry, and explain why it is appropriate.

Grade 8: none

Lesson 8: Milk Rainbow

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.
- 5-2-03. Investigate to determine how characteristics and properties of substances may change when they interact with one other.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-13. Differentiate between pure substances and mixtures by using the particle theory of matter.

Grade 8: none

Lesson 9: Egg-Dye Solutions

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.
- 5-2-03. Investigate to determine how characteristics and properties of substances may change when they interact with one other.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-15. Differentiate Classify a variety of substances used in daily life as pure substances, solutions, or mechanical mixtures.
- 7-2-14. Identify solutes and solvents in common solid, liquid, and gaseous solutions.

Grade 8: none

Lesson 10: Iron In Cereal

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-13. Differentiate between pure substances and mixtures by using the particle theory of matter.
- 7-2-14. Differentiate between the two types of mixtures, solutions and mechanical mixtures.
- 7-2-15. Differentiate Classify a variety of substances used in daily life as pure substances, solutions, or mechanical mixtures.
- 7-2-18. Demonstrate different methods of separating the components of both solutions and mechanical mixtures.
- 7-2-19. Identify a separation technique used in industry, and explain why it is appropriate.

Grade 8: none

Lesson 11: The Great Escape

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-13. Differentiate between pure substances and mixtures by using the particle theory of matter.
- 7-2-15. Differentiate Classify a variety of substances used in daily life as pure substances, solutions, or mechanical mixtures.
- 7-2-16. Identify solutes and solvents in common solid, liquid, and gaseous solutions.
- 7-2-20. Experiment to determine factors that affect solubility.

Grade 8: FLUIDS

- 8-3-01. Use appropriate vocabulary related to their investigations of fluids.

Lesson 12: Diaper Polymers

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-10. Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: none

Grade 8: none

Lesson 13: Disappearing Glass

Grade 5: none

Grade 6: none

Grade 7: none

Grade 8: OPTICS

- 8-2-01. Use appropriate vocabulary related to their investigations of optics.
- 8-2-10. Conduct experiments to compare the refraction of light through substances of different densities.

Lesson 14: Wacky Waxy Watercolours

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.

Grade 8: none

Lesson 15: Floating Paper Clips

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.

Grade 6: none

Grade 7: none

Grade 8: none

Lesson 16: Fountain Of Soda

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.
- 5-2-03. Investigate to determine how characteristics and properties of substances may change when they interact with one other.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-10. Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-13. Differentiate between pure substances and mixtures by using the particle theory of matter.
- 7-2-14. Differentiate between the two types of mixtures, solutions and mechanical mixtures.
- 7-2-15. Differentiate Classify a variety of substances used in daily life as pure substances, solutions, or mechanical mixtures.
- 7-2-16. Identify solutes and solvents in common solid, liquid, and gaseous solutions.
- 7-2-17. Describe solutions by using the particle theory of matter.

Grade 8: none

Lesson 17: Blubber In Sea Mammals

Grade 5: none

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-09. Plan an experiment to identify materials that are good heat insulators and good heat conductors, and describe some uses of these materials.

Grade 8: none

Lesson 18: Puffed Rice Fleas

Grade 5: none

Grade 6: ELECTRICITY

- 6-3-01. Use appropriate vocabulary related to their investigations of electricity.
- 6-3-02. Explain the attraction and repulsion of electrostatically charged materials.

Grade 7: none

Grade 8: none

Lesson 19: Hold The Salt

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-10. Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-06. Describe the particle theory of matter and use it to explain changes of state.
- 7-2-13. Differentiate between pure substances and mixtures by using the particle theory of matter.
- 7-2-14. Differentiate between the two types of mixtures, solutions and mechanical mixtures.
- 7-2-15. Differentiate Classify a variety of substances used in daily life as pure substances, solutions, or mechanical mixtures.
- 7-2-16. Identify solutes and solvents in common solid, liquid, and gaseous solutions.

Grade 8: none

Lesson 20: Liquid Rainbow

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-13. Differentiate between pure substances and mixtures by using the particle theory of matter.
- 7-2-14. Differentiate between the two types of mixtures, solutions and mechanical mixtures.
- 7-2-16. Identify solutes and solvents in common solid, liquid, and gaseous solutions.
- 7-2-21. Describe the concentration of a solution in qualitative and quantitative terms, and give examples from daily life when the concentration of a solution influences its usefulness.
- 7-2-22. Demonstrate the difference between saturated and unsaturated solutions.

Grade 8: none

Lesson 21: Making Paper

Grade 5: none

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-13. Differentiate between pure substances and mixtures by using the particle theory of matter.
- 7-2-14. Differentiate between the two types of mixtures, solutions and mechanical mixtures.

Grade 8: none

Lesson 22: Balloon Rockets

Grade 5: Forces and Simple Machines

- 5-3-01. Use appropriate vocabulary related to their investigations of forces and simple machines.

Grade 6: FLIGHT

- 6-2-01. Use appropriate vocabulary related to their investigations of flight.

Grade 7: FORCES AND STRUCTURES

- 7-3-01. Use appropriate vocabulary related to their investigations of forces and structures.

Grade 8: FLUIDS

- 8-3-01. Use appropriate vocabulary related to their investigations of fluids.
- 8-3-11. Compare the relative compressibility of water and air, and relate this property to their ability to transmit force in hydraulic and pneumatic devices.

Lesson 23: Paper Chromatography

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-03. Investigate to determine how characteristics and properties of substances may change when they interact with one other.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-10. Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-13. Differentiate between pure substances and mixtures by using the particle theory of matter.
- 7-2-14. Differentiate between the two types of mixtures, solutions and mechanical mixtures.
- 7-2-15. Differentiate Classify a variety of substances used in daily life as pure substances, solutions, or mechanical mixtures.
- 7-2-16. Identify solutes and solvents in common solid, liquid, and gaseous solutions.
- 7-2-17. Describe solutions by using the particle theory of matter.
- 7-2-18. Demonstrate different methods of separating the components of both solutions and mechanical mixtures.

Grade 8: none

Lesson 24: Exploding Bags

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-03. Investigate to determine how characteristics and properties of substances may change when they interact with one other.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-10. Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-13. Differentiate between pure substances and mixtures by using the particle theory of matter.
- 7-2-14. Differentiate between the two types of mixtures, solutions and mechanical mixtures.
- 7-2-15. Differentiate Classify a variety of substances used in daily life as pure substances, solutions, or mechanical mixtures.
- 7-2-16. Identify solutes and solvents in common solid, liquid, and gaseous solutions.

Grade 8: none

Lesson 25: Gasping For Air

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.

Grade 6: THE SOLAR SYSTEM

- 6-4-01. Use appropriate vocabulary related to their investigations of Earth and space.

Grade 7: FORCES AND STRUCTURES

- 7-3-01. Use appropriate vocabulary related to their investigations of forces and structures.

Grade 8: FLUIDS

- 8-3-01. Use appropriate vocabulary related to their investigations of fluids.
- 8-3-09. Recognize that pressure is the relationship between force and area, and describe situations in which pressure can be increased or decreased by altering surface area.

Lesson 26: Capillary Carnations

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-17. Describe solutions by using the particle theory of matter.

Grade 8: none

Lesson 27: Melting Ice With Salt

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.

- 5-2-03. Investigate to determine how characteristics and properties of substances may change when they interact with one other.
- 5-2-08. Demonstrate that changes of state are reversible through the addition or removal of heat.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-10. Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-06. Describe the particle theory of matter and use it to explain changes of state.
- 7-2-14. Differentiate between the two types of mixtures, solutions and mechanical mixtures.
- 7-2-15. Differentiate Classify a variety of substances used in daily life as pure substances, solutions, or mechanical mixtures.
- 7-2-16. Identify solutes and solvents in common solid, liquid, and gaseous solutions.

Grade 8: none

Lesson 28: Separating Salt & Pepper

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-14. Differentiate between the two types of mixtures, solutions and mechanical mixtures.
- 7-2-15. Differentiate Classify a variety of substances used in daily life as pure substances, solutions, or mechanical mixtures.
- 7-2-18. Demonstrate different methods of separating the components of both solutions and mechanical mixtures.

Grade 8: none

Lesson 29: Antigravity Water

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.

FORCES AND STRUCTURES

- 7-3-01. Use appropriate vocabulary related to their investigations of forces and structures.

Grade 8: FLUIDS

- 8-3-01. Use appropriate vocabulary related to their investigations of fluids.

Lesson 30: Solid Or Liquid?

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.
- 5-2-03. Investigate to determine how characteristics and properties of substances may change when they interact with one other.
- 5-2-05. Identify properties of the three states of matter.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-13. Differentiate between pure substances and mixtures by using the particle theory of matter.
- 7-2-14. Differentiate between the two types of mixtures, solutions and mechanical mixtures.

Grade 8: none

Lesson 31: Balloon In A Bottle

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-05. Identify properties of the three states of matter.
- 5-2-08. Demonstrate that changes of state are reversible through the addition or removal of heat.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-10. Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-03. Demonstrate the effects of heating and cooling on the volume of solids, liquids, and gases, and give examples from daily life.
- 7-2-15. Differentiate. Classify a variety of substances used in daily life as pure substances, solutions, or mechanical mixtures.
- 7-2-16. Identify solutes and solvents in common solid, liquid, and gaseous solutions.

FORCES AND STRUCTURES

- 7-3-01. Use appropriate vocabulary related to their investigations of forces and structures.

Grade 8: FLUIDS

- 8-3-01. Use appropriate vocabulary related to their investigations of fluids.
- 8-3-07. Illustrate, using the particle theory of matter, the effects of temperature change on the density of solids, liquids, and gases.
- 8-3-10. Explain, using the particle theory of matter, the relationships among pressure, volume, and temperature of liquid and gaseous fluids.

Lesson 32: Rubber-Band Racers

Grade 5: none

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-11. Recognize that heat energy is the most common by-product of energy transformations, and describe some examples.

FORCES AND STRUCTURES

- 7-3-01. Use appropriate vocabulary related to their investigations of forces and structures.

Grade 8: none

Lesson 33: T-shirt Tye-Dye

Grade 5: PROPERTIES OF AND CHANGES IN SUBSTANCES

- 5-2-01. Use appropriate vocabulary related to their investigations of properties of, and changes in, substances.
- 5-2-02. Identify characteristics and properties that allow substances to be distinguished from one another.
- 5-2-03. Investigate to determine how characteristics and properties of substances may change when they interact with one other.
- 5-2-09. Explore to identify reversible and non-reversible changes that can be made to substances.
- 5-2-11. Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation.

Grade 6: none

Grade 7: PARTICLE THEORY OF MATTER

- 7-2-01. Use appropriate vocabulary related to their investigations of the particle theory of matter.
- 7-2-13. Differentiate between pure substances and mixtures by using the particle theory of matter.
- 7-2-14. Differentiate between the two types of mixtures, solutions and mechanical mixtures.
- 7-2-15. Differentiate Classify a variety of substances used in daily life as pure substances, solutions, or mechanical mixtures.
- 7-2-18. Demonstrate different methods of separating the components of both solutions and mechanical mixtures.

Grade 8: none