Matter
How to Use This Study Guide

The Matter Unit has an abundance of information and materials. This study packet was created to help you and your child focus on what to study for the Matter quizzes.

The study packet breaks down the information you need to know into lesson summaries. Each lesson summary includes the lesson goals, vocabulary and key notes. All of the quiz questions were derived from these lesson summaries. If you would like to use the Matter notebooks and Student Reference Books at home to help develop an understanding of the unit, that is fine. However, all quiz questions were based on this study packet.

The Matter Unit is divided into three themes:

1. Properties of Matter (Lessons 1 - 6)
2. Changing States of Matter (Lessons 7 - 11)
3. Mixing Matter (Lessons 12 – 15)

For the Matter Unit, your child will take five quizzes:

1. Quiz 1 – Lessons 1 – 3
2. Quiz 2 – Lessons 4 – 6
3. Quiz 3 – Lessons 7 – 9
4. Quiz 4 – Lessons 10 – 11
5. Quiz 5 – Lessons 12 – 15

Each quiz will include a vocabulary section, a true/false section, and a section where your child will apply their knowledge. Look in our class newsletter for quiz dates as they approach and focus your study on the lessons pertaining to that quiz. All the information your child needs to be successful is in this study packet.

Good luck and enjoy the unit!!
Mrs. Hauck

Matter

Lesson 1: What Is Matter?
SRB: pages 1 - 9
Student Notebook: page 3

Goals:
1. Classify matter as a solid, liquid or gas.
2. Recognize that solids, liquids and gases are forms of matter.

Vocabulary:
1. Material: The substance that something is made of.
2. Matter: Anything that takes up space and has mass. Something that can be held in a container and released in another place.

Notes:
1. Matter commonly exists in one of three states: solid, liquid, or gas.
2. Matter is anything that has mass (weight) and volume (takes up space).

Lesson 2: Discussing the Properties of Matter
SRB: pages 10 - 11
Student Notebook: pages 4 - 13

Goals:
1. Explore and compare samples of solids, liquids and gases.
2. Describe the properties of solid, liquids and gases.

Vocabulary:
1. Investigation: Something you do to explore a question.
2. Observation: A careful description that is based on what you have observed.
3. Powder: A solid material in the form of tiny, loose particles.
4. Procedure: A sequence of steps that describes how to perform a task.
5. Property: A characteristic that helps to describe or identify an object, a material or a state of matter.
6. State: A form, stage, or condition of something that can change.

Notes:
1. Some properties help us clarify matter as a solid, liquid or gas.
2. Gases do not have a definite shape. A gas can expand to fill any available space in a container.
3. Solids have a definite shape whether it's in a container or not.
4. Liquids take up a definite amount of space. It fills the bottom of a container.

Lesson 3: Exploring the Weight of Solids and Liquids
SRB: pages 13 - 24
Student Notebook: pages 14 - 21

Goals:
1. Observe that solids and liquids do not gain or lose weight, even when their shapes are changed.

Vocabulary:
1. Conclusion**:** What you have discovered based on observation or other data. You should be able to support your conclusions with evidence.
2. Prediction: A guess about what you think might happen during an experiment or investigation, based on what you already know.
3. Weight: The measure of how heavy something is.

Notes:
1. All matter takes up space (has volume) and has mass.
2. Mass is usually measured by weight.
3. Materials can be described by their properties.

Lesson 4: Exploring the Volume of Solids and Liquids
SRB: pages 25 - 35
Student Notebook: pages 22 - 23

Goals:
1. Learn that a solid object does not gain or lose weight when it changes shape.
2. Recognize that the volume of a collection of solids consists of both solids and air.
3. Determine the volume of air between the pieces in a collection of solids.

Vocabulary:
1. Accurate: Differing only very slightly from the correct value.
2. Approximation: Not exact. A guess based on actual measurement or counting.
3. Displacement: The volume of water pushed out of the way by an object in water.
4. Volume: The amount of space something occupies. A property of all matter.

Notes:
1. A scale is used to measure weight.
2. If water is poured from a tall thin glass into a short wide glass, the volume of water stays the same.

Lesson 5: Investigating Air
SRB: pages 37 - 57
Student Notebook: pages 24 - 29

Goals:
1. Show that air takes up space.
2. Design a simple investigation to answer a question.
3. Write clear procedure for the investigation.

Vocabulary:
1. Air: A mixture of gases that surround the earth.
2. Compress: To press on something until it takes up less space.
3. Expand: To become larger, or take up a larger space.

Notes:
1. Matter commonly exists in one of three states: solid, liquid or gas.
2. Matter has volume and mass.
3. Gases can be compressed a lot.
4. Solids and liquids can be compressed very little.
5. Gases expand if put in a larger container.

Lesson 6: A Sense of Density
SRB: pages 59 - 64
Student Notebook: pages 30 - 33

Goals:
1. Compare objects that are the same size and shape, and notice that they have different weights.
2. Compare objects of different sizes and materials, and rank the objects by density.

Vocabulary:
1. Density: How heavy something is for its size.

Notes:
1. All matter takes up space (has volume) and has mass.
2. Mass is usually measured by weight.
3. Materials can be described by their properties.

Lesson 7: Heating and Cooling Solids and Liquids
Student Notebook: pages 34 - 40

Goals:
1. Explore the effects of heating solids and cooling liquids.
2. Perceive how the properties of a material change between the solid and liquid states.
3. Recognize that the weight of a material does not change between its solid and liquid states.

Vocabulary:
1. Freeze**:** To change from a liquid to a solid by cooling.
2. Melt: To change from a solid to a liquid by heating.

Notes:
1. Matter can change between states.
2. Temperature affects the change of matter from one state to another.
3. One way to change a solid into a liquid is to add heat.
4. When a solid is melted into a liquid, the liquid weighs the same as the original solid.

Lesson 8: Evaporation: Changing from Liquid to Gas
Student Notebook: pages 41 - 43

Goals:
1. Recognize that water evaporates.
2. Begin to think about variables that affect evaporation.

Vocabulary:
1. Evaporation**:** The process of a liquid changing into an invisible gas.
2. Variable: Any factor in an experiment that can be changed.
3. Water Vapor: The state of water when it is an invisible gas.

Notes:
1. Water vapor is a gas.
2. Matter can change between states.
3. Even if matter is not visible, it still exists.
4. When water evaporates, it goes into the air as an invisible gas.

Lesson 9: Condensation: Changing from Gas to Liquid
SRB: pages 65 - 80
Student Notebook: pages 44 - 45

Goals:
1. Compare evaporation and condensation.
2. Discover that water condenses on cold surfaces.
3. Recognize that water can change back and forth between liquid and gaseous states.

Vocabulary:
1. Condensation**:** The change of a gas into a liquid when the gas is cooled.

Notes:
1. Matter can change between states.
2. Temperature affects the change of matter from one state to another.
3. Even if matter is not visible, it still exists.
4. When a gas is cooled, it can turn into a liquid.
5. Water formed on the outside of a glass come from the air.

Lesson 10: Evaporation Investigations: Setting Up
SRB: pages 123 -128
Student Notebook: page 46 - 49

Goals:
1. Consider variables that affect evaporation.
2. Design a simple investigation.
3. Think about the elements of a fair test when carrying out a simple investigation.

Vocabulary:
1. Data**:** A record of what happened during an investigation.
2. Experiment: A well organized activity designed to test whether you ideas are correct.
3. Fair Test: An experiment that compares something by changing one variable while keeping all other variables the same.
4. Results: Data from the experiment organized so that it is easier to interpret.
5. Surface area: The part of a liquid that is exposed to the air.

Notes:
1. One way to answer a question is to design a simple experiment.
2. Data is information gathered by counting, measuring, or other types of observation.

Lesson 11: Evaporation Investigations: Drawing Conclusions
SRB: pages 117 - 128
Student Notebook: pages 49 - 51

Goals:
1. Collect and record final data from evaporation experiments.
2. Evaluate the variable tested and draw conclusions.
3. Present results and conclusions to class.

Vocabulary:
1. Variable: Any factor in an experiment that can be changed.

Notes:
1. One way to answer a question is to design a simple experiment.

Lesson 12: Mixing and Separating Solids
SRB: pages 81 -87 and 94 - 95
Student Notebook: pages 52 - 55

Goals:
1. Observe that the weight of a mixture equals the sum of the weight of its parts.
2. Use the properties of different solids in a mixture to separate the mixture.

Vocabulary:
1. Magnetism: A property that allows some objects to be attracted by a magnet.
2. Mixture: A combination of two or more materials.
3. Recycle: To reuse materials from trash or garbage.
4. Separate: To remove something from a mixture.
5. Sort: To separate objects into groups with similar properties.

Notes:
1. When you mix materials together, the result weights the same as the sum of the parts.
2. A mixture can often be separated by the properties of the different materials in it. Examples of properties could be size, color, shape, or magnetism.

Lesson 13: Mixing and Separating Solutions
SRB: 88 - 91
Student Notebook: pages 56 - 61

Goals:
1. Gain experience mixing and separating a solution.
2. Relate the total weight of the solution to the original weight of the liquid and the dissolved material.

Vocabulary:
1. Dissolve: To mix one material, such as a solid, with another material, such as a liquid, until they create a solution.
2. Solution: A mixture in which one material, such as a solid, combines with another material, such as a liquid, so that you can't tell one material form the other.

Notes:
1. When you mix materials together, the result weighs the same as the sum of the parts.
2. A mixture can often be separated by the properties of the different materials in it.
3. A solution often cannot easily be separated by the properties of the different materials in it.

Lesson 14: Whatzit?!
SRB: pages 92 - 93
Student Notebook: pages 7 and 62 - 66

Goals:
1. Gain experience with a mixture that has new properties which are different from the properties of its ingredients.
2. Develop and write procedures fro testing the properties of Whatzit.

Notes:
1. Materials can be described in terms of their properties. (Color, Shape, Size, Magnetism)
2. Sometimes when you mix material together, you get a new material with different properties.

Lesson 15: Chemical Changes
SRB: pages 97 - 109
Student Notebook: pages 67

Goals:
1. Observe a simple chemical change.
2. Describe the materials used and formed in a chemical change.
3. Begin to differentiate between physical and chemical changes.

Vocabulary:
1. Chemical Change: A change to materials that results in forming a new material with new properties.
2. Physical Change: A change to the size, shape, or state of a material, through which the material remains the same kind of matter.

Notes:
1. Sometimes when you mix material together, you get a new material with different properties.