GRADE 5 · SLIDE DECK

Matter Matters: A 5th Grade Science Journey

A vibrant journey through matter, energy & change · Curriculum Publisher

AGENDA

What we'll cover today

DAY 01	What Is Matter? Atoms, Elements & Compounds	CORE CONCEPTS
DAY 02	States of Matter: Solid, Liquid, Gas	CORE CONCEPTS
DAY 03	Physical vs. Chemical Change — Balloon Rocket Lab	HANDS-ON LAB

SCIENCE · CORE CONCEPTS

01

What Is Matter? Atoms, Elements & Compounds

LEARNING OBJECTIVES

By the end you'll…

- Define matter as anything that has mass and takes up space.
- Identify atoms as the smallest building blocks of matter.
- Distinguish an element from a compound with real-world examples.
- Read symbols on the periodic table for 6 common elements.

WORDS TO KNOW

Vocabulary

MATTER
Anything that has mass and takes up space.

ATOM
The smallest unit of an element that still keeps the element's properties.

ELEMENT
A substance made of only one kind of atom (like oxygen or gold).

COMPOUND
A substance made of two or more different atoms bonded together (like H_2O).

HANDS-ON

Let's do it!

1 **Elements Scavenger Hunt**

Give students a copy of the periodic table. Around the classroom or at home they find and photograph 8 items containing common elements: aluminum foil (Al), copper wire (Cu), penci

2 **Build a Water Molecule**

Using 2 red gumdrops (hydrogen) and 1 blue gumdrop (oxygen) plus two toothpicks, each student builds a physical H_2O molecule. Discuss how the bent shape gives water its special pro

CHECK YOUR THINKING

Practice questions

Q1 Define matter in your own words.

Q2 What is the difference between an element and a compound?

Q3 Water is written as H_2O. What does the small number 2 mean?

Q4 Give the symbols for gold, iron, and sodium.

SCIENCE · CORE CONCEPTS

02

States of Matter: Solid, Liquid, Gas

LEARNING OBJECTIVES

By the end you'll…

- Compare the particle arrangement in solids, liquids, and gases.
- Explain how adding or removing heat changes the state of matter.
- Predict which state a familiar substance will be in at a given temperature.
- Diagram the water cycle in terms of state changes.

WORDS TO KNOW

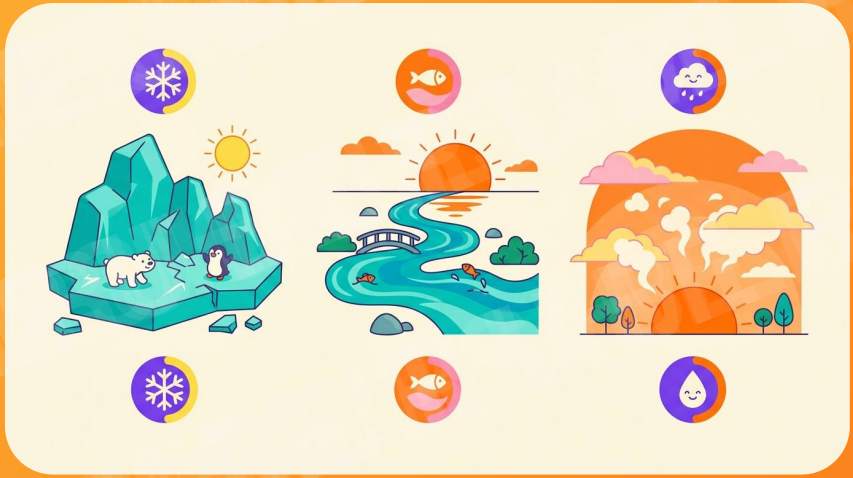
Vocabulary

SOLID
Matter with a fixed shape and volume; particles are packed tightly and vibrate in place.

LIQUID
Matter with a fixed volume but no fixed shape; particles slide past each other.

GAS
Matter with no fixed shape or volume; particles zoom freely to fill any container.

MELTING
The change from solid to liquid, caused by adding heat.



HANDS-ON

Let's do it!

1

States of Matter Freeze Dance

Label three corners of the room Solid, Liquid, and Gas. When music plays, students move like the particles of the announced state — solids vibrate small, liquids slide, gases zoom.

2

Ice → Water → Vapor Race

Give teams 3 ice cubes. Challenge: how quickly can you turn all 3 into visible water vapor without using electricity? Teams test hand-warming, sunlight, salt, and stirring. Time ea

3

Mystery State Bag

Set out 6 sealed bags containing helium (gas), honey (liquid), a rock (solid), whipped cream (surprisingly a colloid), a candle (solid → liquid), and dry ice in a glove (solid → ga

CHECK YOUR THINKING

Practice questions

Q1 In which state are particles packed tightly and only vibrate in place?

Q2 What happens to the particles in a liquid when you add heat?

Q3 What is the change from a gas back to a liquid called?

Q4 A puddle disappears on a sunny day. Which change of state has

SCIENCE · HANDS-ON LAB

03

Physical vs. Chemical Change

—

Balloon

LEARNING OBJECTIVES

By the end you'll…

- Distinguish a physical change from a chemical change.
- Identify at least 3 pieces of evidence that a chemical change has happened.
- Predict, test, and record the results of the baking soda + vinegar reaction.
- Write a word equation for a simple chemical reaction.

WORDS TO KNOW

Vocabulary

PHYSICAL CHANGE
A change that alters the appearance of matter but not what it is made of (like cutting or melting).

CHEMICAL CHANGE
A change that creates one or more new substances with different properties.

REACTANT
A substance that starts a chemical reaction.

PRODUCT
A new substance made by a chemical reaction.

HANDS-ON

Let's do it!

1

Balloon Rocket Fuel

Materials per team: 1 empty 500 mL water bottle, 3 tablespoons of vinegar, 2 teaspoons of baking soda, 1 balloon, small funnel, safety goggles. Steps: (1) Pour vinegar into the bot

2

Physical or Chemical? Sorting Cards

Give each team 12 cards showing common changes (ice melting, log burning, breaking glass, rusting nail, boiling water, baking cookies, cutting paper, mixing paint, souring milk, fo

CHECK YOUR THINKING

Practice questions

Q1 Give one example of a physical change and explain why it is physical.

Q2 Give one example of a chemical change and one piece of evidence.

Q3 In the balloon lab, what filled the balloon and where did it come from?

Q4

FOR THE EDUCATOR

Teacher Answer Key

Organized by day and activity. Every numbered question is matched with its expected answer for quick classroom reference.

DAY 01 · SCIENCE · CORE CONCEPTS

What Is Matter? Atoms, Elements & Compounds

PRACTICE QUESTIONS

Q1 **Define matter in your own words.**

A. Matter is anything that has mass and takes up space.

Q2 **What is the difference between an element and a compound?**

A. An element is made of only one kind of atom (like oxygen). A compound is two or more different atoms bonded together (like water).

Q3 **Water is written as H_2O. What does the small number 2 mean?**

A. It means two hydrogen atoms are bonded to one oxygen atom in each water molecule.

Q4 **Give the symbols for gold, iron, and sodium.**

A. Au, Fe, and Na.

Q5 **Why do compounds usually behave differently than the elements that made them?**

A. Because bonding changes the way the atoms interact with the world — the new compound has its own set of properties, not just a blend of the old ones.

DAY 02 · SCIENCE · CORE CONCEPTS

States of Matter: Solid, Liquid, Gas

PRACTICE QUESTIONS

Q1 **In which state are particles packed tightly and only vibrate in place?**

A. Solid.

Q2 **What happens to the particles in a liquid when you add heat?**

A. They gain energy and move faster, spreading further apart. Enough heat causes them to escape as a gas (evaporation).

Q3 **What is the change from a gas back to a liquid called?**

A. Condensation.

Q4 **A puddle disappears on a sunny day. Which change of state has happened, and where did the water go?**

A. Evaporation. The liquid water became water vapor (a gas) in the air.

Q5 **Draw and label the particle arrangement for a solid, a liquid, and a gas.**

A. Solid = tightly packed grid, small vibration arrows. Liquid = loosely packed, curved motion arrows. Gas = far apart, long motion arrows in all directions.

DAY 03 · SCIENCE · HANDS-ON LAB

Physical vs. Chemical Change — Balloon Rocket Lab

PRACTICE QUESTIONS

Q1 **Give one example of a physical change and explain why it is physical.**

A. Melting an ice cube. The water changed state but is still water — no new substance was created.

Q2 **Give one example of a chemical change and one piece of evidence.**

A. Rusting iron. A new orange substance (iron oxide) forms that isn't iron anymore — color change and a solid coating are evidence.

Q3 **In the balloon lab, what filled the balloon and where did it come from?**

A. Carbon dioxide gas came from the chemical reaction between baking soda and vinegar.

Q4 **Name three pieces of evidence that a chemical reaction has happened.**

A. Any three of: bubbles/gas, color change, temperature change, light or sound, new smell.

Q5 **Write the word equation for the balloon lab reaction.**

A. Baking soda + vinegar → water + sodium acetate + carbon dioxide.

Great work, scientist!

Thanks for exploring Matter Matters: A 5th Grade Science Journey

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