

Build A Ball

Lesson 24



FOCUS

Changes in Matter

OBJECTIVE

To explore how matter changes from one state to another.

OVERVIEW

The three most common states of matter on Earth are solid, liquid, and gas. Chemical or physical forces can sometimes cause matter to change from one state to another.

WHAT TO DO

With your team, carefully follow each step below.



Observe

Look at the water. **Look** at the powder. **Look** at the mold.

Think about the three most common states of matter (solid, liquid, gas). Which state describes each item?



Describe

Describe the water and the powder. What does each one look like? What does each one feel like? What color is each one? What shape is each one?



Discuss

What state of matter best describes powder? solid

What state of matter best describes water? liquid

What state of matter best describes air? gas



READ THE STORY

Matter comes in different states (solid, liquid, gas). But sometimes matter can change from one state to another. Read the story below to find out more.

Changes in Matter

Matter may change from one state into another.

A solid may turn into a liquid. A liquid may turn into a gas. Such changes in matter happen all the time. Common changes result from chemical or physical forces.



This is a chemical change.

A chemical may change matter.

Adding a chemical to a substance, or mixing chemicals together often causes matter to change states.

Mixing can create a chemical change.

Mixing an antacid with water creates carbon dioxide. Some of the solid and liquid matter changes into gas.



This is a physical change.

A physical action may change matter.

There are many kinds of physical change, like cutting, melting, freezing, or boiling. They can make matter change states.

Melting can create a physical change.

Heating makes chocolate melt. Many items melt if they get hot enough. Melting can change matter from solid to liquid.



Changes happen all the time.

Changes in matter can be natural.

Unprotected iron rusts over time (chemical change). Cold weather can turn liquid water to solid ice (physical change).

Changes in matter can also be man-made.

Scientists combine chemicals and other ingredients to create many useful items — from plastic spoons to airplane parts!

WHAT I LEARNED - part 1

Discuss the story with your team, then answer the questions below.



What two forces may cause matter to change states?



Give examples of how solids, liquids, and gases are different.



If a stick of butter is heated, what state might it become?



DO THE ACTIVITY

Working with your research team, carefully follow each step below. Before you start, be sure you know the **safety rules** for this activity.



STEP
1

Snap together the ball mold. **Pour** the powder carefully into the mold, tapping gently so the mold is completely filled. Now **fill** a cup with water.



STEP
2

Place the mold in the cup. **Hold** the mold completely under the water for one minute. **Remove** the mold from the water and let it stand for three minutes.



STEP
3

Open the mold and **remove** the ball. **Roll** it between your hands to smooth it. **Bounce** it a few times. Make sure everyone gets a turn to examine the ball.



STEP
4

Review Steps 1 and 2. **Discuss** which states of matter were present. Now **compare** your observations with those of other research teams.

WHAT I LEARNED - part 2

Discuss the activity with your team, then answer the questions below.



What states of matter were present in this activity?



How was the powder similar to the ball? How was it different?



What might happen if you used a square mold? Why?



SHOW WHAT YOU KNOW - 1

Circle any **physical** change in red. Circle any **chemical** change in blue. Write the word that best describes the change on the lines below.



These changes are



These changes are

To the Parent . . .

Scripture Connection: I Corinthians 15:52

Lesson Focus:

Changes in Matter

Lesson Objective:

To explore how matter changes from one state to another

National Science Education Standards:

Standard B1 — “All students should understand that materials have observable (and measurable) properties . . . Materials exist in different states . . . some materials can be changed from one state to another . . .”

Follow-up Questions:

Ask your child to name the three most common states of matter (solid, liquid, gas).

Ask your child to describe at least one chemical change in matter (solid antacid tablet turning to gas, iron rusting, etc.).

Ask your child to describe at least one physical change in matter (freezing or boiling water, cutting paper, etc.).