



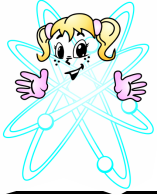
Student: _____ Date: _____

BiCarb Balloon

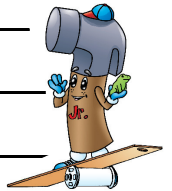
Something to Think About

Atom Girl wants to know . . .

1. How can matter change?

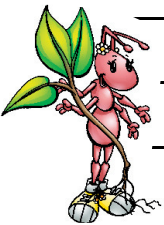


2. What happens during a chemical change?

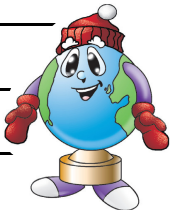


3. What happens during a physical change?

4. Name some chemical changes happening around us.



5. Name some physical changes happening around us.



The Learning Zone

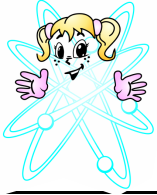


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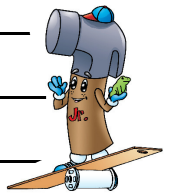
Bicarb Balloon Journal

Atom Girl wants you to tell her . . .

1. What did I see happen?

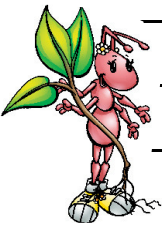


2. What did I do?



3. What did I learn?

4. What other questions do I have about this?



5. What can I draw that I saw happen?



The Learning Zone

BiCarb Balloon

Standard B1

FOCUS Chemical & Physical change

OBJECTIVE To explore how matter can change from one state to another

OVERVIEW Matter comes in different forms called "states". But sometimes matter changes from one state to another. Common changes in state are caused by chemical or physical actions.



WHAT TO DO

With your team, carefully follow each step below.



Observe

Look at the baking soda. **Look** at the salt. **Look** at the vinegar. Think about what common state of matter (solid, liquid, gas) best describes each item.



Describe

Describe the baking soda, salt, and vinegar. What does each one **look** like? What does each one **feel** like? What does each one **smell** like?



Discuss

What state of matter best describes salt? solid
What state of matter best describes vinegar? 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 to another.

A solid may turn into a liquid. A liquid may turn into a gas. Such changes happen all the time. Common changes in state are caused by chemical or physical actions.



This is a chemical change.

A chemical action may change matter.

There are many kinds of chemical actions like rotting, rusting, and burning. These actions make different substances.

For instance, mixing baking soda (sodium bicarbonate) with vinegar (acetic acid) creates carbon dioxide (CO_2). The *solid* and the *liquid* combine to make a *gas*.



This is a physical change.

A physical action may change matter.

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

Boiling can create physical change.

Heating water makes it boil. When water boils, it turns into a type of gas (steam). The matter changes from liquid to gas.



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 can also be caused by people.

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 (page 2), then answer the questions below.

1 Name two types of change that may affect matter's state.

2 How are freezing and boiling similar? How are they different?

3 What are some ways you could change the state of water?

WHAT I LEARNED - part 2

Discuss the activity (page 4), then answer the questions below.

1 What states of matter were demonstrated? How?

2 How were Steps 2 and 3 similar? How were they different?

3 What purpose might baking soda serve in making bread?



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



Examine the salt, baking soda, and vinegar. **Discuss** which state of matter (solid, liquid, or gas) best describes each item. **Pour** a little salt into one balloon.

STEP
2



Pour an inch of vinegar into the tube. **Attach** the balloon to the top of the tube. Now quickly **tip** the balloon so the salt falls in the tube. **Observe** what happens.

STEP
3



Empty the tube and **rinse** with clean water. Now **pour** a little baking soda in the other balloon. **Repeat** Step 2. Carefully **observe** what happens.

STEP
4



Compare Steps 2 and 3. **Discuss** what states of matter were shown in each Step. **Compare** your observations with those of other research teams.

I Wonder Why.....



1. did the vinegar cause bubbling?

A chemical change happened with baking soda to make bubbles.



2. did the balloon get bigger with vinegar and baking soda?

There was a gas made by the chemical change.

3. didn't the balloon get bigger with salt and vinegar?

There was no chemical change, so no gas was made.

4. ice freezes and melts?

Energy was added to melt ice, energy is removed to freeze ice.

5. water boils?

Energy is added to water to make it boil.

Think Like a Scientist.....



1. What happens when energy is added or removed from matter?

There can be physical or chemical changes happening.

2. What are some physical changes around you?

Some examples are breaking, melting, thawing, and cutting.

3. Name some chemical changes around you.

Some examples are rotting, rusting, and burning.



4. Why is melting or freezing water a physical change?

The water has only changed its form to a liquid or solid.

5. Why is a rotten banana an example of a chemical change?

There have been completely new things made by this change.