Physical and Chemical Changes
Informational Reading Passage

Everything on earth is made of **matter**. Matter is anything that takes up space. Matter cannot be created or destroyed, but it can change from one state to another. When matter changes, it is either a chemical reaction or a physical one. Matter is made up of atoms. For matter to change, it needs the atoms to move faster or slower. There are chemical and physical changes happening all around us.

How does matter change state? Water at room temperature has atoms that move slowly. Heating the water in a pot on the stove causes the atoms to speed up. More heat means more movement. If the water continues to get hotter, the liquid changes to steam, or a gas. This is a chemical change!

When a **chemical change** happens, something new is created. There are 4 main clues that will tell you if a chemical change occurred.

1. There is a formation of gas which can be seen by a fizzing or bubbling
2. The reaction will cause heat, light, or an odor
3. A color change is produced
4. A solid is formed during the change

For example, a once yellow banana turned black is a chemical change. If you mix together flour, eggs, milk, and oil and cook it, it will become a pancake. Once a chemical change happens, it can't be reversed. You can't take a pancake and take out the individual ingredients.

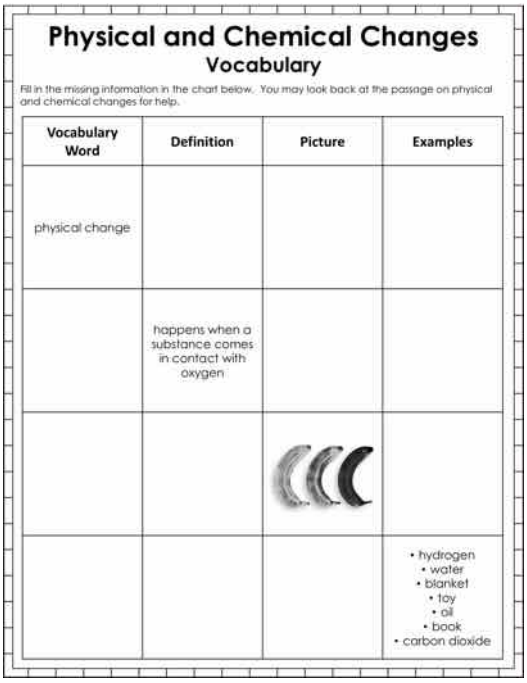
A **physical change** occurs when the shape or size of its matter changes. There is no new substance during a physical change. A piece of paper is still paper if it is crumpled into a ball or cut in half. An ice cream cone that has melted is still ice cream. Nothing but the shape has changed. Temperature or force can cause a physical change.

Some physical and chemical changes are easy to see, and some are not. A campfire leaves behind ashes. A bike left out in the rain turns rusty. Fruit left too long turns rotten. When you eat food, your body digests it. When you wash dishes, the soap breaks down the mess.

If you pay attention, you will notice chemical and physical changes happening all around. The next time you rake up dead leaves in the fall remember that a chemical change to the once green leaves has occurred!

DID YOU KNOW?

The Statue of Liberty is made of copper was was originally the color of a new penny. Over the years, **oxidation** took place. Oxidation happens when a substance comes in contact with oxygen. Oxygen is found in the air and water that surrounds the Statue of Liberty. They reacted together and turned the copper green, just like you might see on some old pennies.



Physical and Chemical Changes
Vocabulary

Fill in the missing information in the chart below. You may look back at the passage on physical and chemical changes for help.

Vocabulary Word	Definition	Picture	Examples
physical change			
	happens when a substance comes in contact with oxygen		
			• hydrogen • water • blanket • toy • oil • book • carbon dioxide

Informational passage on physical and chemical changes with a vocabulary activity.

Fictional passage on physical and chemical changes with a reading comprehension activity.

It's All About the Change
Fictional Reading Passage

Mr. Wallace directed the children's attention to the front of the room by clearing his throat. When everyone was looking, he pulled off the white sheet that covered the table with a dramatic flourish.

"Welcome class to our lesson about the changing states of matter!" The students craned their necks to get a better look. The table had an assortment of things on it. "We talked yesterday about the states of matter. Solids, liquids and gas. Today I'm going to show you how matter can change."

"Looks like you dumped a garbage can on the table," said one student pointing at the bowl of rotten fruit."

"A chemical change is something that cannot be reversed. Something new has been created. How is this an example of chemical change?" he picked up the green, mushy orange.

Jordan raised her hand and wrinkled her nose. "No matter what you, do that orange is never going back the way it was."

Mr. Wallace nodded. Then he pointed at Jordan's hair. "Your hair has been bleached."

Jordan laughed. "I got highlights." She touched one of the blonde strands.

"Class, can tell me why Jordan's highlights are a chemical change?"

Dan said, "The bleach took out the color. It can't change back."

Jordan frowned. "You mean my hair is a science experiment?"

"It's a good example of one." Mr. Wallace smiled. He tossed Mike a chocolate bar. "Take a bite, and while you're chewing let me show you guys this." He held up a glass of water in one hand and an ice cube in the other. "A physical change is something that changes shape or form, but it can be reversed."

"Water turns to ice when frozen, but it can become water again if it melts," one student shouted from the back of the room.

"Excellent," said Mr. Wallace. He held up a box of cake mix. "What happens if we make this? Chemical or physical change?"

"Chemical," yelled the class in unison.

Mr. Wallace pulled out a baked cake from under a box. "Ta da! Snack time, and yes this cake cannot go back to being ingredients. Phillip, take a piece of paper out of your binder. Now crumple it up."

"This is a physical change," said Phillip. "It's a different shape, but it's still paper."

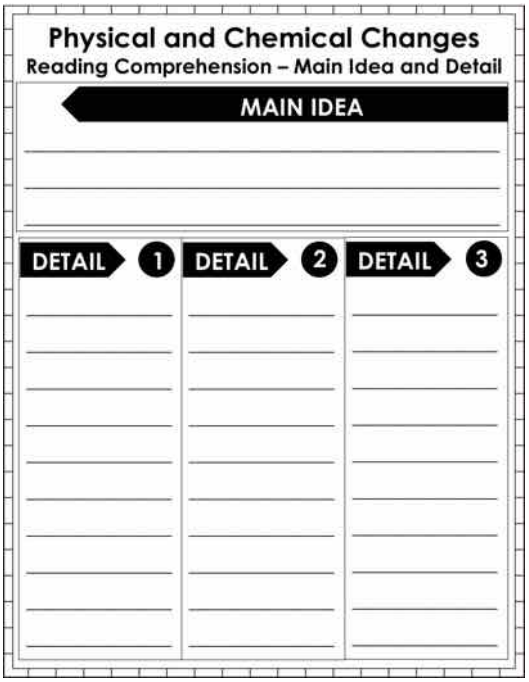
"I think you guys get it. How was that chocolate bar, Mike?"

"Awesome."

"Now your body is digesting it. Can that chocolate bar ever be the same?"

"Disgusting!" Sarah called out. "I wouldn't want to see that. That's definitely a chemical change."

Mr. Wallace clapped his hands. "I want you all to think up ten more physical and chemical changes. And while you're writing them down, I'm going to do an experiment myself. He grinned as he cut himself a large piece of cake.

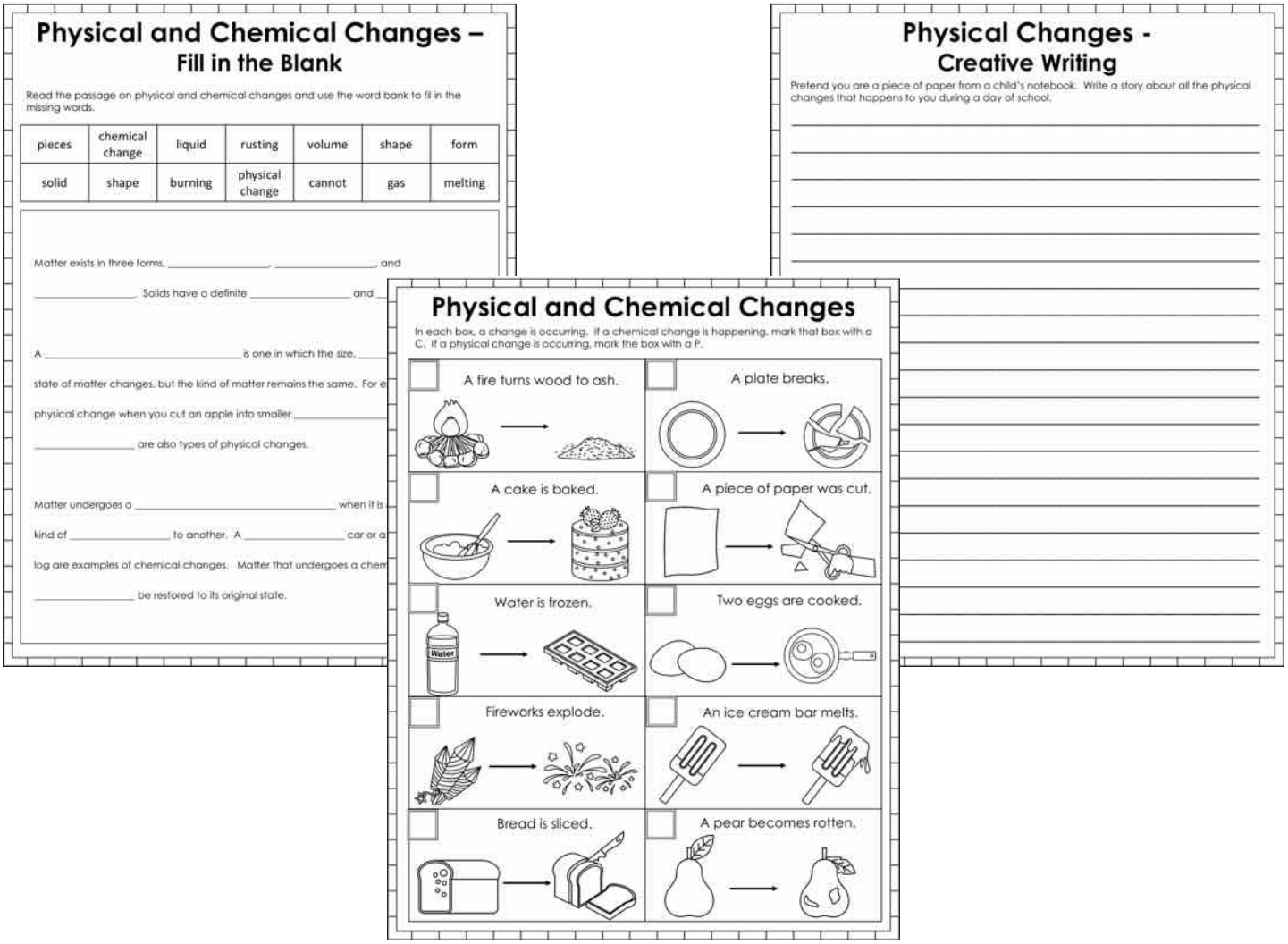


Physical and Chemical Changes
Reading Comprehension – Main Idea and Detail

MAIN IDEA

DETAIL 1	DETAIL 2	DETAIL 3

Three physical and chemical changes pages to reinforce the reading passages.



Physical and Chemical Changes – Fill in the Blank

Read the passage on physical and chemical changes and use the word bank to fill in the missing words.

pieces	chemical change	liquid	rusting	volume	shape	form
solid	shape	burning	physical change	cannot	gas	melting

Matter exists in three forms, _____, _____, and _____. Solids have a definite _____ and _____. A _____ is one in which the size, _____ state of matter changes, but the kind of matter remains the same. For e physical change when you cut an apple into smaller _____. _____ are also types of physical changes.

Matter undergoes a _____ when it is _____ kind of _____ to another. A _____ car or a log are examples of chemical changes. Matter that undergoes a chem _____ be restored to its original state.

Physical Changes - Creative Writing

Pretend you are a piece of paper from a child's notebook. Write a story about all the physical changes that happens to you during a day of school.

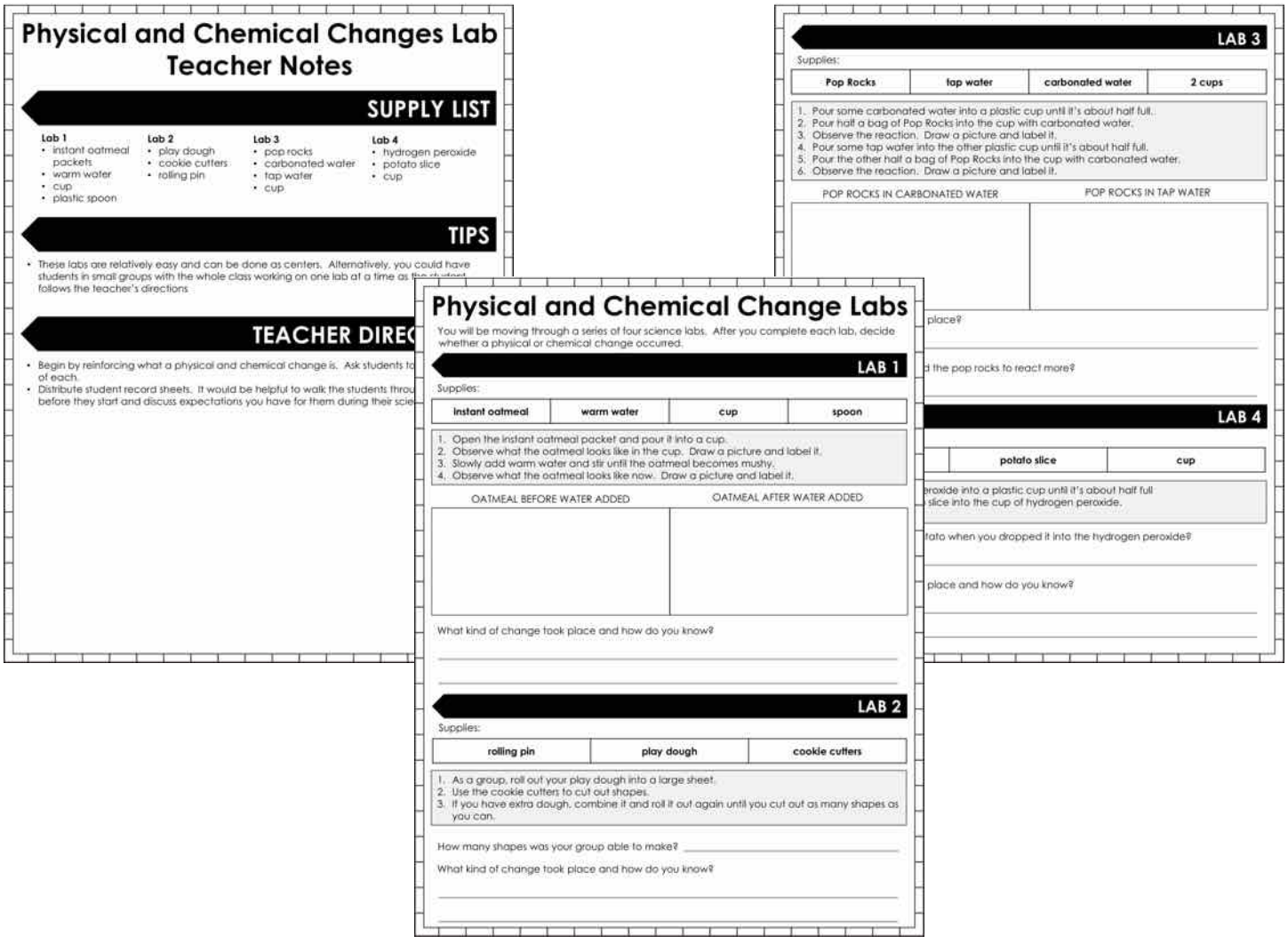
Physical and Chemical Changes

In each box, a change is occurring. If a chemical change is happening, mark that box with a C. If a physical change is occurring, mark the box with a P.

- A fire turns wood to ash.
- A plate breaks.
- A cake is baked.
- A piece of paper was cut.
- Water is frozen.
- Two eggs are cooked.
- Fireworks explode.
- An ice cream bar melts.
- Bread is sliced.
- A pear becomes rotten.

Science Lab

Students rotate through stations to determine whether each lab demonstrates a physical or chemical change



Physical and Chemical Changes Lab
Teacher Notes

SUPPLY LIST

Lab 1
- instant oatmeal packets
- warm water
- cup
- plastic spoon

Lab 2
- play dough
- cookie cutters
- rolling pin

Lab 3
- pop rocks
- carbonated water
- tap water
- cup

Lab 4
- hydrogen peroxide
- potato slice
- cup

TIPS

- These labs are relatively easy and can be done as centers. Alternatively, you could have students in small groups with the whole class working on one lab at a time as the student follows the teacher's directions

TEACHER DIREC

- Begin by reinforcing what a physical and chemical change is. Ask students to of each.
- Distribute student record sheets. It would be helpful to walk the students throu before they start and discuss expectations you have for them during their scie

Physical and Chemical Change Labs

You will be moving through a series of four science labs. After you complete each lab, decide whether a physical or chemical change occurred.

LAB 1

Supplies:

instant oatmeal	warm water	cup	spoon

1. Open the instant oatmeal packet and pour it into a cup.
2. Observe what the oatmeal looks like in the cup. Draw a picture and label it.
3. Slowly add warm water and stir until the oatmeal becomes mushy.
4. Observe what the oatmeal looks like now. Draw a picture and label it.

OATMEAL BEFORE WATER ADDED | OATMEAL AFTER WATER ADDED

What kind of change took place and how do you know?

LAB 2

Supplies:

rolling pin	play dough	cookie cutters

1. As a group, roll out your play dough into a large sheet.
2. Use the cookie cutters to cut out shapes.
3. If you have extra dough, combine it and roll it out again until you cut out as many shapes as you can.

How many shapes was your group able to make? _____

What kind of change took place and how do you know?

LAB 3

Supplies:

Pop Rocks	tap water	carbonated water	2 cups

1. Pour some carbonated water into a plastic cup until it's about half full.
2. Pour half a bag of Pop Rocks into the cup with carbonated water.
3. Observe the reaction. Draw a picture and label it.
4. Pour some tap water into the other plastic cup until it's about half full.
5. Pour the other half a bag of Pop Rocks into the cup with carbonated water.
6. Observe the reaction. Draw a picture and label it.

POP ROCKS IN CARBONATED WATER | POP ROCKS IN TAP WATER

place?

d the pop rocks to react more?

LAB 4

potato slice | cup

roxide into a plastic cup until it's about half full
slice into the cup of hydrogen peroxide.

tato when you dropped it into the hydrogen peroxide?

place and how do you know?