



TEACHER GUIDE

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STUDENT HANDOUTS

- Reading Comprehension

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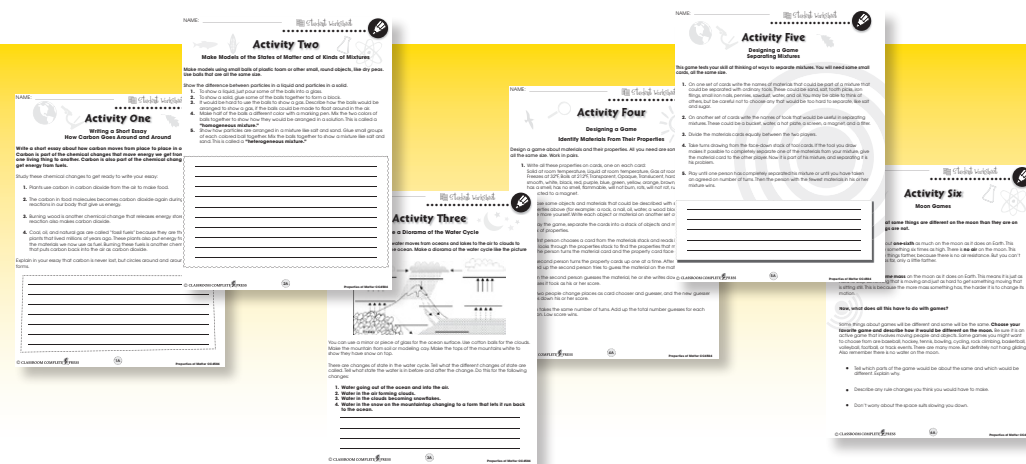
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FREE!

6 Bonus Activities!

3 EASY STEPS to receive your 6 Bonus Activities!

- Go to our website:
www.classroomcompletepress.com/bonus
- Click on item CC4504 – Properties of Matter
- Enter pass code CC4504D





Physical Changes vs. Chemical Changes

1. Some changes are described below. Write **P** beside the changes that are physical changes. Write **C** beside the changes that are chemical changes.

- _____ a) Water boils on a stove.
- _____ b) An old penny, lost in the grass, turns green.
- _____ c) Fireworks explode in the night sky.
- _____ d) Frost forms on a pumpkin.
- _____ e) An old Jack-O-lantern begins to rot.

2. Circle **T** if the statement is TRUE or **F** if it is FALSE.

- T F** a) Chemical changes happen only in things that are alive.
- T F** b) Physical changes happen only in things that are not alive.
- T F** c) The way atoms are fastened together changes during a chemical change.
- T F** d) Atoms and molecules are both particles.
- T F** e) If a material changes color, it is proof that a chemical change is happening.



Physical Changes vs. Chemical Changes

We learned that **chemical changes** cause new materials to be formed.

What do we mean by *new*?

Earlier, we read that particles, called **atoms**, sometimes fasten together to form larger particles, called **molecules**. Sometimes atoms get **rearranged** and fastened in a new way to form different molecules. This is a chemical change. In a physical change, the particles are the same before and after the change.



When clouds begin to form in a clear, blue sky, it looks like a new material is being formed. This is not true. The air is full of many water molecules that we cannot see. They are the gas called water vapor. When they come together to form tiny drops, a cloud appears. This is a physical change because the water molecules did not change. They just went from the gas state to the liquid state.

When hydrogen gas burns, it **combines** with oxygen gas to form water. This is a chemical change because a new material is formed. Atoms in hydrogen and oxygen molecules come apart. Then they fasten together in a new way and form water molecules.

Another example of a chemical change is rust forming on an iron nail. First, oxygen molecules come apart. Then the oxygen atoms fasten onto iron atoms and form a new material. The new material is **rust**. Rust has the chemical name, iron oxide.

These two examples are both chemical changes because atoms have been rearranged to form new molecules.



Physical Changes vs. Chemical Changes

1. Put a check mark next to the answer that is most correct.

- a) Which is the best sign that a chemical change is happening?
- A bubbles
- B flames
- C heat
- D sound
- b) How many of these changes are chemical changes?
- clouds forming
- a tomato rotting
- plants making food
- A none
- B one
- C two
- D three
- c) What kind of change or changes are happening when water goes over a waterfall?
- A neither a chemical change nor a physical change
- B a physical change only
- C a chemical change only
- D both a physical change and a chemical change

2. Write a word in each blank to complete the sentences.

- a) Flames show a _____ change is taking place.
- b) Hydrogen and Oxygen react to form _____.
- c) Chemical changes always change the way _____ are stuck together in molecules.
- d) Adding heat causes a material to change. If removing heat causes the material to return to the way it was, the change was probably a _____ change.

Physical Changes vs. Chemical Changes

3. Use the words "atoms" and "molecules" to explain what happens when a new material is formed during a chemical change.

4. Describe a change you could see that could be *either* a chemical change or a physical change.

Extensions and Applications

5. Change In the Kitchen

Look around a kitchen for ways that materials could change or be made to change using the tools and appliances you see.

List **three physical changes** that could happen in the kitchen. Explain why they are physical changes and not chemical changes. For each change tell whether the material that changes could be returned to the way it was.

List **three chemical changes** that could happen in the kitchen. Explain why they are chemical changes and not physical changes. For each change tell what new material was formed. For each change tell whether the material that changes could be returned to the way it was.



Finding Changes In the Kitchen

A picture of a kitchen and kitchen appliances is shown below



Many physical and chemical changes take place in the kitchen.

One physical change is shown by the box and arrow.

- Look at the picture carefully. How many places can you find in the kitchen where physical and chemical changes can happen? You may want to read some things about the science of cooking to help you understand the changes better.
- Make more boxes and arrows like the one above to show where the changes you found take place.
- In the boxes, tell whether each change is a **chemical change** or a **physical change**.
- Tell the **cause** of as many changes as you can. For example, many changes in a kitchen are caused by adding or removing heat.
- If you think you will need more room, copy the picture of the kitchen and paste it onto a larger piece of paper. You may also use a picture like it cut from a magazine or found on the Internet.



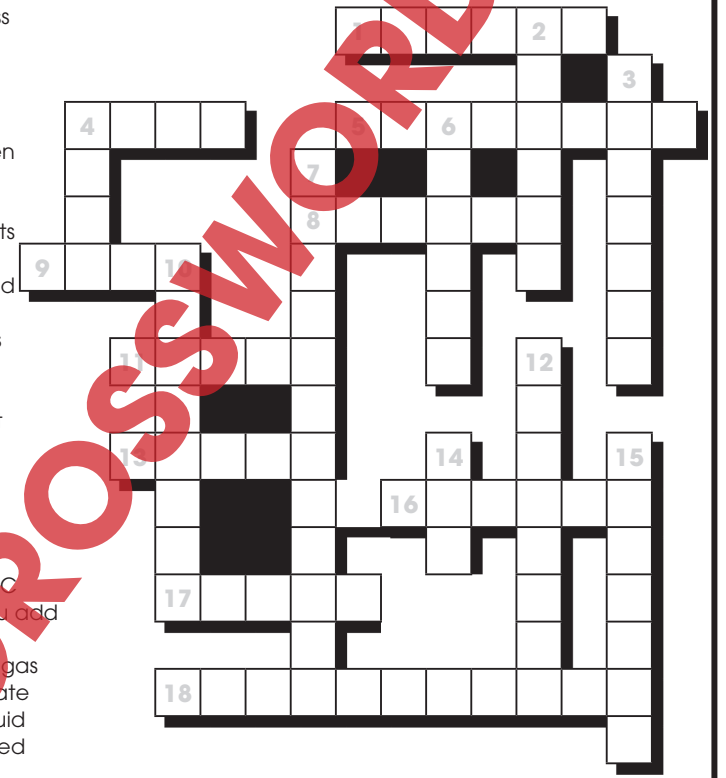
Crossword Puzzle!

Across

- How much space something takes up
- How much matter is in something
- A material dissolved in a liquid
- Something light cannot pass through
- A particle that cannot be divided with everyday tools
- A new material formed when something combines with oxygen
- What iron does when it reacts with oxygen
- Something that has mass and takes up space
- The state of matter that has a fixed shape and a fixed volume
- Some light passes through it and some does not

Down

- See 16 Across
- What water is doing at 212°C
- What a solid does when you add heat
- A material that is not in the gas state and not in the solid state
- The change from gas to liquid
- Two pure materials scrambled together
- Either an atom or a molecule
- Oxygen is one of these
- It keeps you from floating off into space



Comprehension Quiz

Part A

Circle **T** if the statement is **TRUE** or **F** if it is **FALSE**.

- T F** 1) Mass is a property of matter
- T F** 2) Atoms and particles are two kinds of molecules.
- T F** 3) When water boils, it changes into a new material.
- T F** 4) You would have less weight on the moon than you do on Earth.
- T F** 5) Smashing a pumpkin is a chemical change.
- T F** 6) When salt dissolves in water, it forms a mixture.
- T F** 7) Chemical changes cause atoms to fasten together a different way.

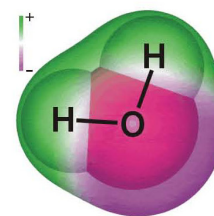
Part B

Put a check mark next to the answer that is most correct.

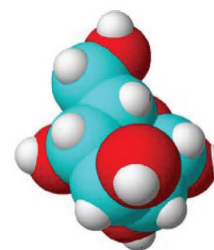
- When water changes from a gas to a liquid it is called
 - A boiling
 - B condensation
 - C evaporation
 - D freezing
- Which is a property of glass?
 - A It is soluble
 - B it is opaque
 - C it is flammable
 - D it is transparent
- Which tool could be used to separate sugar from water?
 - A a screen
 - B a refrigerator
 - C a kitchen stove
 - D a bucket of water

Particles In Two Kinds of Mixtures

Sugar particles in solution



Water molecule



Sugar molecule



water particles
sugar particles



Sand grain



Sugar grain

NAME: _____

After You Read 



Physical Changes vs. Chemical Changes

3. Use the words "atoms" and "molecules" to explain what happens when a new material is formed during a chemical change.

4. Describe a change you could see that could be *either* a chemical change or a physical change.

3. Atoms are connected in new ways to form new molecules.

Answers will vary

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4. Possible answers: color change, bubbles, volume change

5. Answers will vary

A. No

B. Yes

C. No matter could enter or leave in the first experiment. In the second experiment, no iron left, but oxygen from the air combined with the iron and added to the mass.

D. Yes, because the mass gained by the rusting iron equaled the mass lost by the air.

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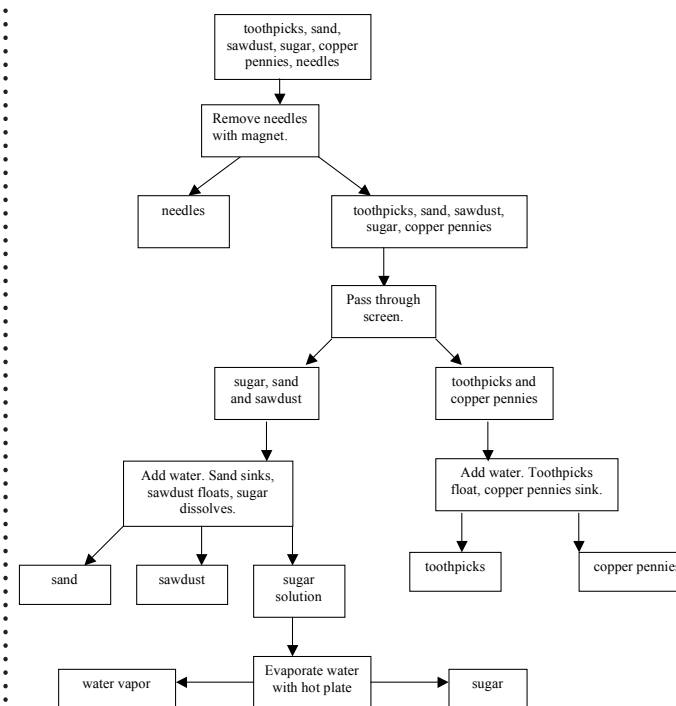
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EASY MARKING ANSWER KEY