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STUDENT HANDOUTS

• Reading Comprehension

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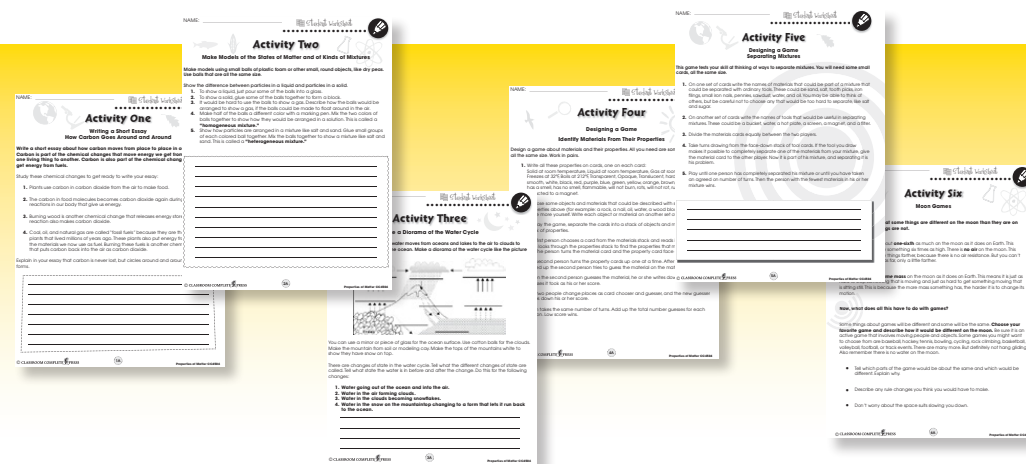
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FREE!

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 of Matter

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

- T F** a) During a physical change a new kind of matter is formed.
- T F** b) After a material has a physical change it is made of different kind of particles.
- T F** c) Melting is a physical change.
- T F** d) Adding heat to a material can cause a physical change.
- T F** e) When a liquid freezes, its particles get harder.

2. Circle the changes that are physical changes.

Melting butter

Breaking a pretzel

Digesting food

Boiling water

A nail rusting

Burning a match

Clothes drying on a line



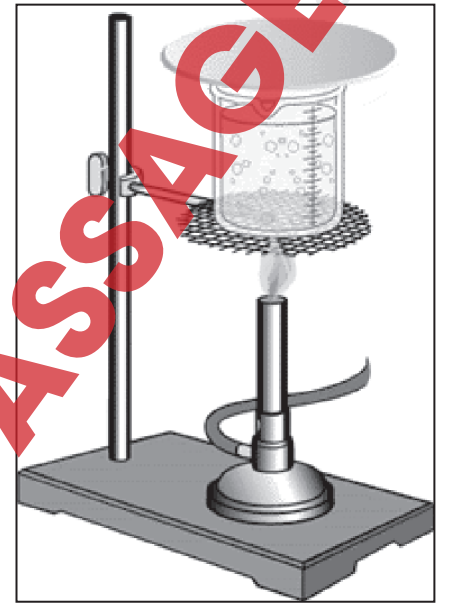
Physical Changes of Matter

Things can change in two ways: **physical changes** and **chemical changes**. A physical change makes something look different, but it is still the same material made of the same kinds of particles. A chemical change causes a whole new material to form. The new material is different because the particles are different. We will soon learn more about chemical changes. First we will look at physical changes.

We have studied how materials can change from solid to liquid to gas and back again. These are all physical changes because no new material is formed. Ice, liquid water, and steam are all made of water particles. Suppose an ice cube is melted, and then the melted water is all boiled away. Now all the water is water vapor. We could condense the water vapor back to liquid water and then freeze that water. The ice we get will be just the same as the ice we started with.

Adding heat causes materials to melt and boil.

Adding or removing heat can cause other physical changes, too. Remember that heat makes particles move faster. Heat also makes particles move farther apart. When particles move farther apart the material takes up more space. A material that takes up more space has a bigger volume. You can see this happen to a balloon. If you take a balloon out of the refrigerator and place it in warm sunlight, it will get larger. When volume gets larger, density gets smaller because the particles are not as close together.



Is the density of steam MORE or LESS than the density of water?
Explain your answer using the word "particles".



Physical Changes of Matter

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

a) What happens when particles of a material move farther apart?

- A A new material is formed.
- B The particles become larger.
- C The material becomes more dense.
- D The volume of the material becomes greater.

b) A physical change can do all of these things, *except*

- A form a new material.
- B make something smaller.
- C change a liquid into a gas.
- D change the color of something.

c) What happens to particles of a material when heat is added?

- A The particles move faster.
- B The particles are destroyed.
- C The particles become softer.
- D The particles move closer together.

2. Fill in each blank with a word from the list. Four words will be left over.

gas	solid	liquid	motion	heat
volume	density	freezing	particle	spacing

Water and ice are made of the same kind of _____ a _____ s.

Particles in a _____ b _____ are much farther apart than the particles in a liquid.

When volume gets larger, _____ c _____ gets smaller.

Adding _____ d _____ to a material makes its particles move faster.

The state a material is in depends on the _____ e _____ and _____ f _____ of the particles of the material.



Physical Changes of Matter

3. How is a physical change different from a chemical change?

4. How does removing heat from a material change the motion of its particles?

Extensions & Applications

5. Physical Changes Caused By Heat

a) This experiment shows that matter does not change during a physical change.

Weigh a cup of water. Put the water in a refrigerator freezer until it is frozen. Remove the frozen water and weigh it again. Let it melt and weigh it one more time.

A. Are the particles of melted water any different than they were before the experiment?

B. Are the weights the same?

C. If the weights are different, use the words "evaporation" and "condensation" to explain the differences.

b) Find an empty plastic soda or water bottle. Put the cap on loosely and run hot water over the bottle for a few minutes. Quickly screw the cap tight and put the bottle in the refrigerator freezer.

Wait 30 minutes and look at the bottle.

A. What happened to the volume of air in the bottle?

B. What happened to the mass of air in the bottle?

C. What happened to the density of the air in the bottle?

D. How did the motion and spacing of the air particles in the bottle change?



Photosynthesis, An Important Chemical Change

You learned earlier about an important chemical change that takes place in PLANTS. Plants turn carbon dioxide and water into oxygen and food molecules. Our bodies get energy from the food molecules. Do you know where the plants get the energy they put in the food? All that energy comes from the sun.

The scientific name for this reaction is **photosynthesis**. A material in plants called **chlorophyll** soaks up the sun's energy. The plant uses the energy from the sun in the photosynthesis reaction. Chlorophyll is green. It is what makes most plants green. Wherever you see green in a plant, photosynthesis can happen.

Experiment

For this experiment, you will need a small sheet of paper. It should be thick enough so that light cannot shine through it. You will also need something to cut the paper and some tape.

You are going to make a **pattern on a leaf**. To make the pattern, you will blocking some light from the leaf and let some light shine on the leaf. Where light hits the leaf it will be green.

Steps:

1. Cut holes in a piece of paper to make a word or picture that you want to see on the leaf. You could cut out the letters of your name; or, if you are very patient, the word "photosynthesis". Remember, whatever you cut out will have to fit on a leaf.
2. Find a large, strong leaf that gets sunlight. Tape the paper with the cut-out word or picture to the side of the leaf that gets the sun. Put it on so that the leaf is completely covered except for the cut-out.
3. Every few days, peek under the paper to see if the picture or word is starting to show up.
4. When you have a good picture, remove the leaf and bring it to school.

On the Internet, you can see pictures like this made by an artist by searching for "chlorophyll art"!



Word Search

Find all of the words in the Word Search. Words are written horizontally, vertically, diagonally, and some are even written backwards.

A	B	V	O	L	U	M	E	R	T	D	H	W	X	G	H
D	C	B	C	X	D	P	Q	R	S	F	J	M	Y	J	K
E	F	P	D	L	I	O	B	S	U	F	O	R	C	E	W
H	G	R	F	G	U	D	T	D	R	I	D	T	Z	Y	R
I	J	O	P	A	Q	U	E	G	A	I	X	S	M	P	E
L	K	P	R	H	I	T	V	A	S	W	E	I	G	H	T
S	M	E	S	O	L	I	D	S	Z	Z	A	R	M	Y	T
N	E	R	J	E	T	N	O	X	E	A	K	E	B	S	A
O	P	T	M	K	M	L	W	E	R	U	P	Q	C	I	M
R	Q	Y	T	I	V	A	R	G	B	A	L	P	D	C	X
S	T	X	Y	E	L	E	S	C	H	E	M	I	C	A	L
V	U	W	Z	A	L	M	X	S	C	G	M	N	F	L	Y

atom

boil

chemical

dissolve

force

freeze

gas

mass

gravity

liquid

matter

melt

mixture

opaque

oxide

volume

physical

property

pure

rot

rust

shape

solids

weight



Comprehension Quiz

Part A

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

- 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. **T** **F**

Part B

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

- 1) When water changes from a gas to a liquid it is called
 - A boiling
 - B condensation
 - C evaporation
 - D freezing
- 2) Which is a property of glass?
 - A It is soluble
 - B it is opaque
 - C it is flammable
 - D it is transparent
- 3) 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

Mass and Weight On the Earth and the Moon



NAME: _____

After You Read 



Physical Changes of Matter

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D. How did the motion and spacing of the air particles in the bottle change?

3.

Accept one of: A new material is formed during a chemical change but not during a physical change. (OR) Atoms are connected in a different ways after a chemical change but not after a physical change.

4.

Removing heat slows the particles down.

5.

B. Answers will vary

C. Water may have condensed on the cup, increasing the weight; or water may have evaporated, decreasing the weight

A. It collapsed

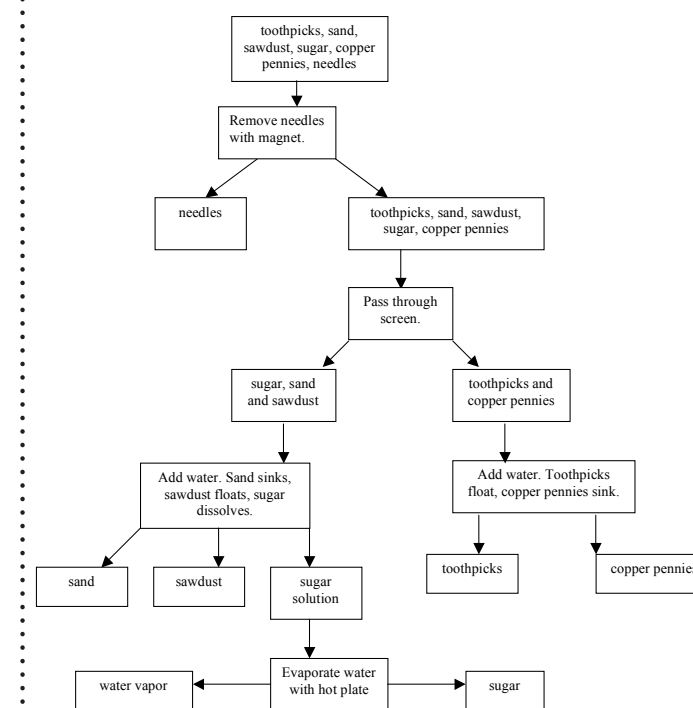
B. It stayed the same

C. It increased

D. The particles slowed down and moved closer together

Answers will vary

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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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EASY MARKING ANSWER KEY