

Name _____

What Are Physical Properties of Matter?

Science Words

Say each word quietly to yourself. Then read the meaning.

Read the tip to help you remember.

matter [MAT•cr] anything that takes up space and has mass

Matter and *mass* begin with the same sounds. If something has mass, it is *matter*.

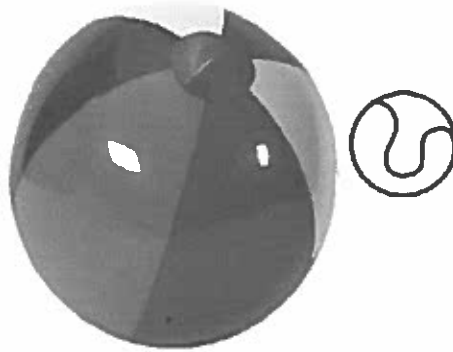
mass [MAS] the amount of matter in an object

Mass, *matter*, and *more* begin with the same sound. The more matter an object has, the more *mass* it has.

volume [VAHL•yoom] how much space an object takes up

When someone asks you to turn up the *volume* on a TV, the person wants more, or louder, sound. In science, something with more *volume* takes up more space.

Volume ends with the sound at the beginning of *millileter*. You measure the *volume* of a liquid in millileters.



The beach ball takes up more space than the tennis ball, so it has more volume.

physical property [FIZ•ih•kuhl PRAHP•er•tee] a characteristic of matter that you can observe or measure directly

Something that is *physical* exists in the world. Unlike an idea, something physical can be observed and measured.

Color, texture, shape, and size are *physical properties* because they can be observed and measured.

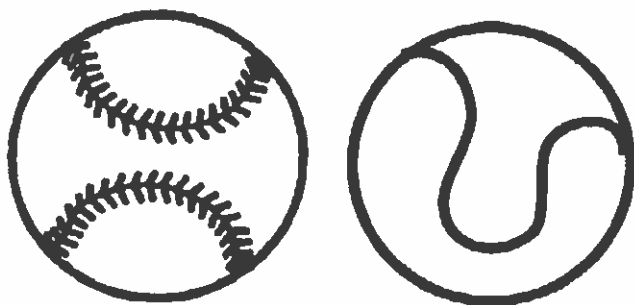
Name _____

What Are Physical Properties of Matter?

density [DEN•suh•tee] the amount of matter present in a certain volume of a substance

Density and *dense* begin the same way. If something is dense, its parts are crowded together, like the trees in a forest. If one forest is more dense than another, it has a greater *density*.

Imagine a baseball and a tennis ball. They are about the same size, but a baseball has more matter, or mass, than a tennis ball. So, a baseball has a greater *density*.



A baseball and a tennis ball are about the same size. But a baseball has more mass, so it has greater density.

Science Concepts

Read the Ideas more than once. Do your best to remember them.

1. Anything that takes up space and has mass is matter.
2. A physical property is a feature or quality of matter that you can observe or measure.
3. Hardness, size, color, shape, taste, texture, and odor are physical properties.
4. Mass, volume, and density are physical properties.
5. Mass is the amount of matter in an object measured in grams or kilograms.
6. Volume is how much space an object takes up.
7. Volume is measured in cubic centimeters for solids, and milliliters for liquids.
8. The volume of an irregular shape can be measured by seeing how much liquid it displaces.
9. Density is the amount of matter present in a certain volume.
10. The density of an object, or substance, is always the same.

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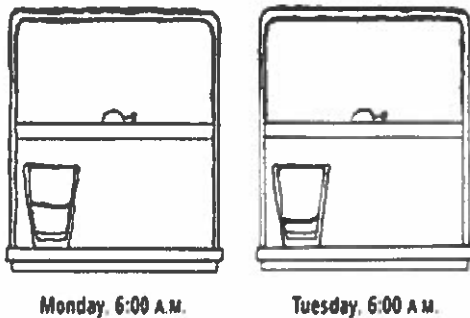
What Are States of Water?

change of state [CHAYNJ uhv STAYT] when matter changes from one form to another

When something changes, it becomes different. When liquid water becomes solid ice, it goes through a *change of state*. The change is from a liquid to a solid.

evaporation [ee-vap-uh-RAY-shuhn] the process by which a liquid changes into a gas

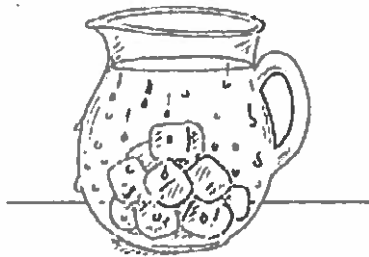
Evaporation and *every* begin with the same sounds. *Evaporation* takes place from every river, lake, ocean, and puddle on Earth.



The liquid in the cup has changed to a gas. Evaporation has taken place.

condensation [kahn-duhn-SAY-shuhn] the process by which a gas changes into a liquid

Condensation, *create*, and *clouds* begin with the same sound. *Condensation* creates clouds when water vapor touches bits of dust and changes to tiny drops of water.



Water vapor in the air has changed to drops of water on the outside of the pitcher. Condensation has taken place.

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**Extra Support for
Vocabulary and Concepts**

What Are States of Water?

Science Concepts

Read the Ideas more than once. Do your best to remember them.

1. Three states of matter are solid, liquid, and gas.
2. A solid, such as a book or pencil, has a fixed or set volume and shape.
3. A liquid, such as water or milk, has a fixed volume, but no fixed shape.
4. A gas, such as oxygen, does not have a fixed volume or a fixed shape.
5. The particles in a solid vibrate, but remain close together at all times.
6. The particles in a liquid, which are not as close together, slide past each other as they move.
7. The particles in a gas are far apart and move quickly in all directions.
8. Taking away heat energy causes particles to slow, and may cause a liquid to become a solid.
9. Adding heat energy causes particles to speed up, and may cause a solid to become a liquid.
10. Evaporation, which is a liquid becoming a gas, is the opposite of condensation.

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What Are Some Physical Changes?

Science Words

Say each word quietly to yourself. Then read the meaning.

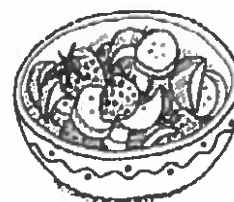
Read the tip to help you remember.

physical change [FIZ·ih·huhl CHAYNJ] a change in which a new substance is not formed

Matter has physical properties, such as color, shape, and mass. A *physical change* is a change in a physical property. Soaking, shredding, and crumpling paper are *physical changes* because they change the physical properties of the paper. They do not change the paper into something new.

mixture [MIKS·cher] a combination of two or more substances that keep their identities

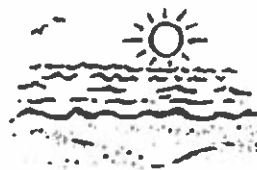
Mixture contains the word *mix*. To mix things is to combine them. To make a *mixture*, you mix things together.



A fruit salad is a mixture.

solution [suh·LOO·shuhn] a mixture in which the substances are evenly mixed

Solution, *specific*, and *same* begin with the same sound. A *solution* is a specific kind of mixture—it is the same throughout.



The ocean is a solution of salt and water.

Science Concepts

Read the Ideas more than once. Do your best to remember them.

1. Changing a physical property of something, such as its shape or texture, is a physical change.
2. A change in state that happens when heat is added or removed is a physical change.
3. Melting is a change from a solid to a liquid that takes place when heat is added to the solid.
4. Evaporation is a change from a liquid to a gas that happens when heat is added to the liquid.
5. Freezing is a change from a liquid to a solid when heat is removed from the liquid.
6. A mixture, such as a salad, is a physical change because no new substances are made.
7. Gold and copper may be melted and mixed together to form a solution.
8. In the ocean, the water is a solvent—the larger part of a solution that dissolves other substances.
9. The salt in ocean water is a solute—the substance that dissolves in the larger part of a solution.
10. Water can dissolve more things than any other solvent, but oil does *not* dissolve in water.

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What Are Some Chemical Changes?

Science Words

Say each word quietly to yourself. Then read the meaning.

Read the tip to help you remember.

chemical property [KEM•ih•kuhl PRAHP•er•tsee] a property that describes how a substance interacts with other substances

Property and *predict* begin with the same sounds. A *chemical property* of something makes it possible to predict how it will change.

chemical change [KEM•ih•kuhl CHAYNJ] a change in which a substance changes into an entirely new substance

Chemical and *cause* begin with the same sound. A *chemical change* causes a new kind of matter to form. A wood fire is a chemical change because it causes wood to change into smoke and ashes.

chemical reaction [KEM•ih•kuhl ree•AK•shuhn] another name for a chemical change

Reaction ends with the sound at the beginning of *new*. Like a chemical change, a *chemical reaction* results in a new kind of matter.

Science Concepts

Read the Ideas more than once. Do your best to remember them.

1. The ability to rust is a chemical property of iron, but not aluminum.
2. The ability to burn is a chemical property of wood; burning causes a chemical change.
3. The same amount of matter is present before and after substances interact.
4. Odor, a change in color, light, heat, and gas bubbles are signs of a chemical change.
5. Leaves give off a smelly gas as they break down; the smell signals a chemical change.
6. Mold, cooking, burning, and rust are examples of chemical change.
7. Burning changes wood to ashes, smoke, and gases; burning is a chemical change.
8. Your stomach adds substances to speed the breakdown of the food you eat.
9. It is possible to control the rate of some chemical changes.
10. Increasing temperature can speed up a reaction; warm milk spoils faster than cold milk.