Name _____

Extra Support for
Vocabulary and Concepts

# What Are Solids, Liquids, and Gases?

## Science Words

**Say each word quietly to yourself. Then read the meaning.**
**Read the tip to help you remember.**

**matter** [MAT•er] anything that has mass and volume

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

**temperature** [TEM•per•uh•cher] a measure of the energy of motion of the particles in matter

*Temperature* and *degrees* have three e's. You use a thermometer to measure *temperature* in degrees.

**liquid** [LIK•wid] a substance that has definite volume but does not have a definite shape

*Liquid* and *lack* begin with the same sound. A *liquid* lacks a definite shape. It takes the shape of its container.

**solid** [SAHL•id] a substance with a definite shape and volume

*Solid* and *set* begin with the same sound. Something definite is set or fixed. A *solid* has a set size and shape.

**gas** [GAS] a substance that does not have a definite shape or volume

*Gas* and *fits* end with the same sound. A *gas* fits into the size and shape of the space it has. An amount of *gas* will spread out to fill a big container and contract to fit into a small container.

Particles in a solid  Particles in a liquid  Particles in a gas

**volume** [VAHL•yoom] the amount of space something takes up

When someone asks you to turn up the *volume* on a TV, the person wants more, or louder, sound. In the science of matter, 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.

Name _____



# What Are Solids, Liquids, and Gases?

## Science Concepts

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

1. Matter cannot be created or destroyed, but it can change form from solid to liquid to gas.
2. You can observe physical properties of matter without changing the matter into something new.
3. Temperature—a measure of how fast particles in matter are moving—is a physical property.
4. Density— how much matter is in a specific volume—is a physical property.
5. To find the density of an object, divide the mass of the object by its volume.
6. Matter is made of tiny particles; the particles have energy and are always moving.
7. Particles in a solid vibrate close together, so the solid keeps its shape.
8. Particles in a gas have a lot of energy and are far apart, so a gas spreads out.
9. When water gives off energy, it cools and may change from a liquid to a solid, ice.
10. When water takes in energy, it heats up and may change from a liquid to a gas, water vapor.

Name _____

Extra Support for Vocabulary and Concepts

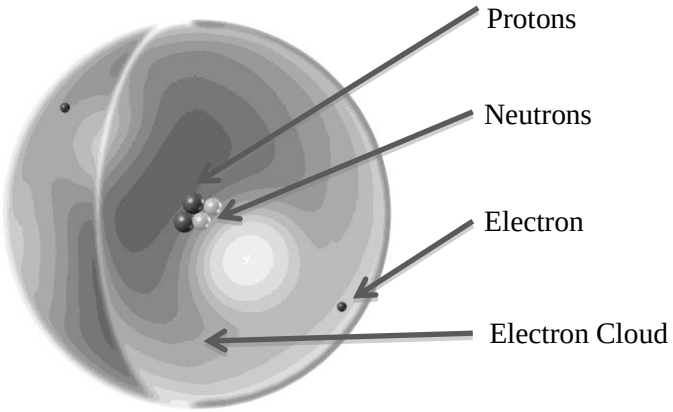
# What Is the Atomic Theory?

## Science Words

**Say each word quietly to yourself. Then read the meaning.**
**Read the tip to help you remember.**

**atom** [AT•uhm] the smallest unit of an element that maintains the properties of that element

*Atom* ends with the sound at the beginning of *minute*. An *atom* is minute—very, very tiny.




Protons and neutrons are in the nucleus of the atom.

**atomic theory** [uh•TAHM•ik THEE•uh•ree] scientific explanation of the structure of atoms and how they interact with other atoms

*Theory* and *thought* begin with the same sound. *Atomic theory* is scientists' thoughts on what atoms are made of and how atoms behave.

**element** [EL•uh•muhnt] substances that can't be broken into simpler substances

In the word *element*, all the vowels are the same. In a real *element*, all the atoms are the same.

**molecule** [MAHL•uh•kyool] two or more atoms joined together chemically

Molecule has two *e*'s and two *l*'s. Let these two's remind you that a *molecule* is two or more atoms.

**compound** [KAHM•pownd] a substance made of atoms of at least two different elements

A *compound* word is made of two or more words that are put together. In science, a *compound* is made of two of more kinds of atoms.

Name _____



# What Is the Atomic Theory?

## Science Concepts

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

1. Atoms, the building blocks of all matter, are made of protons, neutrons, and electrons.
2. An atom has a nucleus that contains protons, which are positively charged particles, and neutrons, which are particles with no charge.
3. The nucleus is surrounded by negatively charged particles called electrons.
4. All atoms of an element have the same number of protons; no other element has that number.
5. The electrons of an atom can be gained or lost, but the protons stay the same.
6. Different atoms of the same element can contain different numbers of neutrons.
7. The properties of a compound may be different from the properties of the elements that form it.
8. There are more than 100 elements.
9. Water is a compound of two hydrogen atoms and one oxygen atom.
10. Salt is a combination of nine sodium atoms and nine chlorine atoms.

Name _____

Extra Support for Vocabulary and Concepts

# How Does Matter Change?

## 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 matter that does not affect the type of matter

Matter has physical properties, such as color, size, 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.

**chemical change** [KEN•ih•kuhl CHAYNJ] a change in matter that results in a change in the identity of the matter

*Chemical* and *create* begin with the same sound. A *chemical change* creates matter with different properties. A cooked apple has different properties from a raw apple, so the apple has undergone a chemical change.

Burning is a chemical change. The change turns wood into gases, smoke, and ash.

**reaction** [ree•AK•shuhn] the process in which new substances are formed during a chemical change

*Reaction* contains the word *react*. When someone says something funny, you might react by smiling. The *reaction* in you produces a smile. The smile is a change. In science, a *reaction* also produces a change.

**conservation of mass** [kahn•ser•VAY•shuhn uhv MAS] the idea that matter may change in its appearance or identity, but the total mass of the matter before and after the change remains the same

*Conservation* and *constant* begin in the same way. *Conservation of mass* is the idea that mass stays constant.

Name _____



# How Does Matter Change?

## Science Concepts

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

1. Physical changes don't affect the properties of the matter being changed; chemical changes do.
2. You can observe the physical properties of matter without changing the type of matter.
3. You cannot observe the chemical properties of matter without changing the matter.
4. A chemical change, such as rotting, results in a change in the identity of the matter.
5. Except for water, matter expands when it heats up and contracts when it cools down.
6. Water expands when it cools and becomes less dense, which is why ice floats in water.
7. The rate of change is how quickly a change in matter takes place.
8. Warmer air causes ice to melt faster–have a faster rate of change–than cooler air.
9. The amount of mass in matter stays the same during physical and chemical changes.
10. The mass of wood and air equals the mass of the smoke, ashes, and gases produced when the wood burns.

Name _____



# What Are Mixtures and Solutions?

## Science Words

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

**Read the tip to help you remember.**

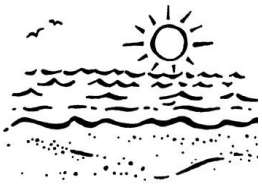
**mixture** [MIKS•cher] a combination of two or more substances that keep their identities

*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 that has the same composition throughout

*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. Everything that is part of a mixture keeps its own identity.
2. The matter in a mixture may not be spread evenly throughout the mixture.
3. A solution is a mixture in which the matter is spread evenly throughout.
4. A solution forms when one kind of matter dissolves in another kind of matter.
5. Air is a solution of different gases; the ocean is a solution of salt and water.
6. Some solids, such as salt, dissolve in liquids, but others, such as sand, do not.
7. Physical properties, such as size and color, can be used to separate the matter in mixtures.
8. A magnet can be used to separate a mixture that contains objects made with iron.
9. Water can be used to separate a mixture with some objects that float and some that do not.
10. An alloy is a mixture of metals; steel is an alloy made from iron and other metals such as nickel.