6th Grade Science

June 2021

Dear BelovED Scholars,

Congratulations! You have successfully met the criteria to advance into your 6th Grade year! Welcome to Middle School! This year will be an exciting time as you continue to make memories,but will also be one in which you begin to reflect on your journey here at BelovED and your goals for High School and beyond! I hope you are looking forward to an enjoyable summer. Attached you will find information and activities for your summer work in Science. The contents of the packet will provide you with the preparation and foundation for the 6th Grade Science curriculum. Your goal must be to master the concepts and vocabulary and retain them. You are responsible for completing the packet over the summer.

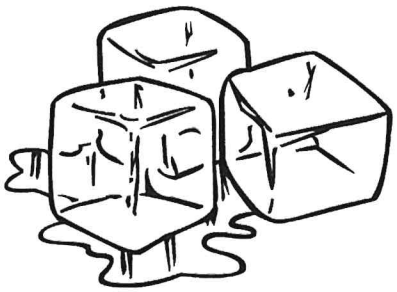
Upon returning to school, your packet will be checked and graded for completion and count as your first homework grade. We will review the packet and an assessment will be given. We are going to have an exciting, challenging and fun year. I look forward to working with you all next year. I hope you have a great summer!

Best of luck to you all,

Mrs. Paone-Colon
6th Grade Science

Name: _____ Date: _____

What is Matter?



Vocabulary Words:
Matter: anything that has mass and takes up space
Volume: the amount of space matter takes up
Chemistry: the study of matter

Things around you. All around you there is matter. The chair you are sitting on, air and water are all matter. Almost everything that you see is matter. Anything that has mass and takes up space is called matter.

What do we call something that has mass and takes up space?

Matter has mass. Place two clear glasses in front of you. Next, fill one glass with water. When you lift both glasses, the one with water should feel heavier. Water has mass because water is matter. Mass is what makes the glass feel heavier.

Why does a glass of water feel heavier than an empty glass?

Air is another example of matter. Take a pool float and press it as flat as you can.

Measure the mass of it. Fill the same pool float with air and measure its mass again. The pool float should feel heavier. This is because air has mass. Air is matter. The mass of the air in the pool float makes it heavier.

Why does a pool float weigh more when it is filled with air?

Matter takes up space. Remember the glass we filled with water earlier? Now, take a rock and place it in the glass. The rock is matter. It takes up space in the glass. The rock pushes some of the water out of its way. The amount of space the rock takes up is called volume. Another example of matter taking up space is when you are taking a bath. When you get into the bathtub, the water level rises. You are moving water out of the way to make room for yourself.

We said before that air is matter. We know that air takes up space. When you blow air into a balloon, the air makes the balloon take up more space. The volume of the balloon gets bigger.

Why does a balloon take up more space when you blow air into it?

Even humans are matter. As discussed earlier, everything around us is matter. Did you realize that includes YOU? When we go to a doctor's office, we step on a scale to measure how much we weigh. When we take a bubble bath, the water level rises when we get into the bathtub. We take up space. Why does this happen? It happens because we have mass and take up space. You are matter, too.

How can you show others that you are matter?

What is chemistry? Chemistry sounds like a big confusing word. However, chemistry is not confusing. Chemistry is the study of matter. Scientists who study matter are called chemists.

What does a chemist do?

What you learned:

- ✓ Matter is anything that has mass and takes up space.
- ✓ Nearly everything you see in the world is made of matter.
- ✓ Volume is the amount of space an object takes up.
- ✓ Chemistry is the study of matter.

Answer These:

1. Why does a bicycle tire get heavier when you pump air into it?

_____

_____

2. What properties of air make you think that it is matter?

_____

_____

_____ **3. Matter**

a. can push water out of a glass b. cannot push water out of a glass

c. cannot push air out of a glass

_____ **4. The amount of space matter takes up is called**

a. weight b. volume c. chemistry d. measurement

5. What is the name of the person who studies matter? _____

6. List three examples of matter:

_____

_____

_____

Name: _____ Date: _____

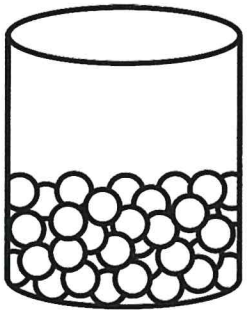
What are the Forms of Matter?

Vocabulary Words:
phase or state: one of the forms in which matter is found
solid: form of matter: has a definite shape and volume
liquid: form of matter: no definite shape, but a definite volume
gas: form of matter: no definite shape or volume
molecules: tiny bits that make up matter
vibrate: move back and forth quickly in a small space

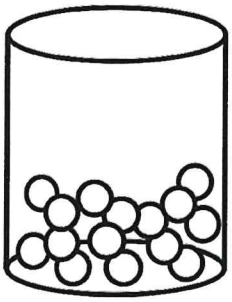
All matter is not exactly the same. Matter is all around us, but all matter is not exactly the same. Your school building is most likely made from concrete. Concrete is much different from the water that we drink. Concrete and water are both different from the oxygen that we breathe in. There are three forms of matter. Forms of matter may also be called phases or states of matter.

What are some examples of matter?

Solids. The concrete building you are in right now has a definite shape. It also has a definite volume. Volume is the amount of space it takes up. Concrete is solid. All solids have certain characteristics in common. They all have a definite shape and volume. If we were to look at the molecules of a solid, we would see that in all solids, the molecules are packed super tightly together. These molecules do not have a lot of room to move around so they just vibrate in place. Since the molecules cannot move around, this is what helps to keep the object's shape. Solids can be hard, like concrete. Solids can also be soft, like stuffed animals.



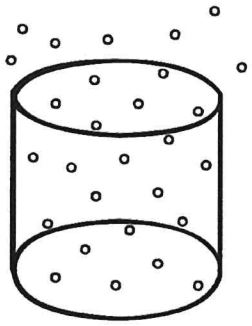
What are the characteristics of a solid?



Liquids. Pour water from your water bottle onto the floor. What happens to the shape of the water? The shape changes from taking the shape of the water bottle to becoming a puddle on the floor. Water is different from a solid. It does not have a definite shape. Water will change shape depending on what container it is in. However, the volume of water will remain the same. Liquids have a definite volume. The amount of water that was in the water bottle is the same amount of water that is now in the puddle on your floor. (Make sure you wipe it up now). Since water is able to change shape, the molecules of water are different than the molecules of a solid. The molecules of water have more room to move around. They are able to easily slide past one another.

What is one difference between liquids and solids?

Gases. Take a balloon and blow air into it. Hold the end of the balloon. Squeeze the balloon. You can easily change the shape of the balloon. Air is similar to liquids in that it will take the shape of whatever it is in. Gases do not have a definite shape. Unlike solids and liquids, gases do not have a definite volume. Gases will spread out to completely take up space in the container they are in. A water bottle can be half empty but a container filled with a gas, such as helium, will always be completely full. Molecules in a gas look very different compared to molecules in a solid or liquid. Molecules in a gas move around super quickly and have plenty of room between one another. This is why they are able to change shape and fill up a container.



Why can a container never be half full of air?

What you learned:

- ✓ There are three phases of matter: solids, liquids, and gases.
- ✓ Solids have a definite shape and volume. Their molecules vibrate in place.
- ✓ Liquids have a definite volume, but do not have a definite shape. Their molecules can slide past one another and change position.
- ✓ Gases do not have a definite shape or volume. They can easily spread out to all parts of a container.

Answer These:

_____ 1. The form matter comes in is called

a. shape b. phase or state c. volume

_____ 2. When you pour milk from a carton into a glass, the milk changes

a. volume b. shape c. mass

_____ 3. In a container of gas, the molecules are

a. mostly at the bottom b. mostly at the top c. spread out evenly

4. How are liquids and gases different from one another?

_____

_____

_____

5. What is something solids and liquids have in common?

_____

_____

6. Give an example of each state of matter. _____

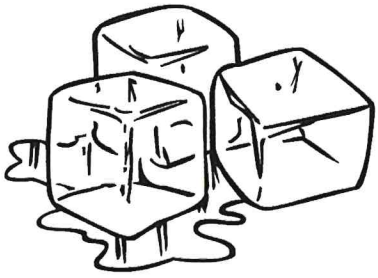
_____

_____

Name: _____ Date: _____

Can Matter Change Forms?

Vocabulary Words:
evaporation: changing from a liquid to a gas when the liquid is left open to air
condensation: changing from a gas to a liquid

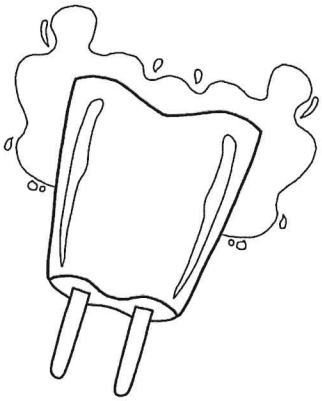


Water can become a solid. During the summer, it is not unusual to fill an ice tray with water and put it in the freezer to make ice cubes. The temperature in the freezer is usually at 0°F or -17°C. This temperature is below the freezing point of water. When the ice cube tray is placed in the freezer, the water loses its heat and changes to ice. The water now becomes a solid. The shape of the water now takes the shape of the ice cube tray. Ice is a solid. When liquids lose enough of their heat, they can become a solid. When this happens it is called freezing.

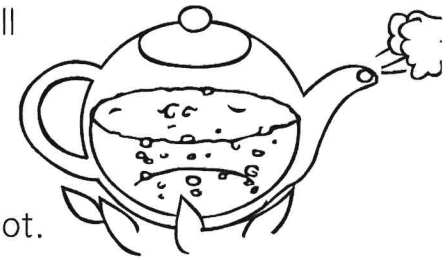
How can water become a solid?

Ice can become a liquid. Just as liquids can become solids, solids can become liquids. In the summertime, if you take out the ice cubes from the freezer, you will observe that they do not remain ice cubes forever. The warm air temperatures will cause the ice cubes to gain heat. As the ice cubes gain heat, they will melt. As the ice cubes are melting, they are returning back to the liquid phase. This process is called melting. This is how a solid can become a liquid.

How can a solid become a liquid?

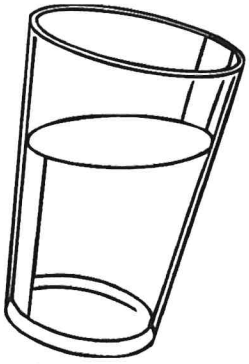


Liquids can become gases. It is time for dinner. Take a pot and fill it with water. Place it on your stovetop. Turn on the dial. Heat the pot until the water inside it boils. As the water prepares to boil, you will notice bubbles coming up from the bottom of the pot. When the water begins to boil, steam will rise from the water. The water is evaporating. Water that is evaporating is called steam or water vapor. Evaporation is the method that liquids take to become a gas. The water in the pot could continue to boil until each drop has evaporated into the air. Evaporation takes place when molecules of water escape from the liquid into the air. Liquids can evaporate when they are exposed to the air or high heat.



How can water become a gas?

Gases can become liquids. On a warm summer day, take a glass of iced tea outside. Sit down and relax. After some time, you might notice that there are water droplets on the outside of your glass. The drops of water are water vapor that has cooled. When a gas cools and turns to a liquid, this is called condensation. Condensation is when a gas becomes a liquid. Another example of this can be shown if you take a bowl of ice and hold it carefully over a pot of boiling water. Heat from the stove made the water turn to water vapor. As it hits the bowl of ice, it is cooled again and turns back into water droplets. Changing a gas to a liquid is called condensation.



What is condensation?

What you learned:

- ✓ Liquids change to a solid when they lose heat.
- ✓ Solids change to a liquid by gaining heat.
- ✓ When a liquid boils, it changes to a gas.
- ✓ A liquid can change to a gas by evaporation.
- ✓ A gas can change to a liquid by condensation.

Answer These:

_____ 1. To change a solid to a liquid, you need to

a. cool it b. remove heat c. add heat

_____ 2. To change a solid to a liquid is called

a. melting b. freezing c. cooling

_____ 3. Water changes from a liquid to a gas when it

a. melts b. loses heat c. evaporates

4. Describe how water can become ice.

_____

_____

_____

5. Why do water droplets form on a mirror while you are in the shower?

_____

_____

_____