

Reflect

Suzanne loves to swim on warm summer days. She has a pool in her backyard that she spends many hours using. When it gets too warm, she likes to drink ice-cold lemonade that has been freshly squeezed that day. One day, as she was floating in the pool, Suzanne noticed that a glass of juice that she had left out a few days earlier was different from what she had remembered. The glass was full a few days ago, and now it is only half full.

What do Suzanne, her pool, the iced lemonade, and the disappearing liquid all have in common? *Water.*



What are the different forms of water?

When we think of water, we usually think of it as a liquid. However, water can also be a solid or a gas. When water is a solid, it is called ice. When water is a gas, it is called *water vapor*.




Here are some descriptions of the different states of matter in which water can exist:

- **Solid:** a solid is when the particles that make up an object are so close together that they cannot move around.
- **Liquid:** a liquid is when the particles that make up an object are close together, but they can still move or slide around each other.
- **Gas:** a gas is when the particles that make up an object are completely separate, so they can bounce around.

Water is all around us. It is in our atmosphere as water vapor, it is in our bodies, and it covers our planet. We use water for a vast number of things every single day.

Water is matter, and matter has physical properties that help us distinguish it from other substances. Since water can exist in three different states, the properties that water has can be different from one moment to the next.

Properties of Water

Properties of the Different States of Water		
Solid (Ice)	Liquid	Gas (Water Vapor)
		
Has its own shape that does not change	Takes the shape of the part of the container it fills	Expands to fill the entire container it is in
Does not move	Flows toward the bottom	Moves easily in all directions

Do you remember Suzanne's summer activities? The pool water was a liquid. The ice in her lemonade was a solid. What was a gas? This is a little trickier. When Suzanne looked over at the cup of juice, she noticed that there was only half of what was there before. Did the juice disappear? No, the water in the juice evaporated. This means the Sun heated up the water, and it turned into a gas.

What Do You Think?

Suzanne's summer fun involved the three different forms of water: solid, liquid, and gas. What would winter fun look like for Suzanne? What could she do in the winter that involved all three states of matter?

Water changes states at very specific temperatures. When water changes from a solid to a liquid, that is called melting. Pure water melts at 0°C . When water changes from a liquid to a solid, that is called freezing. Water freezes at the same temperature that ice melts, 0°C . When water changes from a liquid to a gas, that is called evaporation or boiling. Water boils at 100°C .

Look Out!

Many people have no idea of all the things for which water is used. Aside from being used for drinking, water is also used for cleaning, moving objects, and generating electricity. Ice is used for more than just cooling our drinks, as well! Scientists use ice to preserve substances for long periods of time. Doctors and nurses will give ice to numb pain and stop swelling of injured parts of our bodies. We can use steam, too. Steam is used when people iron and press their clothes. Most modern irons use steam in order to make the clothing more flexible, so that the iron can flatten it out. These are only a few examples of how water is used in its different states.

What Do You Think?

Take a moment to fill in the table below with three to five uses of each of the states of water. Brainstorm with a partner and try to come up with examples that have not been used in this text.

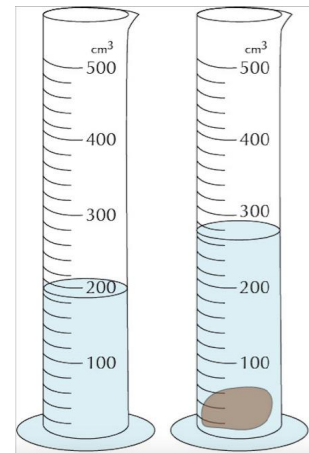
Uses of the Different States of Water		
Solid	Liquid	Gas

Try Now

Take a few moments to explore one of the uses of water. Make sure you have an adult with you when you perform this task.

Water can be used to determine the volume of irregularly-shaped objects such as rocks. Follow the steps below to find out the volume of a rock.

1. Grab a measuring cup from the kitchen and a rock from outside.
2. Fill the measuring cup about halfway with water. Make sure you are using metric measurements (if you have them), and make sure you fill it to an exact measurement point.
3. Place the rock into the water.
4. Notice what the new measurement is.
5. Subtract the original volume of the water from the new volume of the water and the rock. The difference that you get is the volume of the rock.



Water is a very useful tool that we can use to measure other types of matter that otherwise could not be measured.

With what other types of material could you do this activity? There are hundreds of oddly-shaped objects that we use every day.

Connecting With Your Child

When Life Hands You Lemons . . .

Water is a very common and very useful substance in our daily lives. We use it in all forms several times a day. In fact, sometimes we use it subconsciously.

Water is an important part of our health, too. When we are doing a great amount of physical activity, it is important for us to stay properly hydrated so that our bodies can recover from the extra work they have to do. That is on top of the already high amount of water our bodies need on a regular day.

Talk with your child about the importance of staying hydrated when playing outside or working out. Florida summers can be quite warm, and that only makes the importance on this even greater.

Spend some time exploring with your child more of the properties of water. Sometimes water is a substance in which other substances dissolve. Teach your child how to make lemonade. While you are making it, observe what happens when you stir the water, lemon juice, and sugar together. Discuss these observations with your child and ask questions.

Here are some questions to ask your child as you make lemonade together:

1. What are states of matter?
2. What is the most common state of water?
3. What do we use water for in the real world? Ice? Steam?
4. Why is water so important to our world?