

Second Grade Extension Activities



States of Matter

Matter is all around us! For scientists, matter is anything that takes up space and has mass. That means that almost everything around us, even stuff too small to see with our naked eye, is matter. On Earth, most matter is in one of three forms, or “states”. The three main states of matter are **solid**, **liquid**, and **gas**.

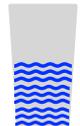
States of Matter Scavenger Hunt:

Look around your house to see if you can find an example of a solid, a liquid, and a gas. Observe and draw each of your examples. Look for details that make each state of matter different.

Solids are matter that have **a definite shape and size**. A table, a couch, and a book are all examples of solids. They will not change their shapes if you turn them a different direction, and they won't grow bigger or smaller if you put them in another space.



Liquids are matter that have **a definite size, but no definite shape**. Water, orange juice, and milk are all examples of liquids. Liquids will change their shape to fill the bottom of whatever container they are poured into, but if you pour a liquid from one container to another the amount of liquid will not change.



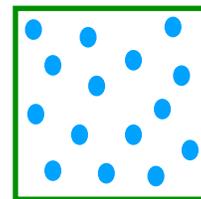
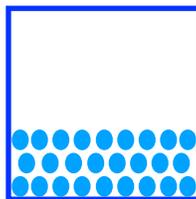
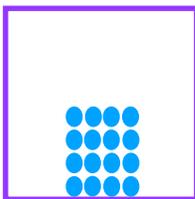
Try this: Using a measuring cup, pour 1 cup of water from the measuring cup into a different shaped container. Notice how the shape of the water changes. Now, pour the water back into the measuring cup. You should still have 1 cup of water.

Gases are matter that have **no definite shape or size**. Air is a mixture of gases that we can breathe in, and carbon dioxide is an example of a gas we breathe out. Gases spread out to fill up whatever container they are in. For example, if you blow into a balloon, the air inside of the balloon will spread out to fill up the whole balloon.



Do the Molecule Dance:

Matter is made of molecules. Molecules are very small; so small that you can't see them with your naked eyes. Everything in the world (including you!) is made up of billions and trillions of molecules. Molecules are arranged differently in solids, liquids, and gases. Look at the three pictures below and see if you can guess which model represents a solid, a liquid, and a gas.



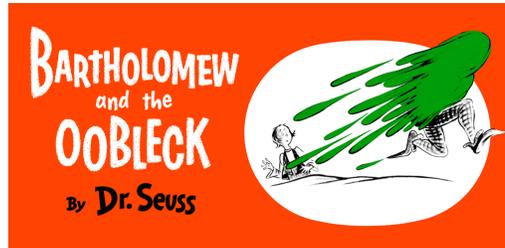
Need a movement break? Use your body to act like the molecules in each state of matter. To act like a solid, stand still like a statue. For a liquid, you can move a little, and sink down to the floor. As a gas you can move all around the room, filling up every space. Make up your own dance or game like Simon Says using each of these movements.

Oobleck!

Experiment with matter by making this ooey, gooey slime.

Materials:

- Cornstarch
- Water
- A mixing bowl
- A spoon
- Food coloring (optional)



Try This:

1. Combine 2 cups of cornstarch and 1 cup of water into a large mixing bowl.
2. Stir together with a spoon or your hands until fully combined.
3. You can easily make more or less oobleck if you like, just make sure that you always use two parts cornstarch to one part water.

Experiment:

Try changing the amount of pressure you put on your oobleck and observe what happens. Apply pressure by quickly poking the oobleck with a spoon. How does it feel? Now try slowly pressing your spoon through the oobleck. What do you notice this time? You can also try rolling the oobleck into a ball in your hands and then releasing the pressure by holding the ball still in your hands. What happens to the ball? Continue to play and experiment with your oobleck to see what you can observe.

Think about it:

What state of matter do you think your oobleck is? Think about the properties of each state of matter we learned about. Does oobleck fit in with any of these? Does it fit with more than one? Can you think of any other substances that are similar? Make your hypothesis!

Want to know more?:

Oobleck is a non-newtonian fluid. This means that it acts like both a solid and a liquid. When pressure is applied to oobleck, the cornstarch molecules smash together and act like a hard solid. When pressure is released, the cornstarch molecules have time to move out of the way and the oobleck acts like a liquid. Another way to think about it is to imagine a Ziploc bag full of marbles. In this model, the marbles act like the cornstarch molecules that make up oobleck. When you squeeze the bag (applying pressure) the marbles run into each other and it would be difficult to move a spoon through them. When you release the pressure and slowly put your spoon through the bag of marbles, they will move out of the way and you can get it all the way to the bottom.

Clean Up:

Although oobleck looks messy, it actually cleans up really easily. Throw large amounts of oobleck into a trash bag, then rinse the bowl by continuously running warm water over it. This will ensure that you dilute the oobleck enough as it rinses down the sink. Wipe up any oobleck that landed on the table, floor, or your child with a damp rag.

Literacy Connection:

After you have finished experimenting, read Bartholomew and the Oobleck by Dr. Seuss.