

Lesson 1.2 Matter

What is Matter?



A cup of water is made up of matter.

What do your clothes, a basketball, a cup of water, and the air you're breathing all have in common? They are all made up the same thing - **matter**. Matter means anything that takes up space, which, in other words, is everything! Everything around us has matter, whether or not you can see, feel, touch, or smell it.

Matter is defined by two things **mass** and **volume**. Mass is the amount of matter something has in it (it's weight). Volume is how much space something takes up (it's size).

Explaining Matter

There are three different states of matter: **solid, liquid, and gas**¹.



A book is one example of a solid.

- **Solid** is something that has a fixed size and shape, and it doesn't change. Anything you can pick up, hold, and feel is a solid. A book is a solid because its shape and volume stay the same, even if you move it from one place to another. A pen, a banana, and a piece of wood are all examples of solids.
- **Liquid** has a fixed volume (amount), but it takes on the shape of whatever container it's in. Anything that flows when it's poured is a liquid. Milk is a liquid, so it has the shape of the bottle that it's in, but if you would pour it into a square container, that's the shape it will take. Although its shape changes, the amount of milk stays the same. Water, oil, and soap are also examples of liquids.
- **Gas** is something that doesn't have a fixed size or shape, but it takes on the shape and volume of whatever space it has available. We can't always see gases, but they are all around us. Oxygen, carbon dioxide, helium, and nitrogen are all gases when they are at room temperature.

Is Water a Matter?

Here's an easy way to understand that water is a matter, and that it has both mass and volume. Imagine you have an empty bucket in front of you. Now picture it being filled with water until the top. The bucket will be a lot heavier now than when it was empty! This shows that water has mass, because the bucket weighs more when it has water in it.