

Oakland Schools Science Scope

Text in the Middle

<p>GIST In my OWN words this means . . .</p>	<p>TEXT <i>Chemistry is the study of matter</i> You could say that chemistry is the science that studies all the stuff in the entire world. A more scientific term for "stuff" is "matter." So chemistry is the study of matter. Matter is all the physical things in the universe. All the stars in the galaxies, the sun and planets in our solar system, the Earth, and everything on it and in it are matter. All human-made objects, all organisms, the gases in the atmosphere, and anything else that has mass and takes up space, including you, are examples of matter. Chemistry is special because it looks at matter all the way down to its smallest parts: the atoms and molecules that matter is made of.</p>	<p>Write or draw what you visualize while reading the text.</p>
<p>GIST In my OWN words this means . . .</p>	<p>TEXT To give you an idea about how small atoms and molecules are, use a metric ruler to look at the length of one millimeter. It is about the size of a dash like this one -. Try drawing a tiny line or dot that is about 1/10 as long as the dash. It might be about the size of a period like the one at the end of this sentence. A hydrogen atom is about 1 ten millionth of the size of the period. So it would take about 10 million hydrogen atoms lined up next to each other to go from one side of the period to the other.</p>	<p>Write or draw what you visualize while reading the text.</p>

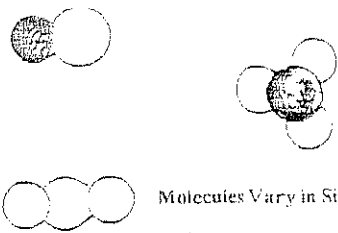
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<p>GIST In my OWN words this means . . .</p>	<p>TEXT Here is another way to imagine how small atoms and molecules are. In about 1 tablespoon of water, there are about 600 billion trillion water molecules. That's 600,000,000,000,000,000,000,000,000. This number is so huge that even if you could count one million molecules every second, it would take you about 200 million centuries or about 20 billion years to count all the molecules in a tablespoon of water.</p>	<p>Write or draw what you visualize while reading the text.</p>
<p>GIST In my OWN words this means . . .</p>	<p>TEXT Studying chemistry can help make sense of many of the different things you see and do every day. What you eat and drink, the weather outside, the soap and water you wash with, and the clothes you wear, are all a result of chemistry. The sports equipment you use, the materials your house is made of, the way you get to school, and the electronic equipment you use are all a result of the interactions of atoms and molecules. Having a better idea of what atoms and molecules are and how they interact can help you better understand the world around you.</p>	<p>Write or draw what you visualize while reading the text.</p>
<p>GIST In my OWN words this means . . .</p>	<p>TEXT Matter is made of atoms and</p>	<p>Write or draw what you visualize while reading the text.</p>

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	<p>molecules</p> <p>We have already used the term <i>atom</i> and <i>molecule</i> a couple of times. You will learn a lot more about atoms and molecules later on.</p> <p>For now, let's say that atoms and molecules are the extremely tiny particles that make up all the matter on Earth. An atom is the basic building block of all matter. A molecule is made of two or more atoms connected or bonded together. Even though atoms and molecules are not the same, the model we are using shows both atoms and molecules as little circles or spheres. This model makes it easier to show some of the basic characteristics of the different states of matter on Earth.</p>	
<p>GIST</p> <p>In my OWN words this means . . .</p>	<p>TEXT</p> <p>Most elements are composed of individual, identical atoms. For this reason, they are not ordinarily broken down and are homogeneous. Elements differ from one another in their "proton counts." The numbers of these sub-atomic particles defines the properties of its atoms. Neutrons add mass and are central to nuclear properties, but they barely affect the surrounding electron cloud.</p>	<p>Write or draw what you visualize while reading the text.</p>

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<p>GIST In my OWN words this means . . .</p>	<p>TEXT</p>  <p>Molecules Vary in Size</p> <p>MOLECULE: two or more atoms bonded together in a new, whole particle of matter. Molecules have various shapes, depending on the way in which their atoms are bonded. They are small, with a wider range of sizes than atoms. Molecules contain from two atoms to hundreds of atoms. Some molecules are smaller than atoms, while others are much larger. Nevertheless, the atomic or molecular world is still small compared to our macroscopic world of matter.</p>	<p>Write or draw what you visualize while reading the text.</p>
<p>GIST In my OWN words this means . . .</p>	<p>TEXT</p> <p>Many ELEMENTS are composed of simple molecules. Hydrogen, nitrogen, oxygen, fluoride, chlorine, bromine, iodine, and astatine are made of two-atom (diatomic) molecules. Most COMPOUNDS are made of molecules. Like elements, they possess uniform properties because of the repeating molecular units. Unlike elements, compounds can be broken down by chemical means.</p>	<p>Write or draw what you visualize while reading the text.</p>