



# Connected Chemistry

## Discovering Matter Unit - Lesson 1: Modeling Matter



### Introduction

Chemistry is the study of matter and energy. Chemists are the scientists who often find explanations to everyday events by examining particles of matter at the submicroscopic level. Although chemists have identified and classified millions of particles, they have discovered that all these particles fall into a small number of categories, such as atoms and molecules. In the Discovering Matter Unit, you will explore the interactions between submicroscopic particles of matter to identify the categories that chemists use routinely to classify matter.



### What Do You Think?

What do you think matter is?

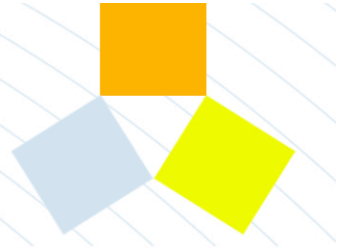
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<p>List 6 things in the room that are matter</p> <ol style="list-style-type: none"><li>1. _____</li><li>2. _____</li><li>3. _____</li><li>4. _____</li><li>5. _____</li><li>6. _____</li></ol>	<p>List 6 things in the room that ARE NOT matter</p> <ol style="list-style-type: none"><li>1. _____</li><li>2. _____</li><li>3. _____</li><li>4. _____</li><li>5. _____</li><li>6. _____</li></ol>
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Write your own definition for the following terms. This is an exercise for you to express your own ideas.

Macroscopic level

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Microscopic level

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Submicroscopic level

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## Discussion With the Teacher

What is Macroscopic, Microscopic and Submicroscopic?

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In the area below, draw what you think water looks from these different perspectives 

**Macroscopic level**




**Submicroscopic level**

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## What Do You Think?

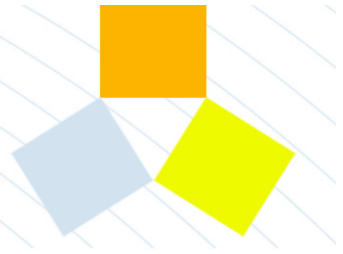
Before using the Classifying Matter simulation, draw **MACROSCOPIC** pictures of each of the substances. Please write down your observations of the substances as well.

Water 	<hr/> <hr/> <hr/> <hr/>
Copper 	<hr/> <hr/> <hr/> <hr/>
Oil 	<hr/> <hr/> <hr/> <hr/>

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Sodium 	<hr/> <hr/> <hr/> <hr/>
Table Salt 	<hr/> <hr/> <hr/> <hr/>
Baking Soda 	<hr/> <hr/> <hr/> <hr/>

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## Drawing Submicroscopic Representations

Now, **select three of the six substances** and draw what you think they look like from a **submicroscopic view**. Remember that there are no incorrect answers to this exercise. It is an opportunity for you to apply what you might already know and allow you to creatively express your ideas.

Substance 1 _____ 
Substance 2 _____ 
Substance 3 _____ 



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## Discovering Matter Simulation Activity 1



The Classifying Matter Simulation contains the following substances:

- Water
- Sodium
- Copper
- Table Salt
- Oil
- Baking soda

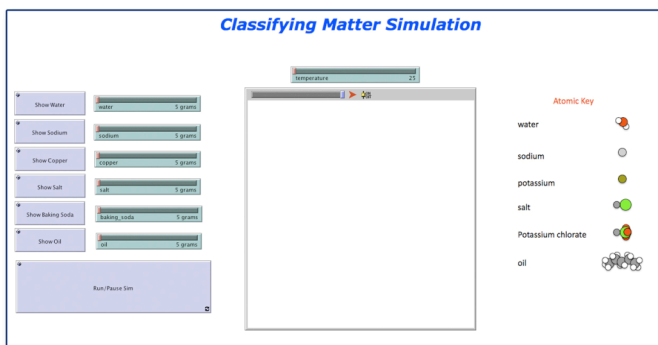
You may be familiar with these substances on a macroscopic level in your everyday life and perhaps you have noticed similarities and differences between their properties.

In this simulation activity, you will characterize these substances on both the macroscopic **and** submicroscopic levels, and you will also discover how chemists formally classify each of them according to their submicroscopic similarities.

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## Classifying Matter Simulation Activity



As instructed by your teacher, open the Discovering Matter Simulation and take a few moments to examine the simulation. Familiarize yourself with the layout of the screen and the function of each window.

While using the simulation, draw **SUBMICROSCOPIC** pictures for each substance. Also, please list observations about each of the substances below your picture. Please note the identity of the substances and their behavior.

<p>Water </p>          	<p>Sodium </p>          
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Observations about Water

Observations about Sodium

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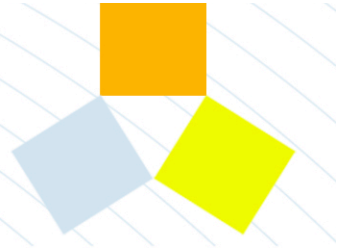


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Copper 	Salt 
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Observations about Copper

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Observations about Salt

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Oil 	Baking Soda 
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Observations about Oil

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Observations about Baking Soda

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## Discovering Matter Unit - Lesson 1: Modeling Matter

Compare the pictures you drew before and after viewing the Classifying Matter simulation. How did you change your pictures using your observations of the simulations?

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As previously discussed, chemists have developed a system to classify all substances into a few specific categories. Using your observations from the submicroscopic views in the simulation, brainstorm three possible categories that would allow you to classify the six substances in the simulation.

On the next page, please follow your teacher's example on how to group the substances.


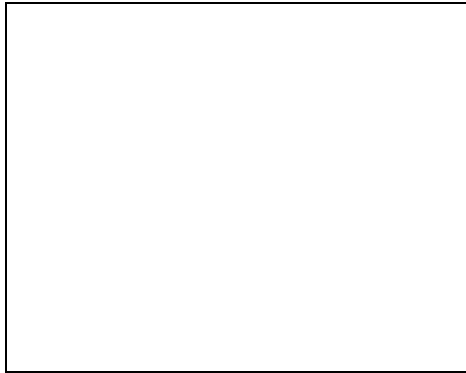


**Teacher Demo**

**Group 1:** \_\_\_\_\_

<p>Substances</p> <p>_____</p>	<p>Diagram of the Substances </p>
<p>How are the substances in this group similar?</p> <p>_____</p> <p>_____</p> <p>_____</p>	


**Group 2:** \_\_\_\_\_

<p>Substances</p> <p>_____</p>	<p>Diagram of the Substances </p>
<p>How are the substances in this group similar?</p> <p>_____</p> <p>_____</p> <p>_____</p>	


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**Student Work**

**Group 1:** \_\_\_\_\_

<p>Substances</p> <p>_____</p> <p>How are the substances in this group similar?</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Diagram of the Substances </p> <p>_____</p>
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**Group 2:** \_\_\_\_\_

<p>Substances</p> <p>_____</p> <p>How are the substances in this group similar?</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Diagram of the Substances </p> <p>_____</p>
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