

Chemistry All Around Us - Week 5

Grades 3-5

Day	Topics	Related Standards
1	Exploring Solids	<p>Analyze and interpret data to explain that matter of any type can be subdivided into particles too small to see and, in a closed system, if properties change or chemical reactions occur, the amount of matter stays the same.</p>
2	Exploring Liquids	
3	Exploring Gases	
4	Bartholomew and the Oobleck	
5	Changing Matter	<p>Plan and carry out investigations to demonstrate that some substances combine to form new substances with different properties and others can be mixed without taking on new properties.</p>

Chemistry All Around Us - Week 5

Day 1: Exploring Solids

Teacher/Parent Background:

In science, the “stuff” that everything is made of is called matter. You can use your senses to detect matter. You can feel the shape and roughness of a rock. You can taste the juice of an orange. You can smell popcorn. You can see a crowd at a ball game. The characteristics of matter that we can observe with

our senses are called properties. No two substances have exactly the same set of properties. The properties of matter can help us categorize (sort/group) matter.

Overview:

In this activity, young learners will use their senses of touch and sight to explore the various observable properties (characteristics) of different types of matter. They will then use their observations to make decisions about how to define a specific category of matter - solids.

Related Standards:

- **Analyze and interpret data** to explain that matter of any type can be subdivided into particles too small to see and, in a closed system, if properties change or chemical reactions occur, the amount of matter stays the same.

Key Terms:

- matter - the "stuff" that everything is made of
- properties - characteristics of a substance
- senses - touch, taste, hear, smell, see
- solid - a state of matter in which the substance has a definite shape and a definite volume
- volume - the amount of space that an object or substance takes up

Materials List:

- A variety of different types of matter:
 - Solids - crayons, books, pencils, pebbles, toys, balls, etc.
 - Liquids - water, shampoo, hand soap, milk, etc.
 - Gases - filled balloon or sandwich bag, football, basketball, etc.

Activity Description:

1. Place a variety of different types of matter (objects) on the floor/table.
2. Prompt the student to begin exploring and verbally describing the observable properties of each object, focusing on properties he/she can experience through his/her senses of touch and sight.
 - What are you observing about each object?
 - Are all the objects the same? Why or why not?
 - How is (object 1) like (object 2)?
 - How is (object 1) different from (object 2)?
 - Do all the objects feel the same? Why or why not?

3. Once the student has had the opportunity to make and verbally describe observations about the different types of matter, prompt him/her to physically sort the items.
 - Note: Do not provide sorting categories. Observe how the student determines which objects go in which category and ask clarifying questions:
 - Why did you group those objects together? What do they have in common?
 - How did you decide which objects went in which category?
 - Are there some objects you are not sure about? Why?
 - Are there some objects that fit in more than one category? Why or why not?

Closure:

Share with the student that scientists have also observed that there are many types of matter just like there were many types of objects in today's sort. To help identify the different types of matter or make them easier for people to sort, scientists grouped the different types of matter by their properties just like you did. Those categories are: solids, liquids and gases.

Extension:

Explain that matter that is sorted in the solid category has a definite shape and takes up a set amount of space (volume). Solids are made of particles too tiny to see. These particles are close together and do not move around very much.



SOLID

For example, if you put a rock on your desk, the rock would hold its shape. It would not start to bulge on one side or flatten out like a pancake. And the volume (how much space the rock takes up) of the rock would not change. It would not get smaller or larger as it sat on your desk.

Discuss with the student:

- If a solid has a definite shape and volume, which category in your sort contains solids? Why do you think so?
- Are there objects in other categories that might also be solids? Why or why not?
- Would you like to change how you sorted any objects? Why or why not?

Note: The student will be revisiting the sort throughout the week to reflect on and possibly make changes to his/her sort. It is not important that he/she has correctly sorted all the objects at this point. It is important that the student is recognizing that matter has different properties and can be sorted based on those properties. Sometimes, matter appears to have properties of more than one category.