Grade 6 Science

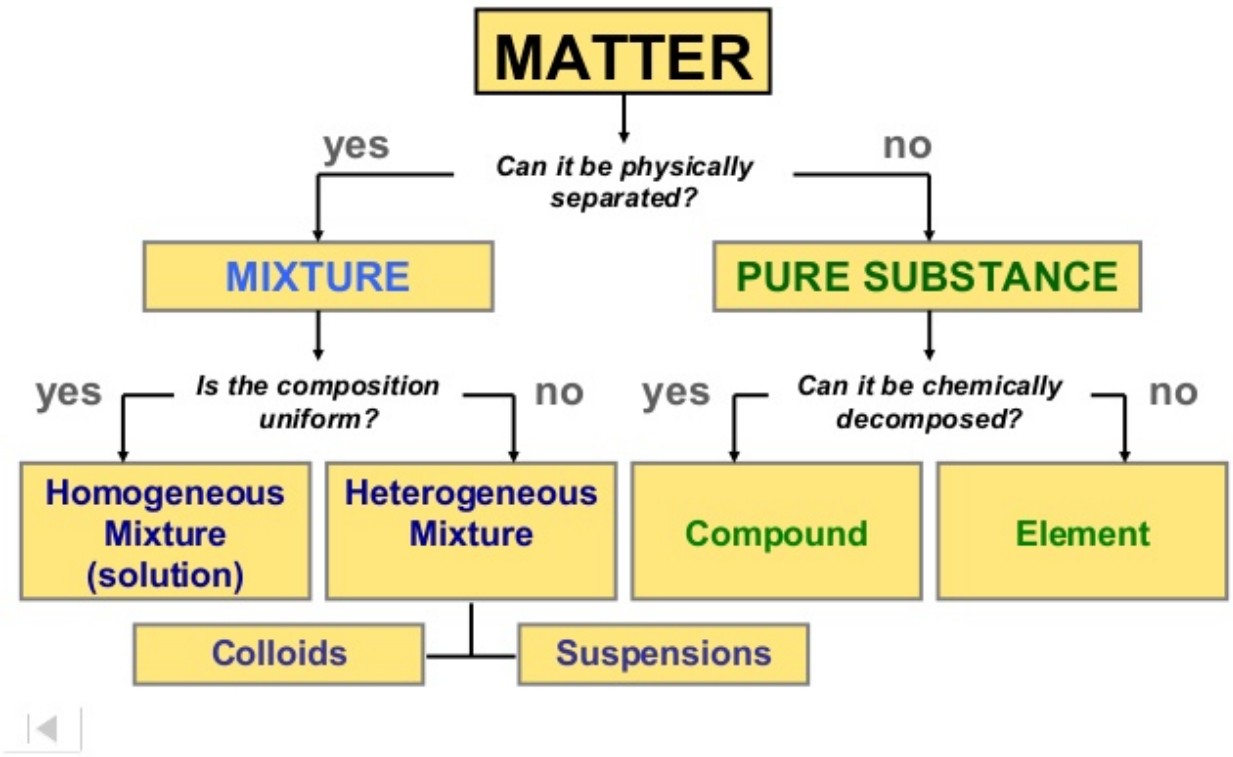
Week of November 9 – November 13

Mixtures

Welcome to the Chemistry Unit!

Chemistry is the study of matter. Matter is anything that has mass and takes up space.

The image below shows the classification of matter. In Grade 6, we will focus on heterogeneous mixtures (mechanical mixtures, suspensions and colloids).



Courtesy Christy Johannesson www.nisd.net/communicationsarts/pages/chem

In past grades you have learned about some of the following big ideas.

- Everyday materials that you interact with are made of matter.
- Matter has useful properties. For example, solids keep their shape and liquids and gases flow.
- Materials can be changed physically and chemically.
- Matter is made of particles called atoms.

- Matter has mass and takes up space.
- Matter has different phases (solids, liquids and gases).
- Matter can change phase.
- Solutions are homogeneous mixtures.

Heterogeneous and Homogeneous Mixtures

In this lesson we will review **mixtures**, their different properties, and how we use them in our everyday lives. Our main focus will be on ways to separate **mixtures** and the industrial processes involving **mixtures**.

Mixtures are everywhere you look. Most things in nature are **mixtures**. If you look around you will notice the rocks, lakes, and even the air we breathe is a **mixture**. There are an infinite number of **mixtures**. Anything you can combine is called a **mixture**. Think of all the different foods you eat. Think of how many different types of cake there are, an infinite amount. Each cake has a different **mixture** of ingredients that combined to form a cake.

Image adapted from Betty Crocker

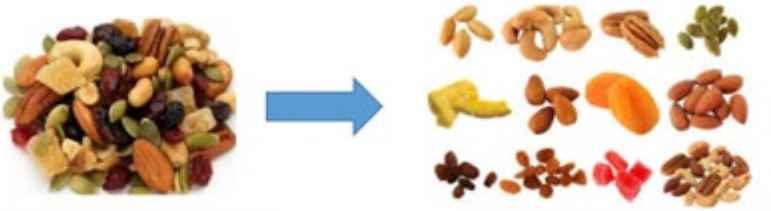
Cake Ingredients

Final product, cake.

Mixtures are about the physical properties of substances, not the chemical ones. What this means is that the individual substances are near each other but the properties of each substance does not change.

Example:

Trail mix is a popular mixtures of different ingredients.



Trail mix is a mixture of different substances.

When the ingredients are separated, their physical properties have not changed.

Image Adapted from backpackingtips.com

Homogeneous Mixtures Review

A **solution** is a mixture of two or more substances in a single phase. At least two substances must be mixed in order to have a solution. The substance in the smallest amount and the one that dissolves or disperses is called the SOLUTE. The substance in the larger amount is called the SOLVENT. In most common solutions water is the solvent. The gases, liquids, or solids dissolved in the water are the solutes. We call these solutions with water as the solvent aqueous solutions. The term aqueous comes from the Latin word "aqua" meaning water.

In the graphic, the blue bottle is a solution (homogeneous mixture) of water, KOH, glucose, oxygen gas dissolved, and methylene blue - an indicator. In this example, water is the solvent and the KOH, glucose and the methylene blue are the solutes.

The video below defines solutions and heterogeneous mixtures and gives an example of each **one.**

What Are Solutions? https://youtu.be/JoiAzaNSNsc

Types of Solutions https://youtu.be/gpHwcyPNyI0

Heterogeneous Mixtures

In a **heterogeneous mixture** the substances are not evenly distributed (chocolate chip cookies, pizza, rocks).

Examples of heterogeneous mixtures are mechanical mixtures (different components are visible), suspensions (salad dressing), colloids (two phase systems of matter) like emulsions (ie. milk and mayonnaise) and aerosols (ie. fog and smoke).

The next few sections of the course will look into these types of mixtures in more detail.

Chemistry ~ Learning Guide Name: _____

Instructions:

Using a pencil, complete the following notes as you work through the related lessons. Show ALL work as is explained in the lessons. You are required to have this package completed BEFORE you write your unit test. Do your best and ask questions if you don't understand anything!

Mixtures

1. What are the differences between a heterogeneous mixture and a homogeneous mixture?

2. What is another name for homogeneous mixtures?

3. What are the main types of heterogeneous mixtures?

4. List five examples of heterogeneous mixtures in your home.