



Have you ever cooked an egg? In this case, mass is a very important concept. It's something that doesn't change when you cook or bake. Mass is the amount of stuff something has and it does not change, no matter what kind of reaction it goes through. Even if the particles in the egg rearrange after you cook it, like its proteins turning into jelly, the mass of the egg still stays the same! To conserve mass means that mass can never be created or destroyed - only changed from one thing to another. Conservation of mass happens whenever reactions take place - like when we cook eggs!

Mass: How much matter is in something.

Reaction: (re•ac•tion) a change in a substance

Rearrange: (re•ar•range): put into a new order or position.

Proteins: (pro•tein) a material made of particles called amino acids.

Conserve (con•serve) saving from loss or destruction

Draw two examples of Conservation of Mass

1.

2.

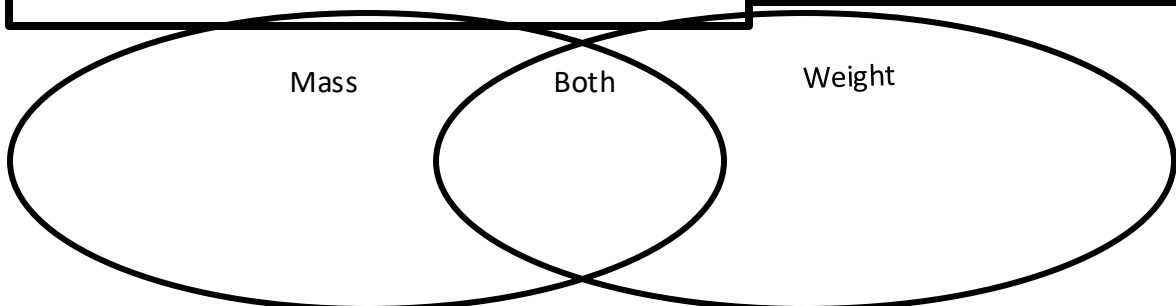
# What is the difference between mass and weight?

What is the difference between mass and weight? Mass is a measurement of how much matter something has. In other words, it's a way of describing how much "stuff" is in an object. Weight is a measurement of how strongly gravity pulls on an object. If you were to stand on a scale on the moon, where the gravity is weaker, you would weigh less than you do on Earth, but your mass would still be the same. So, the main difference between weight and mass is that mass is a measure of the amount of matter in an object, while weight is a measure of how strongly gravity pulls on that object.

In other words: Here is another way to say it.

Gravity (grav•i•ty): an invisible force that pulls objects towards Earth.

Scale:



# Measuring Matter

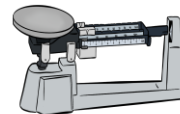
We measure different types of matter using different tools depending on their properties.

1. Mass: Mass is how much matter an object has. To measure mass, you can use a scale or a balance. You can measure mass in grams or kilograms.
2. Volume: Volume is how much space an object takes up. To measure the volume of a liquid, you can use a measuring cup or a graduated cylinder. You can measure volume in milliliters or liters.
3. Density: Density is how tightly packed the particles are in something. To measure density, you need to know the mass and volume of the object. You divide the mass by the volume to find the density.

Depending on: (de•pend•ing•on) It changes based on situation.

Properties: (prop•er•ties) ways to describe something. Examples are color, height, and what something is made of

Balance: (bal•ance)



Graduated cylinder: (grad•u•a•ted•cy•lin•der)



particles: (par•ti•cles)

The smallest possible piece of matter.

Property To Measure	How It Is Measured
Mass	
	Measuring Cup or Graduated Cylinder

# Mixtures and Solutions

Mixtures and solutions seem alike but have some differences. Mixtures are made when two or more substances are combined but one does not dissolve into another. Mixtures can usually be separated easily again using a sieve or filter. You can't use the same kinds of methods to separate out solutions because it is all blended together so much! This happens when the particles break apart into tiny pieces that get mixed up with one another and become hard to separate again. For example, salt can dissolve in water to make a salt water solution - it is not easy to separate the salt from the solution again. So, though mixtures and solutions are both made from more than one substance, there are differences between them.

Substances  
(sub•stance•): what something is made of

Combined  
(com•bined): joined together

Dissolve (dis•solve): to mix completely with liquid

Sieve: (/SIV/):



Filter (fil•ter):



Blended:(blend•ed): mixed well.

What is the text structure of this passage?:

- a) Problem and Solution
- b) Compare and Contrast
- c) Cause and Effect

How do you know? What key words could be clues?

# Molecules of matter

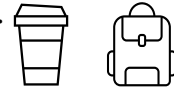
Molecules behave differently in solids, liquids, and gases. In solids, the molecules are tightly **packed together** and can't move around much. That's why solids keep their shape. **On the other hand**, in liquids and gases, the molecules are **spread apart**. They are free to move around and fill up whatever **container** they are in. In gases, they can even move around faster because they're so far apart from each other. Gas molecules have plenty of room to **bounce** off each other like bouncing balls. By understanding how tightly-packed or spread-apart different molecules act in solids, liquids, and gases, we can learn lots about the world we live in!

Packed together  
(pack•ed) very close together.

On the other hand: A way of saying "What I am going to tell you is different"

spread apart  
(spread•a•part) not close together

Container (con•tain•er): something that can hold things. Like a backpack or bucket.



Bounce to move up and down



State of Matter	Molecules
Solid	
Liquid	
Gas	

# Physical and Chemical Changes

Physical and chemical changes are both types of changes that can happen to substances, but they're different in interesting ways. A physical change is any type of change where the substance looks different but its makeup stays the same. For example, when you cut paper, that is a physical change because the shape of the paper has changed but it is still paper. Chemical changes, on the other hand, involve reactions between molecules that cause new molecules to form. So if you mix baking soda with vinegar and an explosion happens - that's a chemical change because new little bubbles of carbon dioxide were formed. Both physical and chemical changes can create exciting results.

Substances (sub•stance•)  
: what something is made of

Makeup (make•up): the materials that a substance is made of

Reactions (re•ac•tions): what a substance does when something happens to it.

Molecule (mol-e-cule): tiny bits that make up matter.

Baking Soda (Bake•ing•so•da):

Vinegar (Vin-e-ger):

Carbon dioxide (car-bon-di-ox-ide): a colorless, odorless gas. Humans breathe it out.

	What it is:	What it is not:	Examples:
<b>Physical Change</b>			
<b>Chemical Change</b>			

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