

# What's the Matter?



## Focus Morpheme

<b>Suffix</b>	<i>-ment</i>
<b>Pronunciation</b>	The suffix <i>-ment</i> is pronounced /ment/.

## Etymology of *-ment*

<b>Origin</b>	Latin
<b>Meaning</b>	the act of; the state of; the result of
<b>Example: measurement</b>	Look at the word <b>measurement</b> . The base is <i>measure</i> . By adding the suffix <i>-ment</i> , we create the word <b>measurement</b> , meaning “the result of measuring.”

## Vocabulary

- experiment
- arrangement
- movement
- environment
- equipment
- enjoyment
- improvement
- document

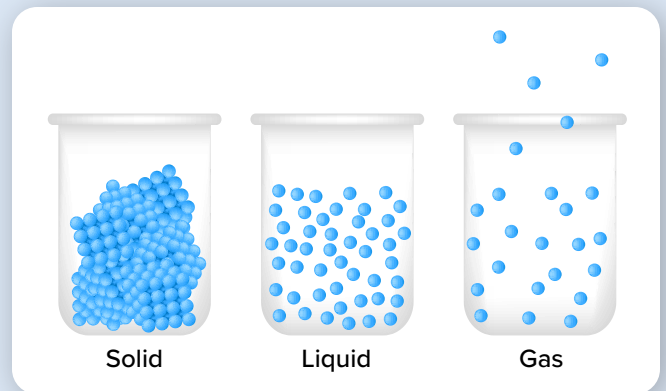
## Activating Prior Knowledge

- What are the three states of matter?
- Which states of matter do you see in the photo above?

# What's the Matter?

Matter is anything that has weight and takes up space. It is made up of tiny particles. Matter can be in one of these states: solid, liquid, or gas. In each state, the **arrangement** of particles is different.

In solids, the particles are close together in a fixed **arrangement**. They cannot move around, but they can vibrate in place. In liquids, the particles are a little further apart and the **arrangement** changes as the particles move. In gases, the particles are far apart and in constant **movement**.



## Changes in Matter

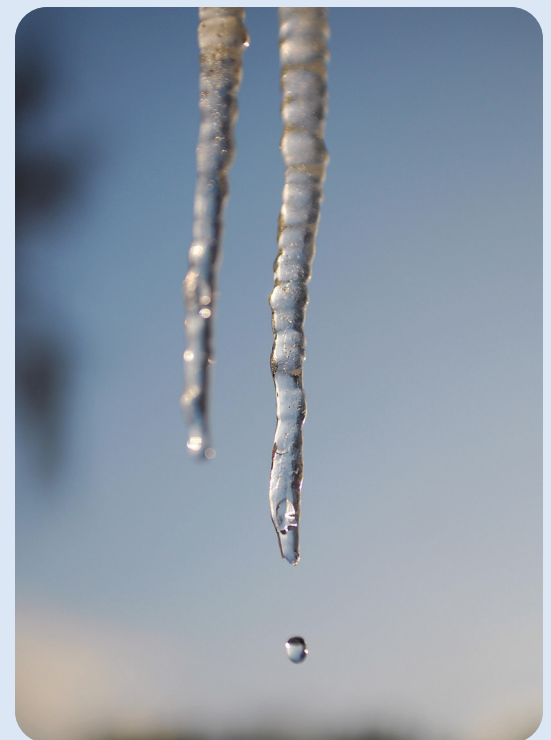
Matter can change in two ways: through a physical change or through a chemical change.

### Physical Changes

During a physical change, matter may change *state*, *form*, or *volume*. Sometimes, these changes take place in the natural **environment**, and sometimes humans cause the change.

- When ice melts and turns into water, it is changing *state* from a solid to a liquid.
- During gym class, you might use **equipment** such as a basketball. If the ball deflates, both the *form* and the *volume* of the ball have changed.

Most physical changes can be reversed. We can refreeze water and add air to a basketball.



Icicles

## Chemical Changes

During a chemical change, matter turns into a different substance. Some chemical changes create an odour, cause a change in colour, or involve a temperature change.

- Burning wood creates chemical changes that turn wood into ash.
- Baking cookies creates chemical changes that turn the batter into cookies.

Most chemical changes cannot be reversed. You cannot turn ash back into wood or cookies back into batter!

### Time to Talk

Sometimes we create physical or chemical changes of matter for our **enjoyment** or the **improvement** of something in our life. What examples can you think of?

## Experiment

Do you think this **experiment** will create physical changes, chemical changes, or both?

### Materials

- 1 small plastic bottle
- 1 balloon
- 1 funnel
- 120 mL vinegar
- 10 mL baking soda



### Procedure

1. Pour 120 mL of vinegar into the plastic bottle.
2. Insert the funnel into the mouth of the balloon.
3. Place 10 mL of baking soda into the funnel so that it falls into the balloon. Then, remove the funnel.
4. Carefully put the mouth of the balloon over the top of the bottle. Try not to let the baking soda fall into the bottle.
5. Hold the bottle with one hand. With the other hand, lift the end of the balloon so the baking soda drops into the bottle.
6. Observe and **document** what happens next.

### Vocabulary

#### Connections

The word **experiment** comes from the Latin *experiri*, meaning “to try or test out.” An **experiment** is the act of trying or testing something out.

**Word Study**

In your Word Study notebook, add today’s morpheme.

New Morpheme	Type of Morpheme	Origin	Meanings
-ment	suffix	Latin	the act of; the state of; the result of

**Word Sort:** Sort the following words according to the base element. Remember, a base is a complete word on its own. A root is *not* a complete word on its own.

- agreement**    **sentiment**    **treatment**    **payment**  
**placement**    **document**    **amazement**    **statement**  
**fragment**    **amusement**    **condiment**    **experiment**

Words with a Base (A base is a complete word.)	Words with a Root (A root is not a complete word.)

**Writing Connections**

Matter changes state when you make a hot drink. Write numbered instructions explaining how to make a mug of tea or hot chocolate. Begin with a list of materials required, and then write step-by-step instructions. Remember to include a title for your instructions.

*Challenge:* Use at least two words with morphemes you have learned this year.

