

**Part C: Lesson 1.4 - Read pages 20-29 to answer these questions.**

1. A physical change alters the form or appearance a change in SIZE or SHAPE.

**Add to notes -  
Change in size,  
shape, or STATE**

2. A change in matter that produces one or more new substances is a CHEMICAL change.

3. The law of conservation of mass states that matter is not created or destroyed during a chemical reaction. The atoms involved in the reaction are not LOST or GAINED, only REARRANGED.

4. Every CHANGE in matter includes a change in ENERGY, which is conserved in a chemical reaction and TRANSFORMED from one form to another.

5. TEMPERATURE is a measure of how hot or cold something is, while THERMAL energy is the total energy of the motion of the particles in an object.

6. What is the difference between endothermic and exothermic reactions? Give examples for each.

**Energy is absorbed during endothermic, such as when ice melts.  
Energy is released during exothermic, such as when wood burns.**

7. What is chemical energy?

**It is the energy stored in chemical bonds.**

**Add to notes -**

**Eating food – Food → Chemical energy**

**Burning fuels – Chemical energy → Thermal energy**



## Physical/Chemical Changes

**Part A: Watch the Study Jams: Changes in Matter to answer these questions.**

1. A physical change is a change when the SIZE, SHAPE, or STATE of matter changes.
2. Physical changes can be caused by MOTION, pressure, and TEMPERATURE, but it doesn't change the molecules that make up the substance.
3. In a CHEMICAL change, the molecules of matter are changed and usually cannot be reversed. Clues that it has occurred are a GAS forms, light or HEAT appears, or the COLOR changes.



## Physical/Chemical Changes

**Part B: Click "Test Yourself" to take the quiz and answer these questions.**

When does a physical change occur? **When the size, shape, or state changes**

What type of change can be reversed? **Physical change**

What could cause the molecules in matter to change? **Extreme heat**

What has likely happened when a substance changes color? **Chemical change**

Stepping on a bag of potato chips would cause which type of change? **Physical change**

What is a clue that a chemical change has taken place? **Color change**

What is the difference between a physical and chemical change?

**Physical → 3 S's**

**Chemical → New substance (molecular change)**

## Physical & Chemical Changes

Use your knowledge of physical and chemical changes to identify at least one way to change each substance.



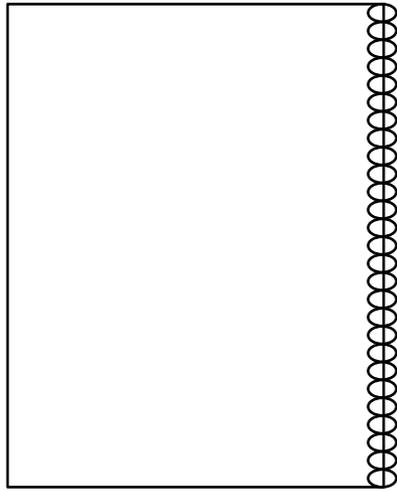
| Substance   | Physical Change  | Chemical Change   |
|-------------|--|---|
| Baking Soda | Mix w/ H <sub>2</sub> O<br>Break up clump                  | Mix w/ vinegar → gas                                    |
| Rocks       | Melting/Cooling<br>Smash<br>Paint or write on it           | Vinegar or HCl<br>→ CO <sub>2</sub> - fizz<br>Acid rain |
| Wood        | Chop<br>Paint it, stain it                                 | Burn it   |
| Apple       | Eat it - bite & chew →<br>Cover w/ caramel<br>cut or slice | Eat it - saliva + acid<br>Turns brown → oxidation       |
| Iron Nail   | Paint it<br>Bend it  | Rust →<br>Acid  |

**Challenge:** Think of a 3 other substances and challenge your classmates to come up with ways to change it physically and chemically. Write their responses in the space below.

| Substance | Physical Change | Chemical Change |
|-----------|-----------------|-----------------|
|           |                 |                 |
|           |                 |                 |
|           |                 |                 |



Cut apart the examples and sort into 2 groups – physical and chemical.



Cutting paper into small pieces

Painting a wall

Baking brownies

Melting a wax candle

Boiling water

Burning a candle

Mixing water, lemon juice,  
and sugar to make lemonade

Toasting a marshmallow  
until it is black

Mixing baking soda  
and water

Cutting an apple  
into small pieces

Rust on a nail

Oxidation on an apple causing  
it to turn brown

Condensation forming on the  
sides of a glass

Putting acid on a rock and  
watching it fizz

Mixing baking soda  
and vinegar

Squishing a marshmallow  
until it is flat

Pouring milk on a  
bowl of cereal

- After we CHECK the answers, create a display on page 28 by gluing them in the right section and add at least 3 pictures for each side.
- Finish your 17 vocab card BEFORE Monday!

**Part D: Lesson 2.1 - Read pages 40-55 to answer these questions.**

1. A **SOLID** has a definite shape and volume. They can be classified as **CRYSTALLINE** (made up of crystals) or **AMORPHOUS** (particles are not in a regular pattern.)

2. A **LIQUID** has a definite volume, but not a definite shape. Liquids with **HIGH** viscosity flow slowly, while those with **LOW** flow quickly.

3. A gas has neither definite **SHAPE** nor definite **VOLUME** as its particles fill all the **SPACE** available.

4. Write a description of each type of phase change and include specific examples.

Melting - Solid (ice) → Liquid (water)

Freezing - Liquid (water) → Solid (ice)

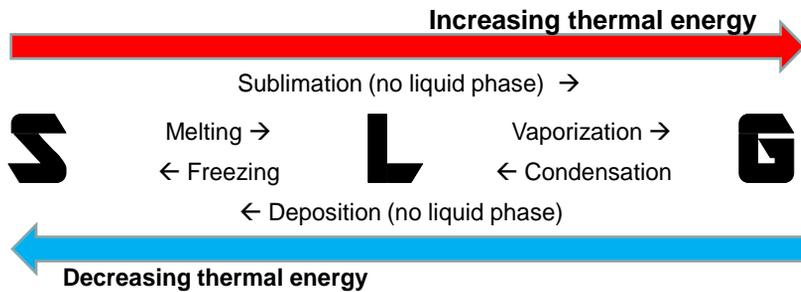
Vaporization - Liquid (water) → Gas (steam or water vapor)

Sublimation - Solid (ice) ↔ Gas (steam or water vapor)

*Add → Deposition – Gas (water vapor) to a solid (frost)*

Condensation - Gas (steam or water vapor) → Liquid (water)

*Draw this diagram on the page under your Part C/D notes.*

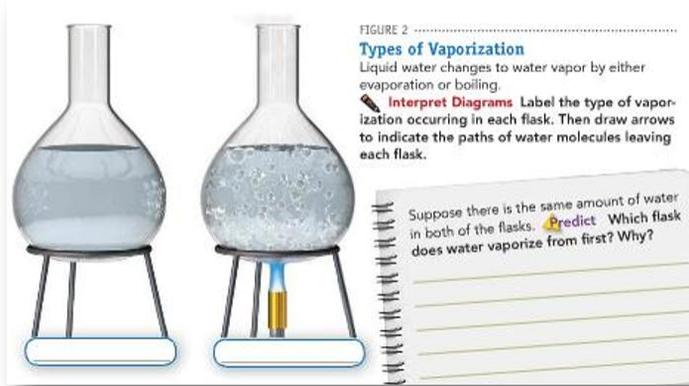


Add arrows to notes to show if energy is  
↑ or ↓

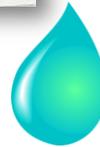
|                |                |
|----------------|----------------|
| Melting ↑      | Sublimation ↑  |
| Freezing ↓     | Deposition ↓   |
| Vaporization ↑ | Condensation ↓ |

**5. What is the difference between evaporation and boiling?**

**Vaporization at the surface of a liquid is evaporation, while boiling is when it occurs at all levels in a liquid.**



**Write down three things you learned about water as you watch the video on the page under your notes →**



**Chemistry Vocabulary List**

|   |   |   |
|---|---|---|
| <input checked="" type="checkbox"/> Atom              | <input type="checkbox"/> Electron               | <input type="checkbox"/> Nucleus                      |
| <input type="checkbox"/> Atomic Mass                  | <input checked="" type="checkbox"/> Element     | <input type="checkbox"/> Period                       |
| <input type="checkbox"/> Atomic Number                | <input type="checkbox"/> Energy level           | <input type="checkbox"/> Periodic Table               |
| <input checked="" type="checkbox"/> Boiling           | <input checked="" type="checkbox"/> Evaporation | <input checked="" type="checkbox"/> Phase             |
| <input checked="" type="checkbox"/> Boyle's Law       | <input type="checkbox"/> Family                 | <input checked="" type="checkbox"/> Physical change   |
| <input checked="" type="checkbox"/> Charles' Law      | <input checked="" type="checkbox"/> Freezing    | <input checked="" type="checkbox"/> Physical property |
| <input checked="" type="checkbox"/> Chemical change   | <input type="checkbox"/> Isotope                | <input type="checkbox"/> Proton                       |
| <input type="checkbox"/> Chemical equation            | <input checked="" type="checkbox"/> Mass        | <input type="checkbox"/> Quark                        |
| <input checked="" type="checkbox"/> Chemical formula  | <input checked="" type="checkbox"/> Matter      | <input checked="" type="checkbox"/> Solution          |
| <input checked="" type="checkbox"/> Chemical property | <input checked="" type="checkbox"/> Melting     | <input checked="" type="checkbox"/> Sublimation       |
| <input checked="" type="checkbox"/> Chemical symbol   | <input type="checkbox"/> Metal                  | <input checked="" type="checkbox"/> Vaporization      |
| <input checked="" type="checkbox"/> Colloid           | <input type="checkbox"/> Metalloid              | <input checked="" type="checkbox"/> Volume            |
| <input checked="" type="checkbox"/> Compound          | <input checked="" type="checkbox"/> Mixture     | <input checked="" type="checkbox"/> Weight            |
| <input checked="" type="checkbox"/> Condensation      | <input type="checkbox"/> Neutron                |   |
| <input checked="" type="checkbox"/> Density           | <input type="checkbox"/> Nonmetal               |   |

✓ = Group 1    ✓ = Group 2    ✓ = Group 3

Need help? Look in your notes/worksheets.  
 You can also go to [mrstomm.com](http://mrstomm.com)  
 → 7<sup>th</sup> Science → Chem Vocab 7<sup>th</sup> Grade

**Review & Reinforce**  
 Chem Vocab 7<sup>th</sup> Grade  
 Classifying Matter