

Chemical Interactions



Unit 3 Notes

7th & 8th Grade Science

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Section 3 Notes

1. **Physical** properties are properties that can be measured or observed without matter changing to an entirely different substance.
2. **Chemical** properties are those that can be measured or observed only when matter undergoes a change to become an entirely different kind of matter.

Add to notes → Properties = Describes matter
3. Identify each as a physical (P) or chemical (C) property.

P An apple is red

P Water freezes at 32°F

C Wood will burn

P Sugar dissolves in water

C Iron will rust

C Noble gases are inert

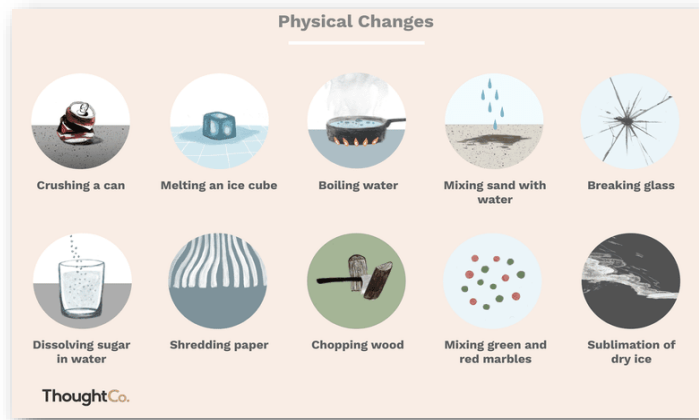
C H & O can combine to make H₂O

P Copper conducts electricity

C Chlorine can be toxic

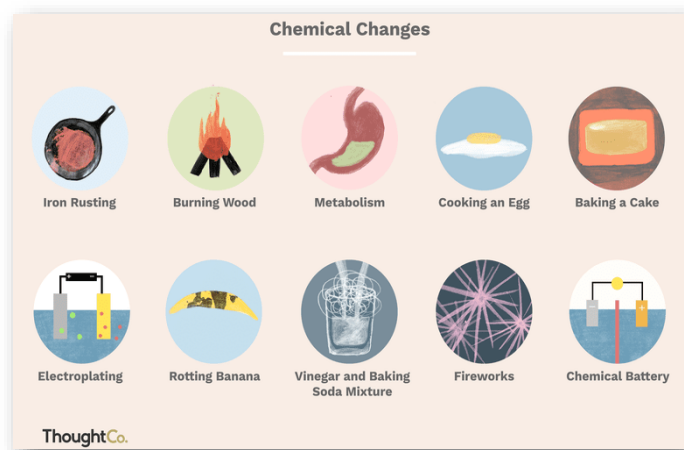
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4. A **PHYSICAL** change is a change in one or more physical properties of matter without any change in chemical properties, such as a change in **SIZE**, **SHAPE**, or **STATE** (S, L, G).



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5. A **CHEMICAL** change (also called a chemical **REACTION**) occurs whenever matter changes into an entirely different substance with different chemical properties.

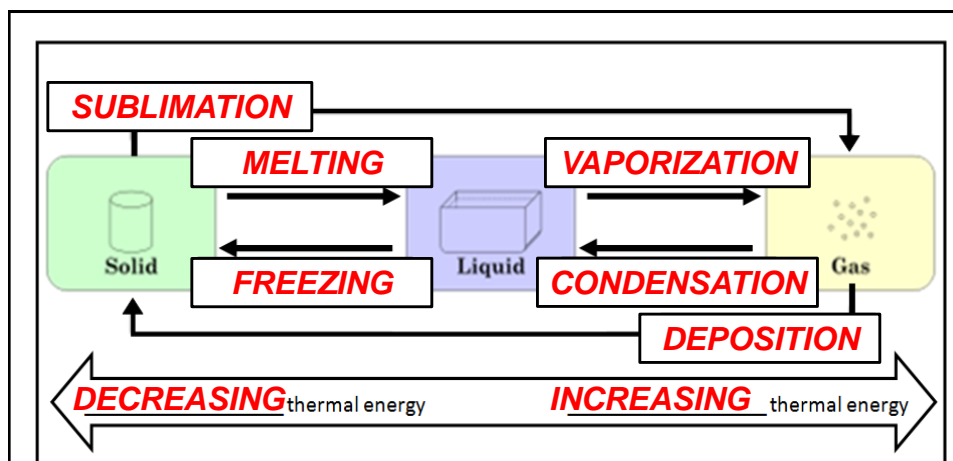


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6. Signs a chemical change has occurred include **BUBBLES** released, a change of **COLOR**, an **ODOR** produced, or a release of **LIGHT**, **HEAT**, and loud **SOUNDS**.

Release of Bubbles	Change of Color	Production of an Odor	Release of Heat and Light	Production of Loud Sounds
				
Bubbles are released when a chemical change produces a gas. The bubbles in this test tube were released when vinegar was added to baking soda. When the two substances combine, they change to water and the gas carbon dioxide.	These rusty pipes were once silver-colored. What happened to them? Iron in the pipes combined with oxygen in the air to produce a new substance—iron oxide—which is reddish brown. Iron oxide is commonly called rust.	You can tell that the food in this can has a stinky odor! When food spoils, it undergoes chemical changes that release unpleasant odors.	Burning is a chemical change that releases both heat and light. When a substance such as candle wax burns, it combines with oxygen and changes to other substances, including carbon dioxide and water vapor.	Gunshots are very loud sounds. They occur because explosive chemical changes take place inside the gun when the shooter pulls the trigger. The changes also propel a bullet out of the end of the gun.

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Your assignments:

- Watch the EDPuzzle video "Changes in Matter 1" and add information to this diagram before class on Monday
- Finish the TWO Legends playlist by the end of the day on Monday (3:30 PM)

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Glue the **Ch3 Sec 3 note worksheet on p 45 FAF R**

FRONT – Use the Chem Unit 3 Textbook to complete.

Textbooks
Chem Unit 3: Chemical Reactions

Chemistry Unit 3 Notes - Section 3 - Use the Ch 3 Textbook to help you complete each part.

- Substances that start (or enter into) a chemical reaction are called _____ Substances that are produced in the reaction are called _____ Reactants and products can be _____ or _____
- Chemical reactions are represented by chemical _____
- Label the diagram using:
Chemical Formula _____
Coefficients _____
Products _____
Reactants _____
Subscript _____
Yield _____

$$2 \text{ Mg} + \text{O}_2 \rightarrow 2 \text{ MgO}$$

- Which number represents the number of molecules of a substance in a reaction? _____
- Which number represents the number of atoms of an element in a compound? _____
- The law of _____ states that matter cannot be created or destroyed in chemical reactions, which is why all chemical equations must be _____

BACK – Watch the EDPuzzle videos to complete.



LEGO Block Party (CCK #23.2)



Conservation of Mass (Todd Ramsey)

EDPuzzle – Lego Block Party – Complete as you watch the video.

- _____ is the amount of matter in an object.
- When one substance dissolves in another, its _____ change.
- A change that creates a new substance is called a _____ change.
- The mass of the reactants is _____ the mass of the products.
- What substances were the reactants in the experiment? _____
- What was produced? _____
- True or False? The law of conservation applies to physical and chemical changes.

EDPuzzle – Conservation of Mass – Complete as you watch the video.

- Our universe is a _____ system because we are not gaining or losing energy or matter.
- A chemical _____ is used to represent a chemical reaction.
- Add coefficients to make a balanced chemical equation. $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2$
- Where is the energy stored? _____
- In methanol, there were 4 H atoms at the start. How many H atoms were in the products? _____
- When methanol is burned, what compounds were produced? _____
- The total number of atoms that enter into a chemical reaction are _____ the number of atoms in the compounds that are produced.

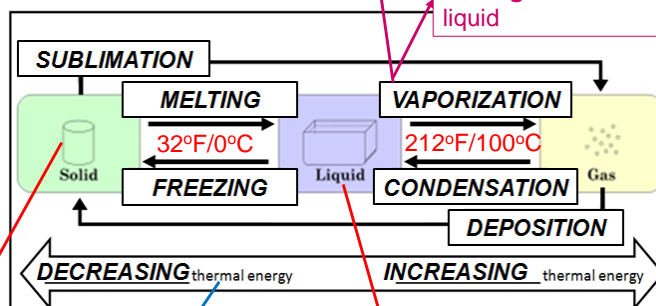
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Do you have all this information on the back p. 43.

Freezing Point Depression – Using salt lowers the freezing point of water (will not work if it is too cold)

Evaporation – Occurs only from the surface of a liquid

Boiling – Occurs throughout a liquid



Solids
Lowest amount of energy
Definite shape
Definite Volume

Kinetic Energy – Energy of motion
Temperature – Increases as kinetic energy increases

Liquids
No definite shape (takes shape of container)
Definite Volume

Gases
Highest amount of energy
No definite shape or volume (takes up available space)

<https://www.youtube.com/watch?v=al-do-HGulk>

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Chemistry Unit 3 Notes - Section 3

1. Substances that start (or enter into) a chemical reaction are called REACTANTS. Substances that are produced in the reaction are called PRODUCTS. Reactants and products can be ATOMS or COMPOUNDS.

2. Chemical reactions are represented by chemical EQUATIONS.

3. Label the diagram using:

Chemical Formula

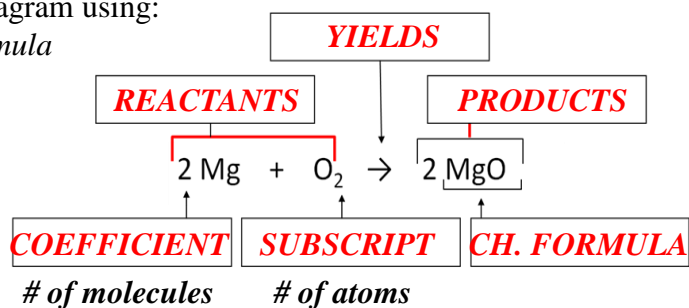
Coefficient

Products

Reactants

Subscript

Yields



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4. Which number represents the number of molecules of a substance in a reaction? COEFFICIENT



5. Which number represents the number of atoms of an element in a compound? SUBSCRIPT

6. The law of CONSERVATION of MASS states that matter cannot be created or destroyed in chemical reactions, which is why all chemical equations must be BALANCED.

Finish the back of the worksheet as you watch the EDPuzzle videos.

Lego Equations – Glue worksheet on page 45 4C

Click here for the [Lego Challenge Tutorial](#)

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