

# PRACTICE FOR SCIENCE REMEDIAL EXAM 9TH GRADE (II TRIMESTER)

Answer the worksheet and send it to the teacher's e-mail: itzel@institutoluispasteur.edu.mx

**Instruction:** complete the general name of the vertical columns and horizontal rows in the periodic table. Also add the amount of each one in the periodic table.

Name: \_\_\_\_\_

Amount: \_\_\_\_\_

Name: \_\_\_\_\_

Amount: \_\_\_\_\_

The periodic table organizes elements by atomic number, with **groups** organizing elements by similar chemical properties and valence electron counts, and **periods** indicating the number of electron energy shells. Elements in a group act similarly; those in a period change properties gradually.

**Instruction:** In the next comparison chart select if the property is related to elements that are non-metals, metalloids, or metals.

**Instruction:** According to the color in the periodic table, select if the elements with that color are non-metals, metalloids, or metals.

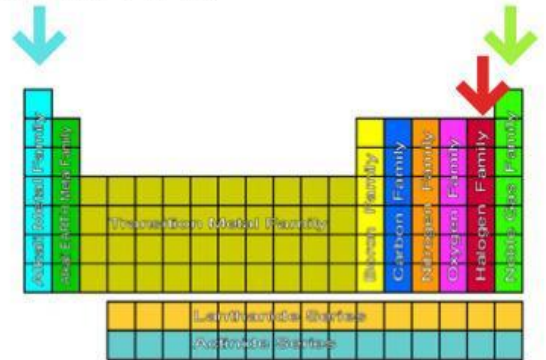
Type of element	Description of general characteristics.
	Good conductor of electricity and heat.
	Poor conductor of electricity and heat.
	Dull.
	Shiny.
	Sonorous.
	Non sonorous.
	Malleable and ductile.
	Brittle.
	High density.
	Low density.
	Properties between metal and non-metals.

# PRACTICE FOR SCIENCE REMEDIAL EXAM

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**Instruction:** organize the elements on "Alkali metals" group, "Halogens" group, and "Noble gases" group. On the line, select the correct chemical symbol.

Alkali metals (Group 1), halogens (Group 17), and noble gases (Group 18) are key periodic table families with distinct chemical properties. Alkali metals are highly reactive soft metals, halogens are the most reactive non-metals forming salts, and noble gases are unreactive, stable gases.



- Francium \_\_\_\_\_
- Sodium \_\_\_\_\_
- Bromine \_\_\_\_\_
- Helium \_\_\_\_\_
- Caesium \_\_\_\_\_
- Astatine \_\_\_\_\_

- Fluorine \_\_\_\_\_
- Radon \_\_\_\_\_
- Argon \_\_\_\_\_
- Iodine \_\_\_\_\_
- Lithium \_\_\_\_\_
- Chlorine \_\_\_\_\_

- Krypton \_\_\_\_\_
- Neon \_\_\_\_\_
- Potassium \_\_\_\_\_
- Rubidium \_\_\_\_\_
- Xenon \_\_\_\_\_

**Instruction:** the next images are representations of Bohr's atomic model. Select the right amount of total electrons (orange color), and the amount of electrons in the outer shell (yellow color), known as "valence electron". Answer if the element shows if the octet rule is complete or not: 8 electrons in the outer shell (blue color).

- Amount of **total electrons**.
- Amount of **electrons in the outer shell**.
- Does it complete the **octet rule?**

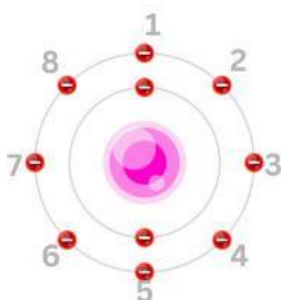
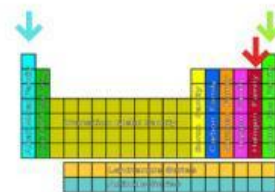
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# PRACTICE FOR SCIENCE REMEDIAL EXAM

## 9TH GRADE (II TRIMESTER)

**Instruction:** select if each sentence describes elements on "Alkali metals" group, "Halogens" group, or "Noble gases" group.



Least reactive

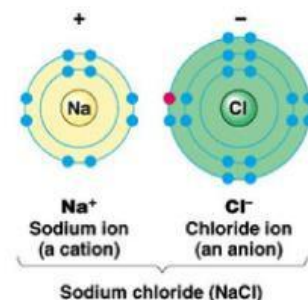


Most reactive

Most reactive



Least reactive



They are **stable, unreactive gases** because the **octet rule is complete** by themselves.

Their **reactivity increase from top to bottom** on this group because the **electron in the outer shell** of atoms as Francium **are further from the nucleus**, so it is **easier for them to lose it** (to complete the octet rule with another element).

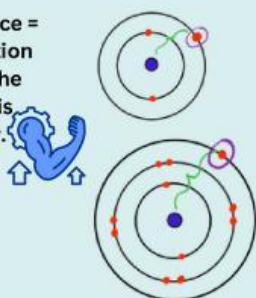
Their **reactivity decrease from top to bottom** on this group because the **electrons in the outer shell** of atoms as Iodine **are further from the nucleus**, so it is **harder to gain an electron** (to complete the octet rule) than the ones that are at the top.

They **bond with alkali metals** to complete the **octet rule** and **together form salts**.

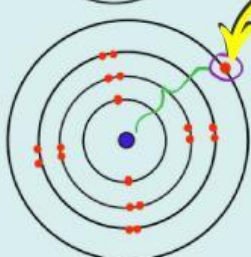
## NOTES

Distance between the nucleus and the valence electron (electrons in the outer orbit/shell).

Less distance = the attraction force to the nucleus is stronger.



More distance = the attraction force to the nucleus is weaker.



That's why it's easier to lose this 1 electron (valence electron), so that means it's easier to react with other elements.

Group 1 always loss 1 electron.

+

Group 7A (17) always gain 1 electron

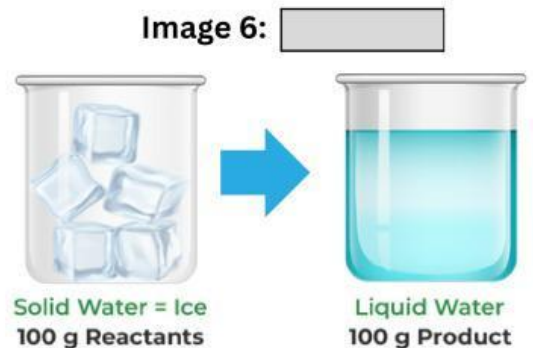
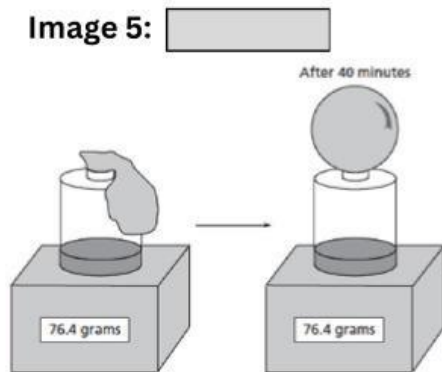
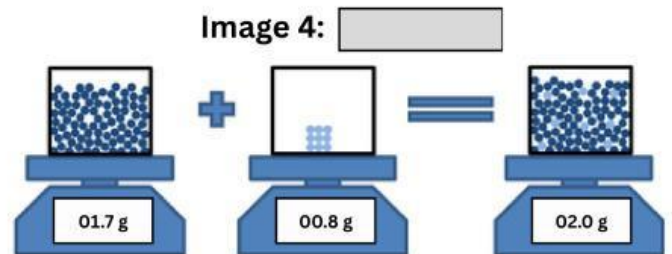
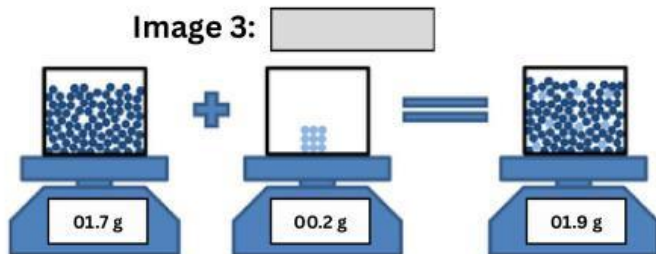
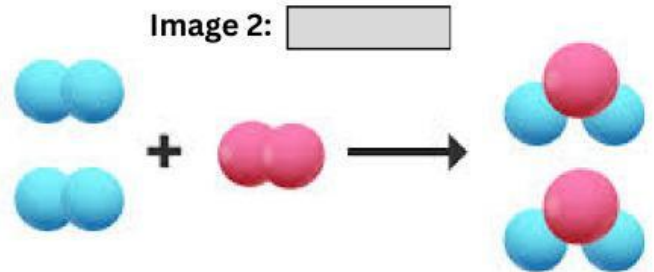
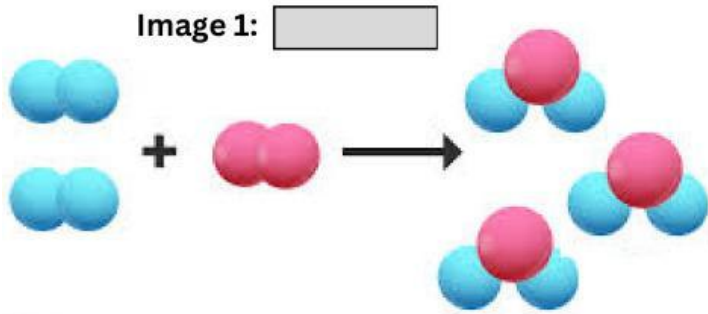
Together they complete 8 electrons in the outer orbit (octet rule)

The octet rule: Atoms are most stable when they achieve the number of electrons necessary to reach 8 electrons configuration in the outer shell / orbit. So the octet rule is the tendency for atoms to lose or gain electrons in order to reach this configuration.

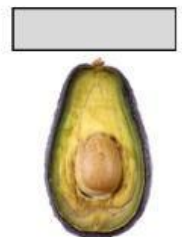
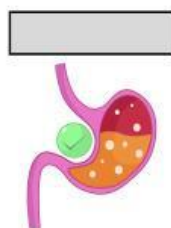
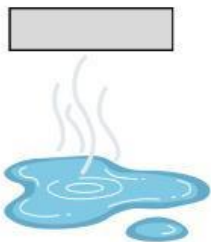
# PRACTICE FOR SCIENCE REMEDIAL EXAM

## 9TH GRADE (II TRIMESTER)

**Instruction:** select if images represent or not the Law of conservation of mass: "The mass of the products will be exactly the same as the mass of the reactants".



**Instruction:** match with a line the images to their names. Then, select if it is a physical change (separation or molecule joining) or chemical change (new products are formed).



Rusting

Melting

Digestion

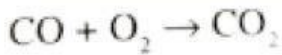
Food  
oxidative

Evaporation

# PRACTICE FOR SCIENCE REMEDIAL EXAM

## 9TH GRADE (II TRIMESTER)

Instruction: identify the reactants and products in the following equations (grey color) and select the correct representation of the word equations (blue color).



Reactant or product?

CO

O<sub>2</sub>

CO<sub>2</sub>

Word equation:



Reactant or product?

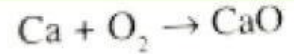
Zn

HCl

ZnCl<sub>2</sub>

H<sub>2</sub>

Word equation:



Reactant or product?

Ca

O<sub>2</sub>

CaO

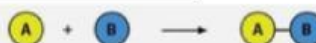
Word equation:

Instruction: select the kind of reaction the images and text represent: synthesis reaction, combustion reaction, or decomposition reaction.

reaction



reaction



reaction



reaction

The **breaking apart** of a compound or substance **into smaller and less complex** components.

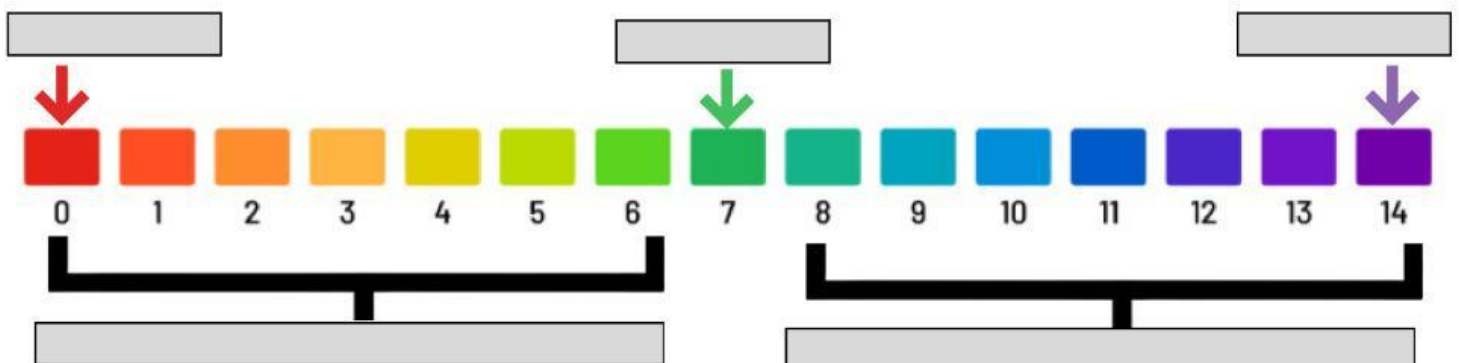
reaction

A reaction in which a substance **reacts with oxygen gas, releasing energy** in the form of **light and heat**.

reaction

A chemical process where **two or more simple substances** (elements or compounds) **combine** to form a **single, more complex** product.

Instruction: in the next pH scale, select if the arrows that are marked are representing alkaline, acids or neutral substances.



# PRACTICE FOR SCIENCE REMEDIAL EXAM

## 9TH GRADE (II TRIMESTER)

Instruction: select if the product is an acid, alkali or neutral. Then, answer the questions.





















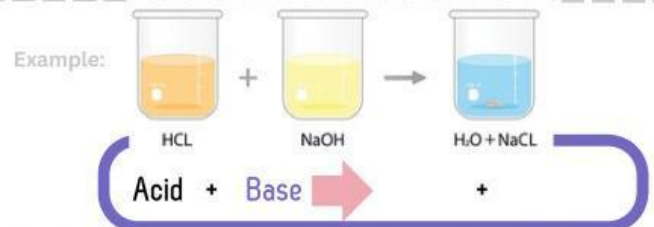





Imagine that you have an acid of pH 3, how many numbers in the pH scale we must add of another substance so it gets neutralized (pH 7)?



What are the products of the reaction of an acid with and alkaline solution?

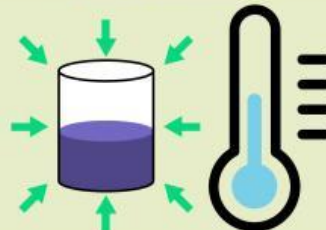


Instruction: answer on each image if it is representing an endothermic or exothermic reaction.

NOTES

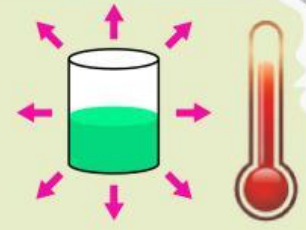
### Endothermic

The endothermic reaction is cooler than surroundings



### Exothermic

The exothermic reaction is hotter than surroundings





Combustion



Cold pack



Water and alkali metal



Freezing water into ice