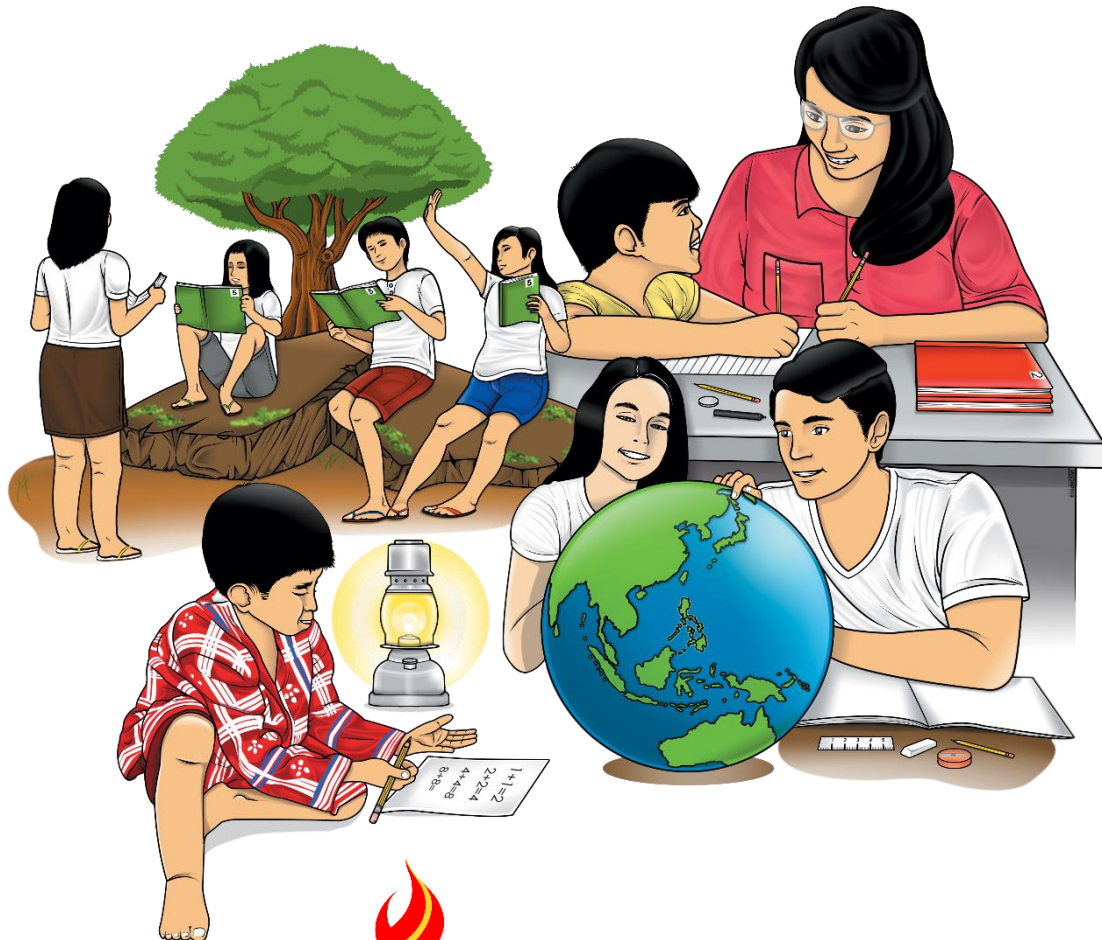


7

Science

Quarter 1 – Module 2: Elements Are Like Spices, When Mixed Together, They Become Better



Science – Grade 7
Alternative Delivery Mode
Quarter 1 – Module 2: Elements are Like Spices, When Mixed Together,
They Become Better
First Edition, 2020

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Development Team of the Module

Writers: Jaypee K. Balera, Leah Joy A. Desamparado, Maria Vanissa M. Tayong,

Editors: Cynthia S. Bustillo, Mirafior O. Albios

Reviewers: Yusof A. Aliudin, Mary Joy B. Bautista

Layout Artist: Glen D. Napoles & Analyn J. Madera

Management Team: Allan G. Farnazo - Regional Director

Isagani S. Dela Cruz - Schools Division Superintendent

Gilbert B. Barrera – Chief, CLMD

Arturo D. Tingson, Jr. – REPS, LRMS

Peter Van C. Ang-ug – REPS, ADM

Elpidio B. Daquipil – CID Chief

Juvy B. Nitura – EPSVR, LRMS

Lenie G. Forro – EPSVR, Science

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Department of Education – SOCCSKSARGEN

Office Address: Regional Center, Brgy. Carpenter Hill, City of Koronadal

Telefax: (083) 2288825/ (083) 2281893

E-mail Address: region12@deped.gov.ph

Science

**Quarter 1 – Module 2:
Elements Are Like Spices,
When Mixed Together,
They Become Better**

Introductory Message

For the facilitator:

Welcome to the **Science 7** Alternative Delivery Mode (ADM) Module on **Elements and Compounds!**

This module was collaboratively designed, developed and reviewed by educators both from public and private institutions to assist you, the teacher or facilitator in helping the learners meet the standards set by the K to 12 Curriculum while overcoming their personal, social, and economic constraints in schooling.

This learning resource hopes to engage the learners into guided and independent learning activities at their own pace and time. Furthermore, this also aims to help learners acquire the needed 21st century skills while taking into consideration their needs and circumstances.

In addition to the material in the main text, you will also see this box in the body of the module:

As a facilitator, you are expected to orient the learners on how to use this module. You also need to keep track of the learners' progress while allowing them to manage their own learning. Furthermore, you are expected to encourage and assist the learners as they do the tasks included in the module.

For the learner:

Welcome to the **Science 7** Alternative Delivery Mode (ADM) Module on **Elements and Compound!**

The hand is one of the most symbolized parts of the human body. It is often used to depict skill, action, and purpose. Through our hands we may learn, create, and accomplish. Hence, the hand in this learning resource signifies that you as a learner is capable and empowered to successfully achieve the relevant competencies and skills at your own pace and time. Your academic success lies in your own hands!

This module was designed to provide you with fun and meaningful opportunities for guided and independent learning at your own pace and time. You will be enabled to process the contents of the learning resource while being an active learner.

This module has the following parts and corresponding icons:



What I Need to Know

This will give you an idea of the skills or competencies you are expected to learn in the module.



What I Know

This part includes an activity that aims to check what you already know about the lesson to take. If you get all the answers correct (100%), you may decide to skip this module.



What's In

This is a brief drill or review to help you link the current lesson with the previous one.



What's New

In this portion, the new lesson will be introduced to you in various ways such as a story, a song, a poem, a problem opener, an activity or a situation.



What is It

This section provides a brief discussion of the lesson. This aims to help you discover and understand new concepts and skills.



What's More

This comprises activities for independent practice to solidify your understanding and skills of the topic. You may check the answers to the exercises using the Answer Key at the end of the module.



What I Have Learned

This includes questions or blank sentence/paragraph to be filled in to process what you learned from the lesson.



What I Can Do

This section provides an activity which will help you transfer your new knowledge or skill into real life situations or concerns.



Assessment

This is a task which aims to evaluate your level of mastery in achieving the learning competency.



Additional Activities

In this portion, another activity will be given to you to enrich your knowledge or skill of the lesson learned. This also tends retention of learned concepts.



Answer Key

This contains answers to all activities in the module.

At the end of this module you will also find:

References

This is a list of all sources used in developing this module.

The following are some reminders in using this module:

1. Use the module with care. Do not put unnecessary mark/s on any part of the module. Use a separate sheet of paper in answering the exercises.
2. Do not forget to answer *What I Know* before moving on to the other activities included in the module.
3. Read the instruction carefully before doing each task.
4. Observe honesty and integrity in doing the tasks and checking your answers.
5. Finish the task at hand before proceeding to the next.
6. Return this module to your teacher/facilitator once you are through with it.

If you encounter any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator. Always bear in mind that you are not alone.

We hope that through this material, you will experience meaningful learning and gain deep understanding of the relevant competencies. You can do it!

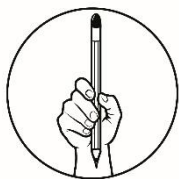


What I Need to Know

Look around you. Is it amazing that you are able to witness the beauty of the environment? Did you know that everything that you see is a matter? I know that you are already familiar with what is matter. It is anything that occupies space, has a mass and volume. It is a chemical substance that can transform into another state. A chemical substance is a matter that has a definite composition and the same composition throughout. In this module, you will find out that substances may be further classified into two: elements and compounds. Surely you will understand how elements are distinguished from compounds based on a set of properties and you will be able to recognize the presence of these elements in different food labels as minerals.

After going through this module, you are expected to:

1. describe the characteristics of an element and compound;
2. distinguish elements from compounds based on a set of properties; and
3. classify substances as either element or compound



What I Know

Directions: Read each item carefully. Use a separate sheet for your answers.

1. Which of the following is the simplest form of substance?
 - A. Chemical Formula
 - B. Compound
 - C. Element
 - D. Mixture
2. Which of the following is **NOT** an example of compound?
 - A. Ammonia
 - B. Helium gas
 - C. Hydrogen peroxide
 - D. Table sugar
3. Which of the following statements is TRUE about elements and compounds?
 - A. Are homogenous in nature.
 - B. Are simplest form of matter.
 - C. Are commonly naturally occurring materials.
 - D. Can be broken down into simpler substances.

4. Which of the following substance is an element?
 - A. Carbon dioxide
 - B. Iron
 - C. Salt
 - D. Sugar
5. Which of the following describes an element?
 - A. The simplest substance.
 - B. It can be broken down into other types of substances.
 - C. It can be separated through a chemical process.
 - D. It is composed of two or more types of atoms.
6. Which of the following statements correctly describes a compound?
 - A. Can be broken down into a simpler type of matter by chemical means.
 - B. Has a unique property that are different from the properties of its individual elements.
 - C. Composed of atoms of two or more elements that bond together.
 - D. Composed of two atoms that bond together.
7. Which of the following will be the result of compound if Hydrogen gas and oxygen gas combine?
 - A. Alcohol
 - B. Salt
 - C. Sugar
 - D. Water
8. Salt is made up of what elements?
 - A. Sodium and Chloride
 - B. Sodium and Chlorine
 - C. Sodium and Copper
 - D. Sodium and Oxide
9. Which of the following is correctly matched?
 - A. Gold: Element: Silver: Compound
 - B. Oxygen: Element: Water: Compound
 - C. Sugar: Element: Salt: Compound
 - D. Water: Element: Hydrogen: Compound
10. Which of the following is NOT an element?
 - A. Na
 - B. Fe
 - C. Pz
 - D. He

For items 11—15, tell whether it is an example of an element or a compound. Write the word ELEMENT if the sample shows characteristics of an element and COMPOUND if it shows characteristics of compound.

- _____ 11. Aluminum
_____ 12. Mercury
_____ 13. Ferrous Sulfate
_____ 14. Sucrose
_____ 15. Carbon

Lesson

1

Characteristics of Elements and Compounds



What's In

Hello! My dear friend! How is your day? I hope that everything is fine after our previous activity. You are already done in identifying substances such as homogeneous or heterogeneous mixtures. I know you feel hard to distinguish substances based on their appearances. But do not worry, there are many ways to identify them because these substances may be classified and are made of different elements and compounds. Elements have unique properties and characteristics form the others.

We have a visitor from our central laboratory. She is Professor Elemena, an expert in all the elements and compounds surrounding us. She knows how to deal with it especially some lost elements and compounds, but she needs our help in finding those elements and compounds as soon as possible to avoid leakage. While she is with us, please help her to make our campus free from chemical hazards. But how we can help her? Please read the poem below and use it as your guide in picking all the lost elements and compounds. I know that you are excited to help her. Let's go!

THE LOST ELEMENT

by: Jaypee Kadalem Balera

I think I was lost
My home is too far at any cost
I am tired finding home-made of lead
So that solar radiation will not anymore be spread,
The heat from Sun makes me float
Like Helium inside a balloon that makes it bloat
As I go far, I feel numb and bursting
Like a bullet powder made of Potassium Nitrate that makes us shaking
I hope I can go home now
I feel my lungs did not function somehow
Hope oxygen will fill me completely
Before carbon dioxide will be mine totally
As I walk in the lonely road above the mountains
It is sad to see land mine of gold and copper be broken
This shows how the environment suffered much everyday
Hope my home will be back with me again like a brand-new day
My body is already in pained and drained
With essential elements from water made up of hydrogen and oxygen
I want to quench my thirst soon
To fast track the lost element which is my Home.

What are the elements and compounds stated in the poem?



What's New

In the previous activity we identified different compound and in a set of compounds is composed of elements.

Can you identify the elements found in the given set of compounds below? Write the elements in the boxes below.

Carbon Dioxide		
Potassium Nitrate		



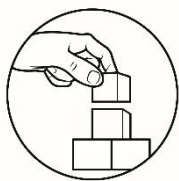
What is It

Elements and Compounds are all around us. Elements are made up of atom or atoms of the same kind. They are the simplest type of matter and cannot be broken down into components. Each element is made entirely from one type of atom. Each element is unique, and no two elements have the same set of properties. Some are in the same state, but they have different properties. Some elements are metals like iron, gold, and silver. Others are nonmetals like Nitrogen, Oxygen and Hydrogen. There are elements that are metalloids like Boron, Silicon and Germanium. Compounds are combination of two or more elements like water which is a combination of Hydrogen and Oxygen; salt which is made up of sodium and chlorine; and rusts formed when an iron reacts with oxygen. Compounds can be broken down into its components through a chemical process and formed when two elements are combined. It has unique properties that are different from the properties of the elements that make them up.

Can you name new metallic elements and set of compounds that is not found in the selection above? Write it inside the box below.

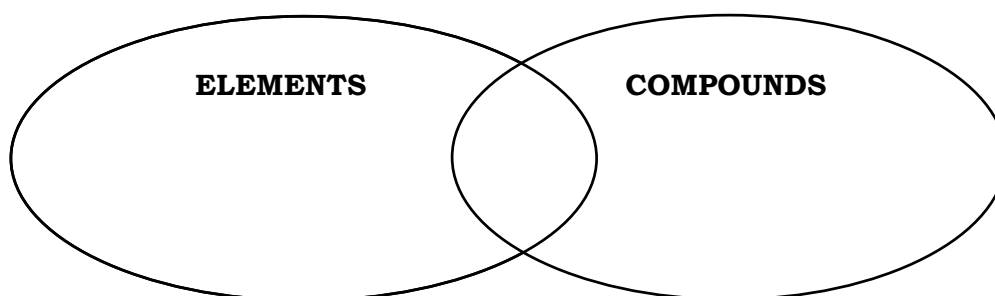
ELEMENTS

COMPOUNDS



What's More

Using the Venn Diagram, describe the characteristics of elements and compounds.



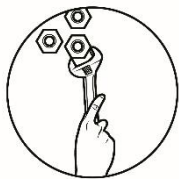
What I Have Learned

Directions: Read the paragraph and identify the correct words that fit in the given sentences inside the box. Write your answer in a separate sheet of paper.

properties	metal	Elements	Compounds
metalloids	more	non-metal	one
properties	chemical process	components	chemical

Elements and Compounds are all around us. (1)_____ are made up of atom or atoms of the same kind. They are the simplest type of matter and cannot be broken down into components. Each element is made entirely from (2)_____ type of atom. Each element is unique and no two elements have the same set of (3)_____. Some are in the same state but they have (4)_____ properties. Some elements are (5)_____ like iron, gold and silver. Others are (6)_____ like Nitrogen, Oxygen and Hydrogen. There are elements that are (7)_____ like Boron, Silicon and Germanium.

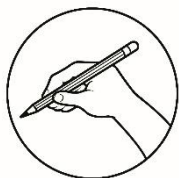
(8) _____ are combination of (9)_____ or (10)_____ elements like water which is a combination of Hydrogen and Oxygen; salt which is made up of sodium and chlorine; and rusts formed when an iron reacts with oxygen. Compounds can be broken down into it's (11)_____ through a (12)_____ process and formed when two elements are combined together. It has unique properties that are different from the properties of the elements that make them up.



What I Can Do

Look and bring any food product label. Paste your chosen food product label in the box. Identify which of the substances are classified as elements and compounds. From the contained compounds, choose three and determine the constituent elements.

* Please use extra sheets if necessary



Assessment

Directions: Read each item carefully. Write only the letter of the correct answer for each question. Use a separate sheet for your answers.

1. Which of the following **CANNOT** be broken down into simple substance?
 - A. Chemical Formula
 - B. Compound
 - C. Element
 - D. Mixture
2. Which of the following is **NOT** an example of element?
 - A. Helium gas
 - B. Hydrogen
 - C. Ice
 - D. Iron
3. Which of the following statements is true about elements and compounds?
 - A. Homogenous in nature
 - B. Simplest form of matter.
 - C. Commonly and naturally occurring materials.
 - D. Can be broken down into simpler substances.
4. Which of the following substance is **NOT** a compound?
 - A. Carbon dioxide
 - B. Hydrogen
 - C. Salt
 - D. Sugar

5. Which of the following describes an element?
- A. The simplest substance.
 - B. It can be broken down into other types of substances.
 - C. It can be separated through a chemical process.
 - D. It is composed of two or more types of atoms.
6. Which of the following statements correctly describes a compound?
- | | |
|------|---|
| I. | It can be broken down into a simpler type of matter by chemical means. |
| II. | It has unique properties that are different from the properties of its individual elements. |
| III. | It is composed of atoms of two or more elements that bond together. |
| IV. | It is composed of atoms of the same kind. |
- A. I, II, III, IV
 - B. I, II, III only
 - C. I, II, IV only
 - D. II, III, IV only
7. Which of the following will be the result of compound if Hydrogen gas and oxygen gas combine?
- A. Hydrogen Peroxide
 - B. Salt
 - C. Sugar
 - D. Water
8. What elements made up the compound Carbon Dioxide?
- A. Carbon and Carbon
 - B. Carbon and Oxide
 - C. Carbon and Oxygen
 - D. Carbon and Hydrogen
9. Which of the following is correctly matched?
- | | |
|------|--|
| I. | Nitrogen: Element: Nitrous Oxide: Compound |
| II. | Iron: Element: Rust: Compound |
| III. | Mercury: Element: Copper: Compound |
| IV. | Oxygen: Element: Water: Compound |
- A. I, II, III, IV
 - B. I, II, III only
 - C. I, II, IV only
 - D. I and II only
10. Sodium is a silvery solid that reacts violently with water and chlorine. When they combine to form the compound sodium chloride known as salt, there is a fundamental change in the properties. Salt is often added to our food when cooking and it is safe to eat. Which of the following statements supports the idea presented?
- A. True to all compounds, they no longer have the properties of the elements that makes them up.
 - B. True to some compounds, it maintains the properties of the elements that makes them up.

- C. True in all elements, it maintains its properties even after it combines with other elements.
- D. True to all elements, they have the properties after they are combined.

11. Which of the following is substance compound?

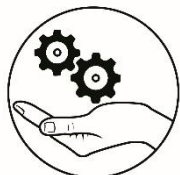
- A. Alloy
- B. Gold
- C. Iron
- D. Silver

12. Which of the following is an element?

- A. Oxygen
- B. Gun powder
- C. Salt
- D. Water

For items 13—15, tell whether it is an example of an element or a compound. Write the word ELEMENT if the sample shows characteristics of an element and COMPOUND if it shows characteristics of compound.

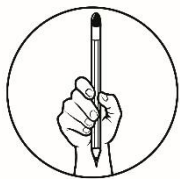
- _____ 13. Calcium Carbonate
 _____ 14. Nickel
 _____ 15. Nitrogen



Additional Activities

It is my pleasure to see you accomplishing all your activities. This time, you will be engaged and have your immersion as a garbage collector. Inside the garbage bin are words need to be thrown at the dump site. As a garbage collector you need to save the following words that describes and shows relationship with elements and compounds. Segregate them by writing it in the boxes.

	<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 10px;">ELEMENT</td> </tr> <tr> <td style="text-align: center; padding: 10px;">COMPOUND</td> </tr> </table>	ELEMENT	COMPOUND
ELEMENT			
COMPOUND			



What I Know

1. Which of the following is **NOT** an example of a compound?
 - A. Gun Powder
 - B. Salt
 - C. Smoke from cars
 - D. Oxygen
2. Which is **NOT** an example of a compound?
 - A. Bases
 - B. Acids
 - C. Mixtures
 - D. Elements
3. Which of the following is **NOT** a group of elements?
 - A. Metal
 - B. Nonmetal
 - C. Metalloid
 - D. Iron
4. Which of the following shows set of properties of an element?
 - A. Made up of big particles of atom.
 - B. Joined through chemical process.
 - C. Composed of one element with same properties.
 - D. Joined through mechanical process.
5. When carbon and oxygen is combined through chemical process they will end up producing a _____?
 - A. Element
 - B. Compound
 - C. Substance
 - D. Acid
6. When you have 2 Hydrogen atoms combined it will end up producing a _____?
 - A. Mixture
 - B. Compound
 - C. Pure Substance
 - D. Base
7. When two different atoms combined it will be produced _____?
 - A. Mixture
 - B. Another substance
 - C. Compound
 - D. Pure Substance

8. What substance is composed of only one kind of atom?
- Element
 - Compound
 - Pure substance
 - Mixture

9. When one or more substance is combined it is called _____?
- Element
 - Compound
 - Pure substance
 - Mixture

10. Which of the following set of properties talks about a compound?

- Made up of one or more atoms
- Joined through chemical process
- Composed of one or more substance
- Mixtures of one or more different substances

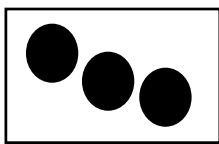
- I and II only
- II and III only
- III and IV only
- I, II, III, IV

11. Which of the following set of properties talks about an element?

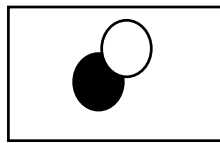
- Made up of one or more atoms with same properties
- Cannot be separated through any process
- Composed of one or more substance
- Mixtures of one or more elements

- I and II only
- II and III only
- III and IV only
- I, II, III, IV

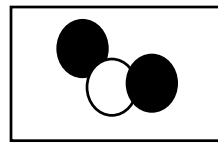
For number 12-15. Which of the following does the illustration talks about? Copy the illustrations below and write whether it describes an element or compound.



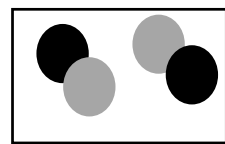
12. _____



13. _____



14. _____



15. _____

Lesson

2

Properties of Elements and Compounds



What's In

Hello! My dear friend! How is your first lesson? I hope that everything is fine after answering all your activity. You are already done in describing the characteristics of an element and compound. I know you feel a little bit hard in identifying the elements in each compound, but you did it. Elements are composed of one atom while compounds are composed of two or more elements. Elements have unique properties and characteristics from the others.

We have a visitor from our central laboratory. He is Professor Purey, an expert in distinguishing properties of all the elements and compounds surround us. He knows how to deal with it. He would like to ask help from you regarding the situation of our laboratory. Everything inside in our school laboratory is in chaos. For you to extend some hand to him, you must read the poem below and use it as your guide in organizing things. I know that you are excited. Let us get started!

Mr. Purey's Lab

by Leah Joy A. Desamparado

Inside the lab, I always do a great job.
Everything is in the right corner and always in order.
I never mixed one that is different from the other.
As you enter the room, all is perfect, not a single clutter.

A red cabinet can be seen on the other side of the corner
Where another pure substance, a compound is placed in there
It can be broken down into simple type of matter,
Composed of atoms of elements two or more bonded together.
It has unique properties different from its individual origins
Chlorine a poisonous gas when combine to sodium.
A shiny metal turn into a table salt
which in cooking food is very fundamental.

Now everything is a mess
Elements and compounds all over the places
Can you help me sort them out?
And organize all of them without any doubt.
I am an Iron, made up of a single atom
Where do I belong?

Is it in the blue cabinet or somewhere between rust, salt, and alcohol?
I am a water, made up of hydrogen and oxygen
They say I am a compound
If you agree, in the red cabinet is where I should be.

You just made a good job!
An apprentice I never had
Always bear in mind
There are two types of substance inside my lab
The simplest matter is the element.
And a compound that can be broken down into its components.

Guide Questions: Write your answer in a separate sheet of paper.

- A. What are the two substances mentioned in the poem?
- B. What are the properties of an element?
- C. What are the properties of a compound?



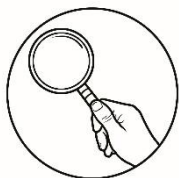
What's New

In the previous activity we identified the properties of a compound and element.

Identify some elements and compounds mentioned in a poem using the given set of properties? Write your answer in a separate sheet of paper.

ELEMENTS

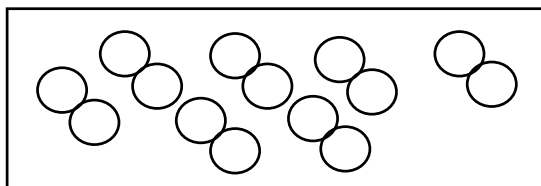
COMPOUNDS



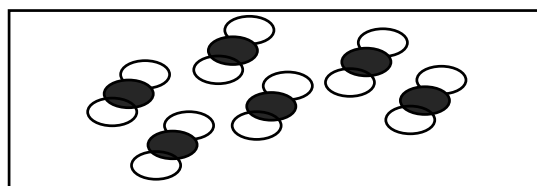
What is It

Elements and Compounds have different set of properties. Elements are somehow like people who prefer to be alone. They are composed only of one atom with same set of properties. Compounds are somewhat celebrities who preferred to be with their fans. They are made up of elements that are combined chemically and composed of two or more elements.

Element and compound are distinguished in different set of properties such as on the figures below.



Pure chemical substance made of the same type of atom.

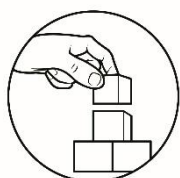
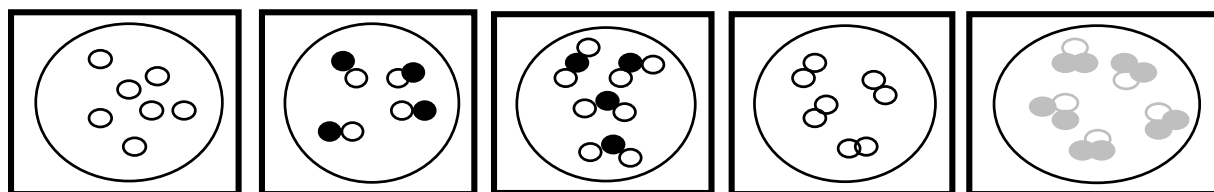


Contain atoms of different element that are chemically combined.

From the knowledge learned about the properties of an element and compound. Let us transfer all the information gathered from it.

WHICH IS WHICH?

Directions: In the given illustrations, identify which are elements and compounds. Write your answer in the space below the illustration.



What's More

Directions: Complete the table by writing the phrases that correctly describes an element and a compound. Choose from the pool of phrases given below.

- ✓ One kind of atom
- ✓ Two or more kinds of atoms
- ✓ Cannot be broken into simpler substance
- ✓ Can be broken into simpler substance by chemical means
- ✓ Metals, nonmetals and metalloids
- ✓ Acids, bases and salts

Comparing Elements and Compounds

	Element	Compound
Composition		
Matter of Separation		
Types		



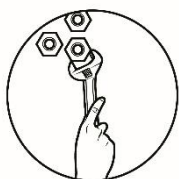
What I Have Learned

Directions: Read the paragraph and identify the correct words that fit in the given sentences in the box below.

fans	same	two	alone	metalloid	element
salts	one	more	chemical	acid	non-metals
bases	metals	chemical process			

Elements and Compounds have different set of properties. Elements are somehow like people who prefer to be (1)_____. They are composed only of (2)_____ atom with (3)_____ set of properties. Some of them are grouped in (4)_____, (5)_____, (6)_____.

Compounds are somewhat celebrities who preferred to be with their (7)_____. Compounds are made up of (8)_____ that are joined (9)_____. They are composed of (10)_____ or (11)_____ elements. Some of them are grouped in (12)_____, (13)_____, (14)_____.



What I Can Do

Look and bring any food product label. Paste your chosen food product label on the box. Group all the substances according to their set of properties of an elements and compounds. *Please use extra sheets if necessary.

	ELEMENTS
	COMPOUNDS



Assessment

Directions: Read each item carefully. Write only the letter of the correct answer for each question. Use a separate sheet for your answers.

- Which of the following substance composed of one type of atom?
 - Chemical Formula
 - Compound
 - Element
 - Mixture

2. Which of the following is **NOT** a compound using the given set of properties?
 - A. Helium gas
 - B. Hydrogen
 - C. Ice
 - D. Iron

3. Which of the following statements is true about elements?
 - A. Homogenous in nature
 - B. Group in each state
 - C. Commonly group according with their set of properties
 - D. Commonly group according with their set of characteristics

4. Which of the following statements is true about compounds?
 - A. Heterogeneous in nature
 - B. Joined using chemical process
 - C. Commonly group according with their set of properties
 - D. Homogenous in nature

5. Which of the following is a property of an element?
 - A. The simplest substance.
 - B. Composed of two or more types of atoms.
 - C. Be separated through a chemical process.
 - D. Composed of two or more types of substances.

6. Which of the following is a property of a compound?
 - A. The simplest substance.
 - B. It is composed of two or more types of atoms.
 - C. It can be separated through a physical process.
 - D. It is composed of two or more types of substances.

7. Which of the following is an example of an element?
 - A. Iron
 - B. Hydrogen Peroxide
 - C. Salt
 - D. Water

8. What elements made up the compound Potassium Nitrate?
 - A. Potassium and Oxide
 - B. Potassium and Nitrogen
 - C. Potassium and Hydrogen
 - D. Potassium and Potassium

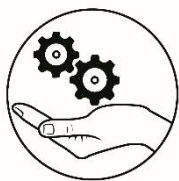
9. Which of the following is correctly matched compound?
 - A. Carbon and Oxygen (Carbon Dioxide)
 - B. Sodium and Chlorine (Sodium Chloride)
 - C. Hydrogen and Water (Hydrogen Dioxide)
 - D. Potassium and Nitrogen (Potassium Nitrite)

10. Sodium is a silvery solid that reacts violently with water and chlorine is a green, poisonous gas. When they combine to form the compound sodium chloride or we know as salt, there is a fundamental change in the properties. Salt is often added to our food when cooking and it is safe to eat. Which of the following statements supports the idea presented?
- A. True to all compounds. They no longer have the properties of the elements that make them up. They have their own properties.
 - B. True in some compounds. Some compounds maintain the properties of the elements that make them up.
 - C. True to all elements. Elements maintain its properties even after it combines with other elements.
 - D. True to all elements. Compounds maintain its properties even after it combines with other elements.

For items 11–12, refer to the problem below.

Substance A and Substance B were examined. The results showed that Substance A is made up of a single atom and cannot be broken down into simple form while Substance B is made up of two or more atoms of different kinds and can be broken down into its components.

11. Which of the following is substance B?
- A. Compound
 - B. Element
 - C. Mixtures
 - D. Pure Substance
12. Which of the following is substance A?
- A. Acid
 - B. Element
 - C. Compound
 - D. Mixture
13. Which of the following could be an example of Substance B?
- A. Calcium Oxide
 - B. Ice
 - C. Iron Oxide
 - D. Water
14. Which of the following could be an example of Substance A?
- A. Oxygen
 - B. Potassium Nitrate
 - C. Sodium Chloride
 - D. Water
15. Which of the following could be the properties of Substance A?
- A. Made of one atom
 - B. Made up of one or more element
 - C. Made up of two or more atoms
 - D. Joined through chemical process



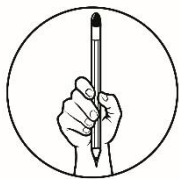
Additional Activities

Great job my friend! You successfully answered all the activities prepared for you and it is such an honor to be with you the whole duration of your journey. This time, you will be engaged in another activity. You will look for the words being described in each of the statements below. Write your answers in the space provided before the number.

My Word Search

M	H	A	R	A	C	H	I	R	O	N	O	U
H	I	A	E	U	B	H	V	U	E	R	L	N
E	Q	X	T	A	S	H	E	G	O	L	D	I
L	L	M	T	O	B	T	Y	M	E	T	A	Q
P	E	E	A	U	M	X	F	S	I	L	V	U
A	C	O	M	P	O	U	N	D	S	S	I	E
R	C	S	V	E	X	R	E	I	A	X	T	E
T	R	I	E	D	N	A	O	E	L	A	Z	R
S	A	I	D	J	E	T	N	T	T	I	N	E
P	U	R	E	S	U	B	S	T	A	N	C	E

- _____ 1. It is the simplest type of matter.
- _____ 2. It is made up of two or more elements.
- _____ 3. It has a definite composition and unique set of properties.
- _____ 4. It occupies space and has mass.
- _____ 5. It is a compound made up of sodium and chlorine.
- _____ 6. It is one of the components of water when broken down.
- _____ 7. An example of element that is a metal.
- _____ 8. Compounds can be classified as _____ or base.
- _____ 9. The smallest indivisible particle that makes up everything.
- _____ 10. A compound that is formed when iron reacts with oxygen.



What I Know

1. It is the simplest form of matter.
 - A. Compound
 - B. Element
 - C. Mixture
 - D. Substance
2. It can be broken down into two or more components.
 - A. Compound
 - B. Element
 - C. Mixture
 - D. Substance
3. Which of the following is **NOT** an element?
 - A. Calcium
 - B. Iron
 - C. Manganese
 - D. Sugar
4. All are elements, **EXCEPT**
 - A. Selenium
 - B. Silicon
 - C. Sodium
 - D. Sulfate
5. Which of the following is **NOT** a compound?
 - A. Carbon dioxide
 - B. Germanium
 - C. Water
 - D. Salt
6. The following are compounds, **EXCEPT**
 - A. Ammonia
 - B. Arsenic
 - C. Methane
 - D. Oxide
7. When hydrogen is combined with oxygen what is produced?
 - A. Hydrocarbon
 - B. Hydrochloride
 - C. Oxide
 - D. Water
8. Sodium chloride is a combination of sodium and ____?
 - A. Carbon
 - B. Chlorine

- C. Fluorine
D. Iodine
9. The following are found in an ingredient's label. Which is an element?
A. Iron
B. Oxide
C. Sorbate
D. Sulfate
10. Which of the following is **NOT** correctly matched?
A. Salt: Na and Cl : Element
B. Water: H and O: Compound
C. Carbon dioxide: C and O: Compound
D. Magnesium chloride: Mg and Cl: Compound
11. What basic step/s you follow in classifying elements from a compound?
A. Look if the substance is in the periodic table.
B. Make it sure that it composed of one element.
C. Make it sure that it is the complex form of matter.
D. Make it sure that its properties and characteristic's are the same.
12. Element is a pure substance (I). Compound is a pure substance too (II).
A. Both statements I and II are TRUE
B. Both statements I and II are FALSE
C. Statement I is False while statement II is TRUE
D. Statement I is TRUE while statement II is FALSE
13. Zinc is a compound (I) while zinc sulfate is an element (II).
A. Both statements I and II are TRUE
B. Both statements I and II are FALSE
C. Statement I is TRUE while statement II is FALSE
D. Statement I is False while statement II is TRUE
14. Joshua planned to have an experiment. He prepared the materials namely sodium chloride, hydrogen peroxide, iron, and iodine. Which of his materials are compounds?
- | |
|--|
| I. Sodium chloride
II. Hydrogen peroxide
III. Iron
IV. Iodine |
|--|
- A. I and II only
B. I and III only
C. II and III only
D. II and IV only
15. How would you classify an element from a compound?
A. Element and compound are composed of one substance.
B. Element and compound are composed two or more substances.
C. Elements and compounds are can be broken down into complex forms.
D. Elements and compounds are cannot be broken down into simpler forms.

Lesson**3****Classifying Substances as Elements and Compounds****What's In**

Hello! How are you? I hope you learned the differences between the elements and compounds? Compound can be broken down into simplest forms which are its constituent elements. In this lesson you will simply classify elements from compounds. You will focus only on the classification of substances as elements or compounds.

**What's New**

You entered in your laboratory room for a science class. Your teacher instructed you to roam around and familiarize what are inside your laboratory room. To your surprised, you have seen a hanging cabinet full of substances. You observed for a while on it. Your teacher called the attention of the class to be seated. She asked any volunteer of what you have observed. After which, she posted your lesson and it is all about classifying elements and compounds. While on your seat, you remembered the materials found on the cabinet.

Activity 1**Which are Elements? Which are Compounds?**

Directions: Inside the box are the substances that are found in the cabinet. Classify which among them are elements ad compounds and complete the template below the box. Copy and fill the template below:

IRON	SODIUM CHLORIDE (SALT)	SULFUR	CARBON
MAGNESSIUM RIBBON	SUGAR	OIL	BAKING SODA
COPPER	ALUMINUM	DISTILLED WATER	CHLORINE

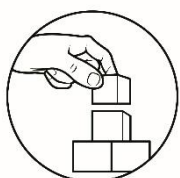
ELEMENTS	COMPOUNDS



What is It

The activity above helped you to think your prior knowledge on lesson 1 and lesson 2. It is easy right? Well, it is important to note that elements are single substance. You can easily see them in the periodic table. In the list above, iron is an element because it is a single substance with one atom and is present in the periodic table. Sodium chloride is a compound because it is a combination of two elements namely sodium and chlorine with 2 or more atoms. Therefore, an element cannot be broken anymore while compound it can be broken to its constituent elements.

- Q1. Which among the substances are elements?
Q2. Which among the substances are compounds?
Q3. What are your bases of classifying them?



What's More

Elements and compounds are also present in the food you eat. They can be seen and read on the food labels known as nutrition facts and ingredients. Take a look on the sample food labels below.

Blueberry

Supplement Facts		
Serving Size 2 scoops (60g) Servings Per Container 20		
	Amount per serving	% Daily Value
Calories	250	
Total Fat	8 g	10%*
Saturated Fat	5 g	25%*
Cholesterol	45 mg	15%
Total Carbohydrate	25 g	9%*
Dietary Fiber	3 g	11%
Total Sugars	1 g	**
Protein	20 g	
Calcium	124 mg	10%
Iron	2 mg	11%
Sodium	170 mg	7%

*Percent Daily Values are based on a 2,000 calorie diet.
**Daily Value not established.

Other Ingredients: Gluten Free Whole Grain Oat Flour, Grass-Fed rBGH Free Whey Protein Concentrate, Gluten Free Whole Grain Oats, Coconut Oil Powder, Gum Blend (Cellulose Gum, Xanthan Gum, Carrageenan), Natural Flavor, Sea Salt, Sucralose.

Contains Milk, Tree Nuts (Coconut).

Can you identify the substances in the food label above?

Yes, it is still easy. Some of these are calcium, monosodium glutamate and ferrous sulfate. The calcium is the element while the two substances are compounds. The constituent elements of monosodium glutamate are sodium, carbon, hydrogen, nitrogen and oxygen while ferrous sulfate is: Iron, sulfur and oxygen.

Let us have another activity to develop your skill on classifying elements and compounds. Here you go!

Activity 2. Let's Hunt Elements and Compounds!

Directions: Refer to the labels of cookies products below.

Nutrition Facts	
Serving Size 4 Cookies (30g)	
Servings Per Container About 11	
Amount Per Serving	
Calories 120	Calories from Fat 45
	% Daily Value*
Total Fat 5g	8%
Saturated Fat 3g	15%
Trans Fat 0g	
Cholesterol 20mg	7%
Sodium 90mg	4%
Total Carbohydrate 18g	6%
Dietary Fiber 2g	8%
Sugars 7g	
Protein 2g	
Vitamin A 2%	• Vitamin C 0%
Calcium 0%	• Iron 4%
*Percent Daily Values are based on a diet of 2,000 calories. Your daily values may be higher or lower depending on your calorie needs:	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram:	
Fat 9 • Carbohydrate 4 • Protein 4	

INGREDIENTS: Wheat Flour, Sugar, Butter, Eggs, Salt, Soy Lecithin (Emulsifier), Leavening Agent (Sodium Bicarbonate), Artificial Flavor.

Contains Egg, Milk, Wheat, Soy.

Manufactured in a facility that process eggs, milk, peanuts, tree nuts, and wheat.

List down in Table 1 the compounds in the product label and the constituent elements. There are cases that you will need to look at the constituent elements because they may not be obvious from the compound name (e.g., citric acid, oil).

Table 1. Compounds and their constituent elements written in the food labels.

Compound	Constituent Element

Note: Please add rows as necessary

Q4. The elements iron and zinc are listed in the Nutrition Facts for the cereal drink. Find out from the Ingredients the source of these elements.

Q5. Name three elements present in the Ingredients of the cereal drink which are not listed in the Nutrition Facts.

(1) _____ (2) _____ (3) _____



What I Have Learned

Elements and compounds are all substances. They can be classified based on their number of atoms. Since element is the simplest form of matter it has one atom only and cannot be broken down anymore. Compounds are combinations of two or more elements; thus, it composes of two or more atoms then it can be broken into its components, the elements.

Directions: Read each situation below. Classify the underlined substances whether it is an element or a compound. Write 1 if it is an element and 2 if it is a compound.

1. Karena brought a sample of iron in the class.
2. Keybird give a piece of copper to his friend.
3. Justine buy table salt from a nearby store.
4. Michaela is fond of eating junk foods with sodium glutamate.
5. Iniego borrowed an aluminum basin from her Aunt.



What I Can Do

Activity 3. What Matters in Labels?

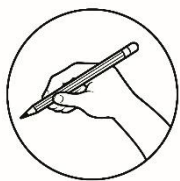
Directions: Look on the food label of soy sauce below. Can you identify the elements and compounds?

<p>Nutrition Facts Serving Size 2 Tbsp (30g) Servings Per Container 16</p> <hr/> <p>Amount Per Serving</p> <p>Calories 150 Calories from Fat 140</p> <hr/> <table border="1"> <thead> <tr> <th></th> <th>% Daily Value*</th> </tr> </thead> <tbody> <tr> <td>Total Fat 16g</td> <td>24%</td> </tr> <tr> <td> Saturated Fat 2.5g</td> <td>13%</td> </tr> <tr> <td> Trans Fat 0g</td> <td></td> </tr> <tr> <td>Cholesterol 0mg</td> <td>0%</td> </tr> <tr> <td>Sodium 290mg</td> <td>12%</td> </tr> <tr> <td>Total Carbohydrate 1g</td> <td>0%</td> </tr> <tr> <td> Dietary Fiber 0g</td> <td>2%</td> </tr> <tr> <td> Sugars 1g</td> <td></td> </tr> <tr> <td>Protein 0g</td> <td></td> </tr> </tbody> </table>		% Daily Value*	Total Fat 16g	24%	Saturated Fat 2.5g	13%	Trans Fat 0g		Cholesterol 0mg	0%	Sodium 290mg	12%	Total Carbohydrate 1g	0%	Dietary Fiber 0g	2%	Sugars 1g		Protein 0g		<p>Vitamin A 0% • Vitamin C 0%</p> <p>Calcium 0% • Iron 0%</p> <p>*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:</p> <table border="1"> <thead> <tr> <th></th> <th>Calories: 2,000</th> <th>2,500</th> </tr> </thead> <tbody> <tr> <td>Total Fat</td> <td>Less than 65g</td> <td>80g</td> </tr> <tr> <td>Saturated Fat</td> <td>Less than 20g</td> <td>25g</td> </tr> <tr> <td>Cholesterol</td> <td>Less than 300mg</td> <td>300mg</td> </tr> <tr> <td>Sodium</td> <td>Less than 2,400mg</td> <td>2,400mg</td> </tr> <tr> <td>Total Carbohydrate</td> <td>300g</td> <td>375g</td> </tr> <tr> <td>Dietary Fiber</td> <td>25g</td> <td>30g</td> </tr> </tbody> </table> <p>Calories per gram: Fat 9 • Carbohydrate 4 • Protein 4</p>		Calories: 2,000	2,500	Total Fat	Less than 65g	80g	Saturated Fat	Less than 20g	25g	Cholesterol	Less than 300mg	300mg	Sodium	Less than 2,400mg	2,400mg	Total Carbohydrate	300g	375g	Dietary Fiber	25g	30g	<p>INGREDIENTS: Soybean Oil, Water, Distilled Vinegar, Blue Cheese (Pasteurized Milk, Cheese Cultures, Salt, Enzymes), Salt, Sugar. Contains less than 2% of: Cellulose Gel and Cellulose Gum, Partially Hydrogenated Soybean Oil, Natural Flavor, Sodium and Calcium Caseinates, Lactic Acid, Xanthan Gum, Potassium Sorbate and Calcium Disodium EDTA as preservatives, Garlic*, Polysorbate 60, Onion*, Propylene Glycol Alginate, Yeast Extract, Spice, Beta Carotene, Sunflower Oil.*Dried</p>
	% Daily Value*																																										
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Dietary Fiber	25g	30g																																									

Complete the table 2 below. Refer your answers on the food label above.

Ingredients		Nutrition Facts	
Compound	Constituent Elements	Compound	Constituent Elements

Q6. How did you classify the substances from the food label above as elements and compounds?



Assessment

Directions: Read each item carefully. Write only the letter of the correct answer for each question. Use a separate sheet for your answers.

- Compounds are formed when two or more _____ are combined.
 - Elements
 - Minerals
 - Nutrients
 - Food products
- In cereal drink the following elements are present, **EXCEPT**
 - Calcium
 - Iron
 - Sodium
 - Zinc
- The only compound present in the food label of soy sauce is _____
 - Iron pyrophosphate
 - Monosodium glutamate
 - Sodium bicarbonate
 - Zinc sulphate
- Which of the following ingredients is an element?
 - Calcium
 - Carbohydrate
 - Oil
 - Protein
- The following are constituent elements of sodium glutamate, **EXCEPT**
 - Carbon
 - Hydrogen
 - Iron
 - Sodium
- Which element is **NOT** found in the chocolate candy?
 - Calcium
 - Hydrogen
 - Iron
 - Sodium
- Which of the following ingredients is a compound?
 - Calcium
 - Calcium chloride
 - Magnesium
 - Manganese

8. Boron, carbon, nitrogen, and oxygen are examples of _____.
- Compounds
 - Elements
 - Ingredients
 - Nutrition facts
9. Carbon dioxide, sodium chloride, sugar and salt are examples of _____.
- Compounds
 - Elements
 - Ingredients
 - Nutrition facts
10. Oxygen and iron are elements (I). Protein and sugar are elements too (II).
- Both statements I and II are TRUE.
 - Both statements I and II are FALSE.
 - Statement I is FALSE while statement II is TRUE.
 - Statement I is TRUE while statement II is FALSE.
11. Compounds is composed of one atom(I). Elements is a single atom substance(II).
- Both statements I and II are TRUE.
 - Both statements I and II are FALSE.
 - Statement I is FALSE while statement II is TRUE.
 - Statement I is TRUE while statement II is FALSE.
12. Airon Jay is fond of eating cereal drink even if he is already in grade 7. What compounds do Airon Jay has taken?
- | |
|--|
| I. Iron pyrophosphate
II. Calcium chloride
III. Sodium bicarbonate
IV. Zinc sulfata |
|--|
- I and II only
 - I and III only
 - II and III only
 - I and IV only
13. Danica was assigned by her teacher to match compound with its constituent elements. Which do you think of her matched pair are correct?
- | |
|--|
| I. Calcium chloride : calcium, chlorine
II. Water : nitrogen, oxygen
III. Carbon dioxide; carbon, oxygen
IV. Salt : sodium, magnesium |
|--|
- I and II only
 - I and III only
 - II and III only
 - I and IV only

14. How do you classify elements from compounds?
- Elements are single atom substances.
 - Compounds are composed of one molecule.
 - Compounds are composed of two or more molecules.
 - Compounds are composed of two or more compounds.
15. Why is it important to be familiar with elements and compounds?
- To classify them accordingly.
 - To tell others you know them.
 - To enumerate elements and compounds.
 - To be praised by others of knowing them.



Additional Activities

Have a tour in your kitchen pick five (5) food products having nutrition facts and ingredients. Look for the name of elements and compounds that are present.

Complete the table below with necessary details from the food labels of the food product you have picked. Write your answer in a separate sheet of paper.

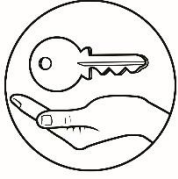
NAME OF FOOD PRODUCT	COMPOUNDS	CONSTITUENT ELEMENTS
1.		
2.		
3.		

Q7. What food product are in your list?

Q8. What elements do you found out? How about the compounds?

Q9. How did you know that these are elements? Compounds?

Q10. Why is it important for you to be familiar in classifying substances as element or compound?



Answer Key

Lesson 1

15. E
14. C
13. C
12. E
11. E
10. C
9. B
8. B
7. D
6. D
5. A
4. B
3. A
2. B
1. C
What I know

15. E
14. E
13. C
12. D
11. A
10. A
9. C
8. C
7. B
6. C
5. A
4. B
3. A
2. C
1. C
Assessment

Lesson 2

15. COMPOUND
14. COMPOUND
13. ELEMENT
12. ELEMENT
11. A
10. D
9. B
8. A
7. D
6. C
5. B
4. C
3. D
2. D
1. D
What I know

10. RUST
9. ATOM
8. ACID
7. IRON
6. HYDROGEN AND OXYGEN
5. SALT
4. MATTER
3. PURE SUBSTANCE
2. COMPOUND
1. ELEMENT
Additional Activities

15. A
14. D
13. D
12. B
11. A
10. A
9. D
8. B
7. B
6. D
5. A
4. D
3. D
2. D
1. C
Assessment

Lesson 3

15. D
14. A
13. D
12. A
11. C
10. B
9. C
8. B
7. C
6. D
5. B
4. B
3. A
2. D
1. C
What I know

15. A
14. C
13. B
12. D
11. C
10. A
9. D
8. C
7. B
6. C
5. C
4. D
3. A
2. B
1. A
Assessment

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For inquiries or feedback, please write or call:

Department of Education - Bureau of Learning Resources (DepEd-BLR)

Ground Floor, Bonifacio Bldg., DepEd Complex
Meralco Avenue, Pasig City, Philippines 1600

Telefax: (632) 8634-1072; 8634-1054; 8631-4985

Email Address: blr.lrqad@deped.gov.ph * blr.lrpd@deped.gov.ph