7

Science

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

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

This Self-Learning Module (SLM) is prepared so that you, our dear learners can continue your studies and learn while at home. Activities, questions, directions, exercise, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on the lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text. Note to the teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put necessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module do not hesitate to consult your teacher or facilitator.

Thank you.

What I Need to Know

Look around you. Is it amazing that you able to witness the beauty of the environment? Did you know that everything that you see is matter? I know that you do. 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 maybe further classified into two: elements and compounds. Surely you will understand how elements 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. They are homogenous in nature.
   b. They simplest form of matter.
   c. They are commonly naturally occurring materials.
   d. They 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. It is composed of two atoms that bond together.
    b. It is composed of two atoms of two or more that bond together.
    c. It can be broken down into a simpler type of matter by chemical means.
    d. It has a unique property that is different from the properties of its individual elements.

7. What is the result if Hydrogen gas and Oxygen gas combine?
    a. alcohol
    b. salt
    c. sugar
    d. sater

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 the given substance is an element or a compound. Write E if it is an element and C if it is a 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! You are already done in identifying substances such as homogeneous or heterogeneous mixtures. I know it is 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 as elements and compounds. Elements have unique properties and characteristics from 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, let's help her make our campus free from chemical hazards. Let's go!

Read the poem and pick out all the elements and compounds mentioned in it.

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 compounds. A compound is composed of elements.

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

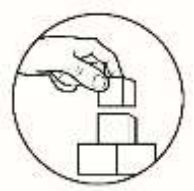
Carbon Dioxide		
Potassium Nitrate		

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.

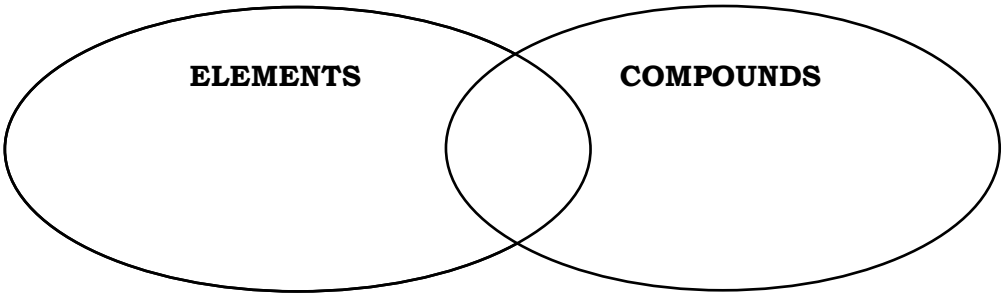
Can you name new metallic elements and set of compounds that is not found in the selection above? Write it inside the box below.

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. They are homogenous in nature
    b. They are the simplest form of matter.
    c. They can be broken down into simpler substances.
    d. They are commonly and naturally occurring materials.

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. What is the resulting 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

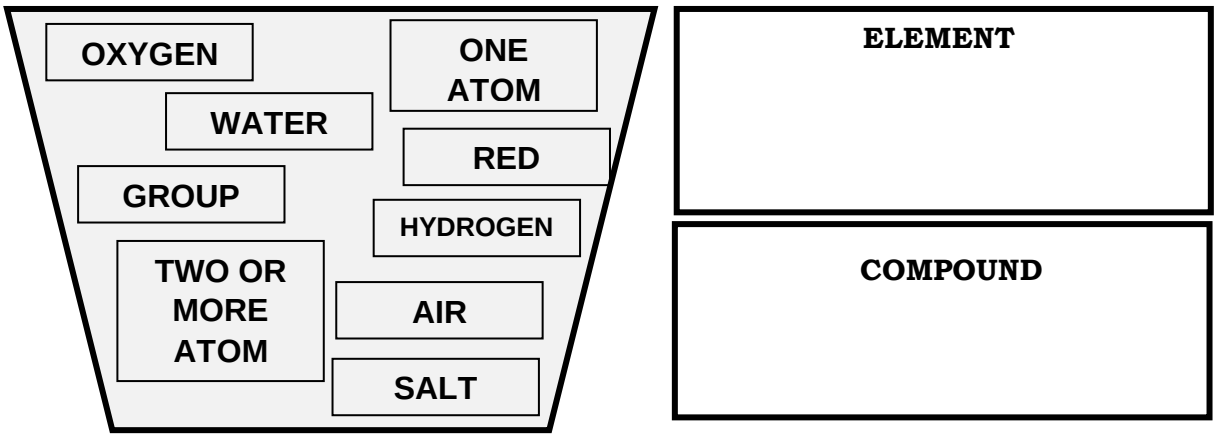
12. Which of the following is an element?
    a. oxygen
    b. gun powder
    c. salt
    d. water

For items 13—15, Tell whether the given substance is element or compound. Write 1 for element and 2 for compound.

_____13. Calcium Carbonate
_____14. Nickel
_____15. Nitrogen

Additional 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 word that describes and shows relationship with elements and compounds. Segregate them by writing it in the boxes.



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. mnother substance
    c. compound
    d. pure substance

8. What substance is composed of only one kind of atom?
    a. element
    b. compound
    c. pure substance
    d. mixture

9. When one or more substance is combined it is called _____?
    a. element
    b. compound
    c. pure substance
    d. mixture

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

I.	Made up of one or more atoms
II.	Joined through chemical process
III.	Composed of one or more substance
IV.	Mixtures of one or more different substances

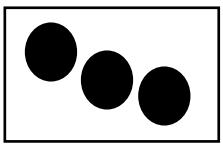
    a. I and II only
    b. II and III only
    c. III and IV only
    d. I, II, III, IV

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

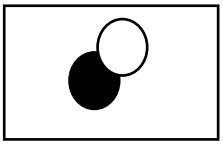
I.	Made up of one or more atoms with same properties
II.	Cannot be separated through any process
III.	Composed of one or more substance
IV.	Mixtures of one or more elements

    a. I and II only
    b. II and III only
    c. III and IV only
    d. I, II, III, IV

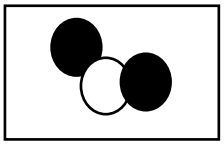
For number 12-15. Identify which item illustrates element or compound. Write your answer on the blank provided.



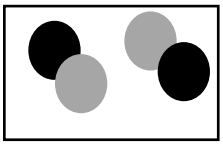
12._____



13._____



14._____



15. _____

Lesson 2 Properties of Elements and Compounds

What's In

Hello! My dear friend! 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.

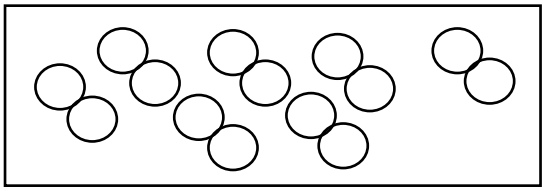
Identify some elements and compounds mentioned in a poem using the given set of properties? Write your answer in a separate sheet of paper.

ELEMENTS	COMPOUNDS

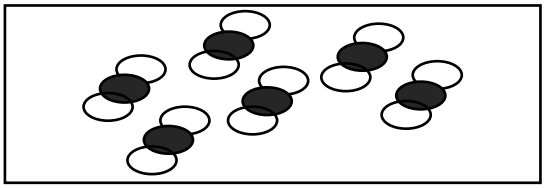
What is It

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.

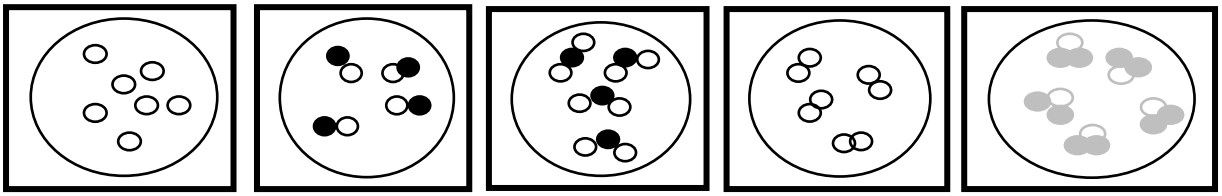


Contain atoms of different element that are chemically combined.

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.

1. Which of the following substance composed of one type of atom?
   a. chemical formula
   b. compound
   c. element
   d. mixture

b. Which of the following is **NOT** a compound using the given set of properties?
    a. helium gas
    b. hydrogen
    c. ice
    d. iron

c. 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

d. 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

e. Which of the following is a property of an element?
    a. It is the simplest substance.
    b. It is composed of two or more types of atoms.
    c. It can be separated through a chemical process.
    d. It is composed of two or more types of substances.

f. 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.

g. Which of the following is an example of an element?
    a. iron
    b. hydrogen peroxide
    c. salt
    d. water

h. What elements made up the compound Potassium Nitrate?
    a. potassium and oxide
    b. potassium and nitrogen
    c. potassium and hydrogen
    d. potassium and potassium

i. 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)

j. 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.

k. **For items 11—12,** refer to the problem below.
    a. 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.

l. Which of the following is substance B?
    a. compound
    b. element
    c. mixtures
    d. pure substance

m. Which of the following is substance A?
    a. acid
    b. element
    c. compound
    d. mixture

n. Which of the following could be an example of Substance B?
    a. calcium oxide
    b. ice
    c. iron oxide
    d. water

o. Which of the following could be an example of Substance A?
    a. oxygen
    b. potassium nitrate
    c. sodium chloride
    d. water

p. 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. This time, you will be engaged to another activity. You will look for the words being described in each of the statements below. Search and encircle the word in the puzzle and write it on 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

b. It can be broken down into two or more components.
    a. compound
    b. element
    c. mixture
    d. substance

c. Which of the following is **NOT** an element?
    a. calcium
    b. iron
    c. manganese
    d. sugar

d. All are elements, **EXCEPT**
    a. selenium
    b. silicon
    c. sodium
    d. sulfate

e. Which of the following is **NOT** a compound?
    a. sarbon dioxide
    b. germanium
    c. water
    d. salt

f. The following are compounds, **EXCEPT**
    a. ammonia
    b. arsenic
    c. methane
    d. oxide

g. When hydrogen is combined with oxygen what is produced?
    a. hydrocarbon
    b. hydrochloride
    c. oxide
    d. water

h. Sodium chloride is a combination of sodium and ____?
    a. carbon
    b. chlorine

c. fluorine
d. iodine

i. The following are found in an ingredient's label. Which is an element?
   a. iron
   b. oxide
   c. sorbate
   d. sulfate

j. 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

k. 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 characteristics are the same.

l. 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

m. 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

n. Joshua planned to have an experiment. He prepared the materials namely sodium chloride, hydrogen peroxide, iron, and iodine. Which of his materials are compounds?

o. Sodium chloride
p. Hydrogen peroxide
q. Iron
r. Iodine

   a. I and II only
   b. I and III only
   c. II and III only
   d. II and IV only

s. 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! 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. Identify the elements and compounds by accomplishing the table 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: Identify compounds and their corresponding constituent elements found in the food labels.

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 2,000 calorie diet. 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.

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.

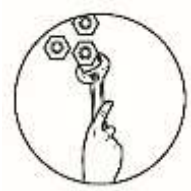
(1)_____ (2) _____ (3) _____

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.

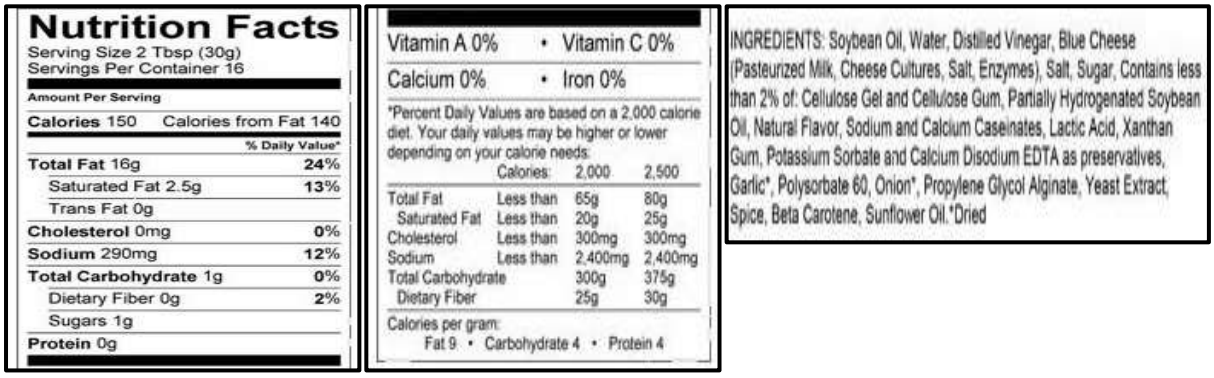
1. Karena brought a sample of iron in the class.
2. Keybird give a piece of copper to his friend.
3. Justine buy table salt from a nearby store.
4. Michaela is fond of eating junk foods with sodium glutamate.
5. Iniego borrowed an aluminum basin from her Aunt.



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?



Nutrition Facts
Serving Size 2 Tbsp (30g)
Servings Per Container 16

Amount Per Serving
Calories 150 Calories from Fat 140

	% 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	

Vitamin A 0% • Vitamin C 0%
Calcium 0% • Iron 0%

*Percent Daily Values are based on a 2,000 calorie diet. 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: 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

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.

1. Compounds are formed when two or more _____ are combined.
   a. elements
   b. minerals
   c. nutrients
   d. food products

2. In cereal drink the following elements are present, **EXCEPT**
   a. calcium
   b. iron
   c. sodium
   d. zinc

3. The only compound present in the food label of soy sauce is_____
   a. iron pyrophosphate
   b. monosodium glutamate
   c. sodium bicarbonate
   d. zinc sulphate

4. Which of the following ingredients is an element?
   a. calcium
   b. carbohydrate
   c. oil
   d. protein

5. The following are constituent elements of sodium glutamate, **EXCEPT**
   a. carbon
   b. hydrogen
   c. iron
   d. sodium

6. Which element is **NOT** found in the chocolate candy?
   a. calcium
   b. hydrogen
   c. iron
   d. sodium

7. Which of the following ingredients is a compound?
   a. calcium
   b. calcium chloride
   c. magnesium
   d. manganese

8. Boron, carbon, nitrogen, and oxygen are examples of _____.
    a. compounds
    b. elements
    c. ingredients
    d. nutrition facts

9. Carbon dioxide, sodium chloride, sugar and salt are examples of _____.
    a. compounds
    b. elements
    c. ingredients
    d. nutrition facts

10. Oxygen and iron are elements (I). Protein and sugar are elements 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.

11. Compounds is composed of one atom(I). Elements is a single atom substance(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.

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 sulfate

    a. I and II only
    b. I and III only
    c. II and III only
    d. 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

    a. I and II only
    b. I and III only
    c. II and III only
    d. I and IV only

14. How do you classify elements from compounds?
    a. Elements are single atom substances.
    b. Compounds are composed of one molecule.
    c. Compounds are composed of two or more molecules.
    d. Compounds are composed of two or more compounds.

15. Why is it important to be familiar with elements and compounds?
    a. to classify them accordingly.
    b. to tell others you know them.
    c. to enumerate elements and compounds.
    d. 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

What I know

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

Assessment

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

Lesson 2

What I know

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

Additional Activities

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

Assessment

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

Lesson 3

What I know

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

Assessment

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

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