

A starburst-shaped logo with a green and yellow border containing the text "Research It!".

Research It!

Research It! Station Directions

Each member of the group will go to the website listed on task card #1

Complete the task cards in order.

Every student will answer the questions from the task cards on the lab sheet in the Research It! section.

Research It!
#1

1. Go to <http://goo.gl/32wD3U>
2. Play through the interactive about elements, compounds, and mixtures

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Research It!
#2

1. How many elements have to be present for a compound to form?
2. How do you know the difference between a compound and mixture?
3. Name 3 things that would be considered a compound.



Read It!

Read It! Station Directions

Each member of the group will read the passage and answer the questions from the task cards on the lab sheet in the Read It! section.

It is important to remember that the answers will come directly from the reading passage.

Read It!

Steel Production

Steel is an **alloy** of iron with about 1 percent carbon. It may also contain other elements, such as manganese. Whereas pure iron is a relatively soft metal that rusts easily, steel can be hard, tough, and corrosion-resistant. Used to make almost everything from skyscraper girders, automobiles, and appliances to thumb tacks and paper clips, steel is one of the world's most vital materials.

Among all the metals, iron is second only to aluminum in natural abundance, making up 4.7 percent of the earth's crust, and occurring mainly as its various oxides. The main product made from iron is steel, the least expensive and most widely used of all metals.

Over the years various countries have excelled in making steel. During the eighteenth century a relatively small amount of steel was made, but Sweden was the main producer. In the nineteenth century Great Britain became dominant. In the twentieth century the United States was the largest steel producer in the world until about 1970, when it was surpassed by the Soviet Union. At the start of the twenty-first century, China led the world in steel production.

Three primary installations in an integrated steel plant are the blast furnace, the steel furnaces, and the rolling mills. The blast furnace converts iron ore to pig iron; the steel furnaces convert the pig iron to steel; and the rolling mills shape the steel into sheets, slabs, or bars.

The three top steel producers in the world are China, the United States, and Japan, in that order. The United States and Japan each produce around 100 million tons (90 million metric tons) of steel per year, and China had an output in 2000 of about 140 million tons (127 million metric tons). Iron and steel make up approximately 90 percent of all the metal produced in the world. The largest steel company in the United States is United States Steel, which produces about 20 percent of the country's steel.

Read It!
#1

After reading the passage, how can you classify steel?

- A. Compound
- B. Mixture
- C. Element
- D. Electrons

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Read It!
#2

Iron is the ____ most abundant metal found on Earth

- A. First
- B. Second
- C. Third
- D. Fourth

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Read It!
#3

Who are the top 3 producers of steel in the world?

- A. China, Russia, U.S.
- B. Russia, U.S., Japan
- C. U.K., U.S., Japan
- D. China, U.S., and Japan

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Read It!
#4

What element is steel mainly composed of?

- A. Iron
- B. Carbon
- C. Manganese
- D. Silver

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A starburst-shaped logo with a green and yellow border containing the text "Explore It!".

Explore
It!

Explore It! Station Directions

One member of the group will read the task cards in order. The group will be responsible for completing each of the tasks that are being read.

Each member of the group will then write their conclusions down on the lab sheet in the Explore It! section.

Explore It!
#1

In front of you there are 3 containers that are labeled **elements**, **mixtures** or **compounds**.

Each Lego piece represents 1 atom.

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Explore It!
#2

Look in the element container.

1. What do you notice about all of these Legos?

An **element** is a pure substance that cannot be broken down into any other substance. It is represented on the periodic table by a symbol. For example, O is Oxygen.

2. Copy the element definition to your lab sheet.

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Explore It!
#3

Look in the mixture container.

1. What do you notice about all of these Legos?

A **mixture** is a combination of many different elements but they are not chemically combined and can be separated.

2. Copy the mixture definition to your lab sheet.

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Explore It!
#4

Look in the compound container.

1. What do you notice about all of these Legos?

A **compound** is when one or more elements have been chemically combined together through a chemical reaction to form a new substance. An example is H₂O (water). You can also count the capital letters. If there are 2 more capital letters it is a compound.

2. Copy the compound definition to your lab sheet.



Write It!

Write It! Station Directions

It is recommended that you have completed at least **two** of the following stations before working at this station.

- Read It!
- Explore It!
- Watch It!
- Research It!

Answer each of the task card questions on the lab sheet in **complete sentences**.

Write It!
#1

Explain what a compound is and how you can tell one by looking at a chemical formula.

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Write It!
#2

How many different elements are present in $\text{C}_6\text{H}_{12}\text{O}_6$?

How do you know?

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Write It!
#3

Describe what an element is?

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A white callout bubble with a green and yellow scalloped border, containing the text "Watch It!".

Watch It!

Watch It! Station Directions

Each member of the group will go to the website listed on task card #1

Complete the task cards in order.

Every student will answer the questions from the task cards on the lab sheet in the Watch It! section of the lab sheet.

Watch It!
#1

YouTube <https://goo.gl/awsp6h>
[goo.gl https://goo.gl/gJwNZf](https://goo.gl/gJwNZf)
URL is case-sensitive

1. Click Play on the video.
2. Answer questions from cards #2-4 on your lab sheet.



YouTube

Watch It!
#2

How is a mixture different from a compound?

Watch It!
#3

How are the atoms in a compound held together?

Watch It!
#4

Based on the information from the video, classify the following as mixture compound or element.

1. H_2O ✨
2. H_4
3. $Fe + S$

I love
with
is feet



Assess It!

Assess It! Station Directions

It is recommended that you have completed at least **two** of the following stations before working at this station.

- Read It!
- Explore It!
- Watch It!
- Research It!

Each member will answer the questions from the task cards on the lab sheet in the Assess It! section.

Assess It!
#1

Which of the following would not be a compound?

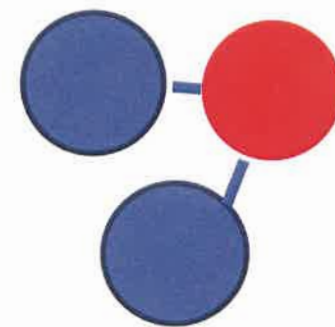
- A. $C_6H_{12}O_6$
- B. $(SO)_4$
- C. H_2O
- D. Cl_3

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Assess It!
#2

The model represents a(n) _____.

- A. Compound
- B. Mixture
- C. Element
- D. Electrons

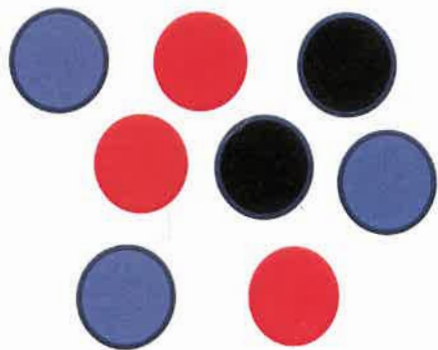


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Assess It!
#3

How many elements are in the mixture pictured?

- A. 7
- B. 4
- C. 3
- D. 2



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Assess It!
#4

An element is a _____ substance.

- A. Mixed
- B. Pure
- C. Combined
- D. Human-made

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Illustrate It!

Illustrate It! Station Directions

Each member of the group will draw a quick sketch on the lab sheet that shows they understand the concept that is being taught.

Use the colored pencils and markers that are provided.

The directions for the sketch are provided on the task card at the table.



Illustrate It!

Illustrate It! Station Directions

On your lab sheet draw a model of an **element**, **compound**, and a **mixture**. Be sure to label them correctly.

Use different colored circles to represent different atoms.