Physical Properties and Uses of Elements

Engage

What To Do:
Listen and watch the video "*Meet the Elements*."
Fill in the elements as they are mentioned in the song.

_____is a metal, you see it every day.
_____, eventually, will make it rust away.
_____ in its ordinary form is coal.
Crush it together and diamonds are born.

Refrain
Come on come on and meet the elements.
May I introduce you our friends, the elements?
Like a box of paints that are mixed to make every shade
They either combine to make a chemical compound or stand alone as they are.

_____a gas that lights up the sign for a pizza place.
The coins that you pay with are _____, _____and _____.
_____and _____make concrete bricks and glass.
Now add some _____ and _____ for some pizza place class.

Refrain

Team up with other elements making compounds when they combine. Or make up a simple element formed out of atoms of the one kind.

Balloons are full of _____ and so is every star.
Stars are mostly _____, which may someday fuel your car.

Hey, who let in all those elephants?
Did you know that elephants are made of elements?
Elephants are mostly made of four elements.
And every living thing is mostly made of four elements.
Plants, bugs, birds, fish, bacteria, and men
Are mostly _____, _____, _____, and _____.

Refrain

Explore

Materials: carbon (charcoal briquette), iron washer, lead, sulfur, copper, aluminum, magnet, conductivity tester

What To Do:
1. Fill in the table below with the answers to the instructions.
2. Use your Periodic Table to find the symbol for each element.
3. Use the bulb and battery set up to test each element to determine if the bulb lights up.
4. Observe each element to decide if it is shiny.
5. Observe each element to decide if it breaks apart easily.
6. Test each element to find if it is attracted to the magnet.

Observations:

Elements		**Properties**			
Name	Symbol	Does the bulb light up?	Is it shiny?	Does it break apart easily?	Is it attracted to a magnet?
Aluminum					
Carbon					
Copper					
Iron					
Lead					
Sulfur					

Use your Periodic Table to classify the six elements in the table as metals or nonmetals.

1. Which ones are metals? _____
2. Which ones are nonmetals? _____
3. Are all metals attracted to a magnet? _____
4. Which of the metals in the table above were attracted to the magnet? _____
5. Did all the metals allow the light bulb to light? _____
6. Did any of the nonmetals allow the light bulb to light? _____
7. Which of the elements broke apart easily? _____

Physical Properties of Elements (anchor tab)

Explain

Luster

Brittleness

Malleability

Electrical Conductivity

Magnetic

Explain

What To Do:

1. Cut out the entire rectangle of the graphic organizer on the previous page.
2. Place glue only under the title anchor tab.
3. Glue it into your notebook.
4. Cut the dotted lines between each word.
5. Cut out and glue the following definitions under the correct flap.
6. Place other information your teacher wants you to on the back of the flap.

Luster describes whether the substance is shiny like a mirror or dull like your clothing.
Brittleness describes whether the substance will break easily like a cookie.
Malleability is the opposite of brittleness. It describes whether the substance can be pressed out into thin sheets.
Electrical conductivity describes whether electricity can pass through an object. If it allows electricity to pass through it is a conductor. If not, it is an insulator.
Magnetic describes whether the substance is attracted to a magnet. Iron, cobalt, and nickel are the only magnetic elements.

Elaborate

What To Do:

1. Watch the following video about rare earth and elements and answer the questions.

Video 1 Rare Earth Elements

https://houstonpbs.pbslearningmedia.org/resource/nvhe.sci.chemistry.rareearth/rare-earth-elements/

1. How is Neodymium and other rare earth elements used in daily life?

2. How many rare earth mines are in the United States?

3. Where does the majority come from?

4. This video states there are 15 rare earth elements and we have colored 17 on our periodic table. Which 2 did the video leave out?

What To Do:

1. Watch the following video about metalloids. It talks about metals and nonmetals, too. Metalloids can be found beginning at 1:58.

Video 2. Metalloids

https://www.youtube.com/watch?v=dpyfCuXVSkg

1. What two physical properties do metalloids have?

2. What does semi conductive mean?

Evaluate

Name _____ period _____

EXIT TICKET

Physical Properties of Elements

Directions: Place the letter of the answer next to each property. The answers will be used more than once and some with have two answers.

_____	Conductor	A. metal
_____	Major uses in technology	
_____	Sometimes a conductor	
_____	Only one mine in the U.S.A	B. nonmetal
_____	Malleable	
_____	Magnetic	C. metalloid
_____	Not Magnetic	
_____	Brittle	D. rare earth
_____	Insulator	

Conclusion: (atoms, metals, technology, nonmetals, elements, metalloids)

All matter is made up of _____. Different kinds of atoms are called _____. _____ conduct electricity, _____ do not conduct electricity and _____ may or may not conduct electricity. _____ are used in _____.