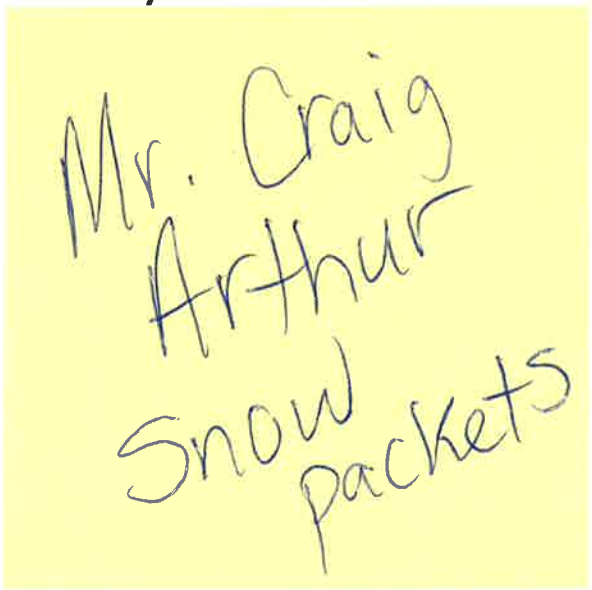
Energy and Power Course I Snow Packet

- Day 1: Research and create a journal entry about Electric Motors
- Day 2: Research and create a journal entry about Hydraulics
- Day 3: Research and create a journal entry about Electrical Pumps.
- Day 4: Research and create a journal entry about Hydroelectric Power.
- Day 5: Research and create a journal entry about how pipeline systems work.

All Journal entries should be written in the Class Notebook in One Note. Make sure you label your entries "Snow Packet Assignment".



Energy and Power Course 2 Snow Packet

- Day 1: Research and create a journal entry about Voltage Distribution.
- Day 2: Research and create a journal entry about Circuit Breakers and Fuses.
- Day 3: Research and create a journal entry about: How can we determine if an off-grid or an on-grid renewable power system is better?
- Day 4: Research and create a journal entry about Capacitive Reactance.

All Journal entries should be written in the Class Notebook in One Note. Make sure you label your entries "Snow Packet Assignment".

Name _____

Daily Science

Big Idea 5

WEEK 1

Day 1

Weekly Question

What do atoms look like?

Nearly everything in the universe is made of matter. This paper is made of matter. You are made of matter. Even the air we breathe is made of matter. But what *is* matter? Matter is anything that has both mass and volume. In other words, matter is any object or substance that is composed of particles and takes up space.

The basic building blocks of matter are the **elements**. An **atom** is the smallest unit of an element that still has all the properties of that element. Oxygen is an element. Iron is an element. Gold and silver are both elements. There are 117 known elements, which means there are 117 types of atoms. More elements certainly exist, though they have yet to be discovered.

Vocabulary

atom
AT-um
the smallest unit of an element that contains all the properties of that element

elements
EL-ih-mentz
basic chemical substances from which all matter is made

A. Write *true* or *false*.

1. We know that only 117 elements exist. _____
2. The smallest unit of an element is an atom. _____
3. Gold and silver are made of atoms. _____
4. Atoms are the basic building blocks of matter. _____

B. Even though it is invisible, air is composed of matter. In your own words, explain why this is true.

_____

_____

C. Fill in the bubble next to the phrase that completes the analogy.

Atom is to **element** as _____.

Ⓐ **matter** is to **iron**

Ⓑ **element** is to **matter**

Ⓒ **matter** is to **element**

Ⓓ **element** is to **oxygen**

Name _____

Daily Science
Big Idea 5
WEEK 1

Day 3

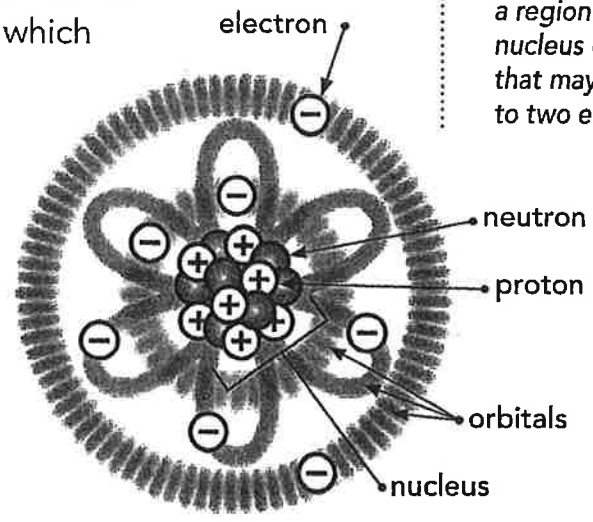
Weekly Question

What do atoms look like?

All atoms, no matter which element they are, have the same basic structure. An atom consists almost entirely of empty space. Most of the mass that does exist is concentrated in the *nucleus*, or central core, of an atom. All of an atom's protons and neutrons reside in the nucleus. Since a proton carries a positive charge and a neutron carries no charge, the charge of an atom's nucleus is equal to the number of protons it contains.

Electrons occupy the space outside the nucleus and constantly spin around it. The areas in which the electrons spin are called **orbitals**, or electron clouds. Electrons, however, do not actually orbit the nucleus in a fixed, circular path. Instead, they may move anywhere within their orbital.

An orbital may contain a maximum of two electrons. This means that an atom will have half as many orbitals as it has electrons. For example, calcium has 20 electrons that are distributed among 10 orbitals.



nitrogen atom

Vocabulary

orbital
OR-bih-tul
a region around the nucleus of an atom that may contain up to two electrons

A. Answer the questions.

1. What does an atom mostly contain? _____
2. Where is most of the mass of an atom located? _____
3. How many electrons can an orbital hold? _____

B. Check the box next to the phrase that completes the analogy.

Proton is to **nucleus** as _____.

- ❒ **neutron** is to **orbital**
- ❒ **electron** is to **orbital**
- ❒ **nucleus** is to **orbital**
- ❒ **atom** is to **element**

Name _____

Daily Science
Big Idea 5
WEEK 1

Day 5

Weekly Question

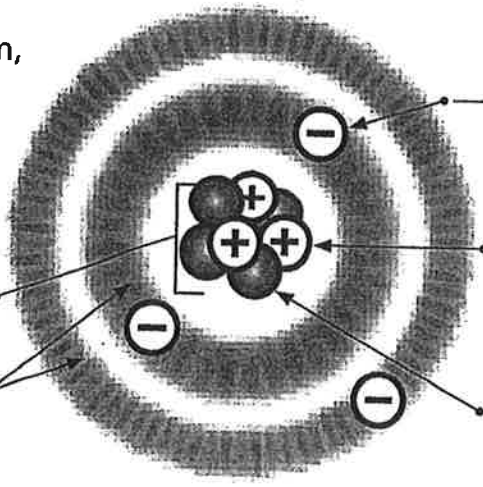
What do atoms look like?

A. Use the words in the box to complete the paragraph.

electrons	**elements**	**isotopes**	**atoms**
neutrons	**orbitals**	**protons**	

Matter is made up of _____, and the smallest particles of these are called _____. In turn, the particles are made up of positively charged _____, neutral _____, and negatively charged _____. Protons and neutrons are located in the nucleus, while electrons are found in the _____. Atoms that contain the same number of protons but different numbers of neutrons are called _____.

B. Label the parts of the atom, using the words *electron, neutron, nucleus, orbitals,* and *proton.*



_____

_____

_____

_____

C. Write the names of four elements.

1. _____
2. _____
3. _____
4. _____

Name _____

Daily Science

Big Idea 5

WEEK 2

Day 2

Weekly Question

What is the periodic table?

Currently, the periodic table includes 117 elements. Of these, only the first 94 are naturally occurring. The remaining 23 elements are not found naturally on Earth, though they may exist elsewhere in the universe. However, scientists have been able to artificially create them. And some of these manmade elements have become very important in everyday life. For example, Americium (am-eh-RISH-ee-um) is commonly used in smoke detectors.

The elements of the periodic table can be divided from left to right into metals, metalloids, and nonmetals. The vast majority of the known elements—nearly 80%—are metals, which share certain properties. Most metals are shiny and can bend without breaking. And all of them are good conductors of heat and electricity. In contrast, nonmetals are not shiny. They are also brittle, which means they break easily. And they are poor conductors of heat and electricity. **Metalloids** lie between the metallic and nonmetallic elements in the periodic table and exhibit properties that are between the two.

Vocabulary

metalloid
MET-uh-loyd
an element with properties between a metal and a nonmetal

A. List three properties of metals.

1. _____ 3. _____

2. _____

B. Use the periodic table on page 154 to answer the questions.

1. Which elements are metalloids? _____

_____

2. Which two elements along the stair step line are *not* metalloids?

_____

3. Which nonmetal is in the "wrong" place on the periodic table?

_____

Name _____

Day 4

Weekly Question

What is the periodic table?

Daily Science Big Idea 5 WEEK 2

Not only does the periodic table help you know the number of protons and electrons in an element, but it shows the location of the electrons in that element. Remember that electrons move within orbitals that surround the nucleus of an atom. These orbitals cluster together to form *atomic shells*. The atoms of all the elements in the same row, or **period**, of the periodic table contain the same number of atomic shells. The periods are numbered from 1 to 7, indicating the number of shells that the elements in that period contain. The first shell lies closest to the nucleus, with each successive shell enclosing the previous one, like the layers of an onion.

The electrons that occupy the outermost shell in an atom are very important, because they determine how the element will combine with other elements. The atoms of all elements in the same column, or **group**, of the periodic table contain the same number of outer-shell electrons.

Vocabulary

group
groop
a column in the periodic table

period
PEER-ee-ud
a row in the periodic table

A. Use the periodic table on page 154 and the information in the passage to answer the questions.

1. How many atomic shells does a sodium (Na) atom contain? _____

2. Which other elements contain the same number of atomic shells as sodium? Use the chemical symbols to write your answer.

_____

3. Which other elements contain the same number of outer electrons as sodium? Use the chemical symbols to write your answer.

_____

B. Explain why the electrons in the outermost shell are important.

_____

_____

NAME DATE

Mental Disorders

Research and submit answers for the following questions.

1. Describe 'Paris Syndrome.'

2. What disorder cause people to want to pull out their hair?

3. People who suffer from 'windigo psychosis' want to eat what for food?

4. Explain the disorder B.I.I.D?

5. A person who believes they are literally 'dead' suffers from what disorder?

6. People who suffer from Stendhal Syndrome cannot stand in front of these objects.

7. Describe Fregoli Delusion.

8. Adolf Hitler was triskaidekaphobic, what exactly does that mean?

9. Describe lycanthropy?

10. In the disorder autophagia, what do people choose to eat?

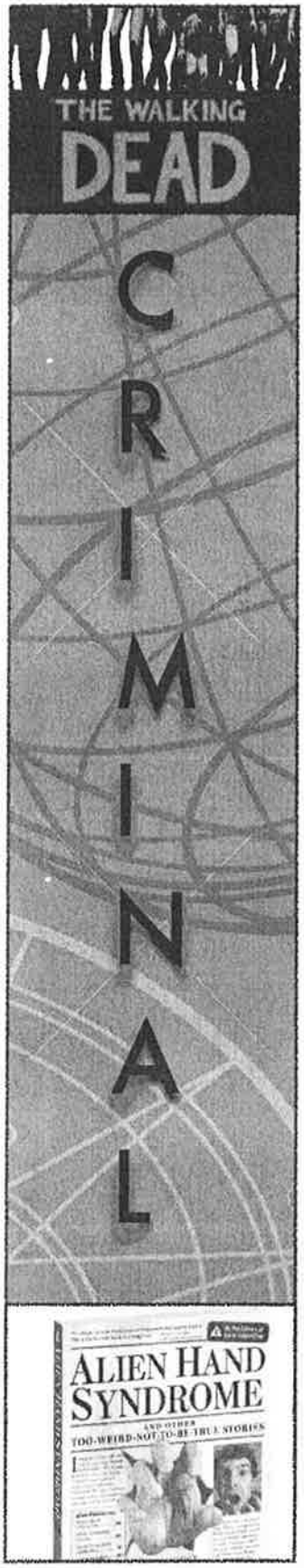
11. Million heiress Patricia Hearst was kidnapped by the Symbionese Liberation Army and later joined in committing several of their armed robberies. She is thought to have suffered from what disorder?

12. Dr. Strangelove's disorder is also known as this . . .

13. What is Somatoparaphrenia?

14. Erika Eiffel became famous for 'marrying' the Eiffel Tower. Obviously she suffers from this mental disorder.

Name _____ Date _____ Period _____



Profiling

_____ 1. the desire to eat human flesh

_____ 2. the desire to live as an amputee

_____ 3. the belief that oneself is dead

_____ 4. the belief one's hand is not their own

_____ 5. the belief that multiple people are in fact the same person who changing a disguise

_____ 6. the belief that one's body parts belong to someone else

_____ 7. a disorder in which one panics when exposed to art

_____ 8. disorder where one demonstrates sympathy for their captors

_____ 9. the belief that one can turn into a werewolf

_____ 10. love of inanimate substances

a. Somatophrenia **b. Stendhal Syndrome**

c. Fregoli Delusion **d. Dr. Strangelove Syndrome**

e. Stockholm Syndrome **f. Objectofilia**

g. Cotard's Syndrome **h. Windigo Psychosis**

i. Lycanthropy **j. B.I.I.D.**