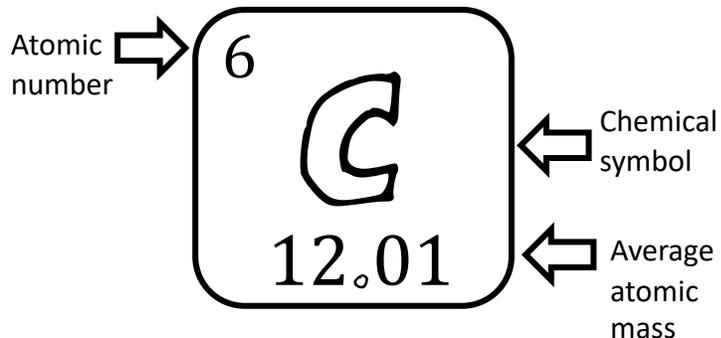


## Background

### The elements

The periodic table organizes all 118 known elements and provides information for each one. You can find the chemical symbol, the average atomic mass, and the atomic number for each atom.

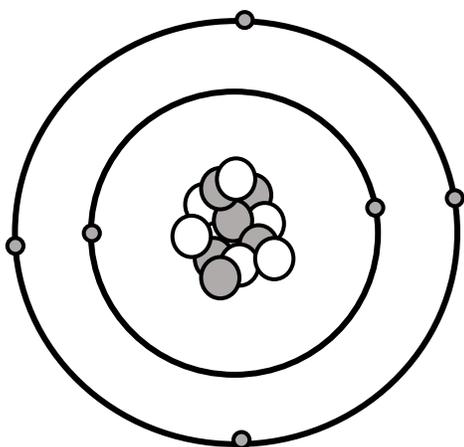


### Organization

The periodic table is organized in such a way that many patterns emerge. One of the first patterns that we can see relates to the little number located at the top left of each chemical symbol square. This number is referred to as the atomic number, and it represents the number of protons in each element. If the atomic number is 1, then the element is Hydrogen, with a chemical symbol of H. The periodic table is arranged by increasing atomic number.

The average atomic mass also increases as you move along the table. It is called average, because in nature, atoms have different masses. Just like people weigh different amounts. You can estimate that if the average mass of Carbon is 12.01 amu (that is atomic mass units), then most Carbon atoms found in nature will have a mass of 12 amu.

### Carbon



How do I know this is a Carbon atom? If you count the protons, you will see that there are 6 of them. This number is the same as the atomic number. In the periodic table you will find that the element with an atomic number of 6 is carbon.

### Subatomic particles

An atom is made up of 3 subatomic particles.

If you look in the middle of an atom, you will find the nucleus. The nucleus is made up of protons and neutrons. The protons have a positive charge. The neutrons have a charge of 0. Together they make up an atom's mass.

Electrons orbit around the nucleus. They are tiny and not contribute to mass. However, they have a negative charge that is important. If an atom has the same number of protons and electrons, it will be considered neutral and will have a charge of 0.

- Electron – negative charge
- Proton – positive charge
- Neutron – no charge

# Element Symbols - Word Search

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_

	Name to search		Name to search		Name to search
Na		P		Ca	
K		Sn		Mg	
Fe		Sb		Mn	
Cu		W		Cl	
Si		Co		He	
S		Pb		Kr	

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

# Element Symbols

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

**Instructions:** Label the parts for the element below.

**Word bank:**  
Average atomic mass  
Atomic Number  
Chemical Symbol  
Protons      Nucleus  
Neutrons    Electrons

A diagram of the element symbol for Beryllium (Be). The symbol is enclosed in a rounded rectangle. In the top-left corner is the atomic number '4'. The chemical symbol 'Be' is in the center, with the 'B' having two circles inside and the 'e' having a circle inside. Below the symbol is the average atomic mass '9.012'. There are four empty rounded rectangular boxes with arrows pointing to the diagram: one on the left points to the atomic number, one on the right points to the chemical symbol, and two on the right point to the average atomic mass.

What is the name of the element with the label Be?

The atomic number refers to the number of what subatomic particle?

Atomic mass refers to which subatomic particles?

A diagram of an atom with a central nucleus and two electron shells. The nucleus is composed of several grey spheres (neutrons) and white spheres (protons). Two concentric circles represent the electron shells, with small circles representing electrons. There are four empty rounded rectangular boxes with arrows pointing to the diagram: two on the left point to the electron shells, and two on the right point to the nucleus.

# Element Questions

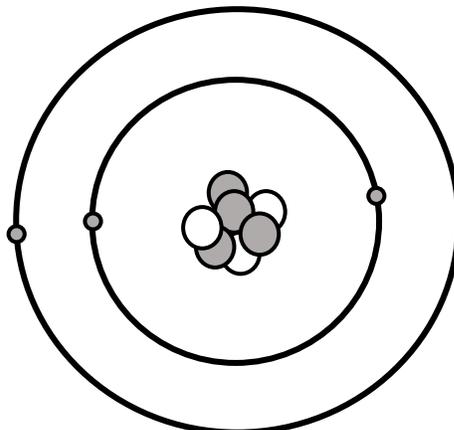
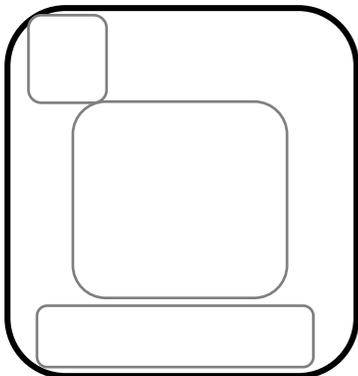
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_

**Instructions:** Answers the questions below.

The periodic table is arranged in increasing \_\_\_\_\_ number.  
Explain what that means in terms of atomic structure.

An atom is neutral when the proton number and what are the same? Use mathematics to provide an explanation for this phenomena.

**Instructions:** Identify the element represented in the diagram. Fill out the periodic table square with the correct information found in the periodic table.



Element name