Block____ Name_____

Atomic Structure Worksheet

1. Complete the following table about the three major subatomic particles.

Particle	Charge	Relative Mass	Location
electron(e-)		1/2000	
	+1		inside the nucleus
neutron (n^0)		1	

2. What determines the elemental identity of an atom? _____

3. Which subatomic particle is gained or lost from an atom to form an ion? _____

4. There are two atoms with the following characteristics:
   Atom #1 has 4 protons, 4 neutrons and 4 electrons
   Atom #2 has 4 protons, 6 neutrons and 4 electrons

   What is the atomic number of Atom #1? _____ What is its mass number? _____

   What is the atomic number of Atom #2? _____ What is its mass number? _____

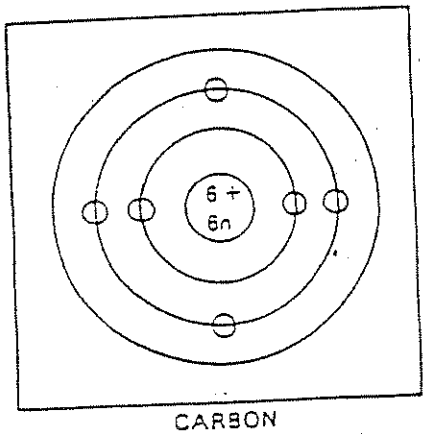
   Are these two atoms the same element? _____ Why or why not?

   Are these two atoms isotopes of one another? _____ Why or why not?

5. Complete the following table: You will need your periodic table!!

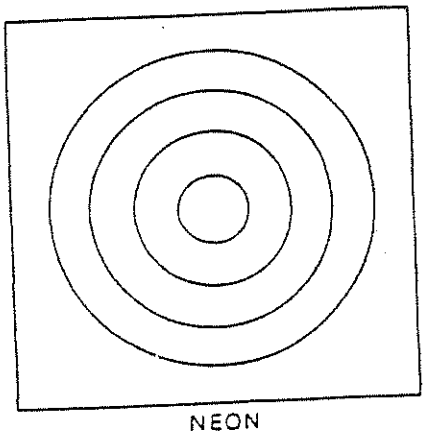
symbol	# protons	# neutrons	atomic #	mass #	# electrons	isotope name
$^{12}_{6}C$						carbon-12
	5	6			5	
			4	9	4	
$^{140}_{56}Ba$						
		12	12		12	

Name	Symbol	# protons	# neutrons	# electrons	atomic number	atomic mass
opper-64						
	$^{124}_{50}Sn$					
		19				39
		74	110			
				4		9
		4	7			
			4	3		
					33	75
			71		51	
		80				201



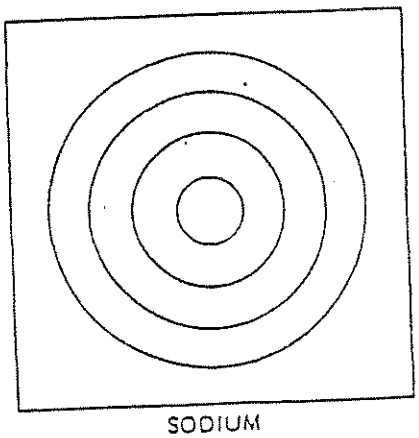
CARBON

Atomic number = 6
Mass number = 12



NEON

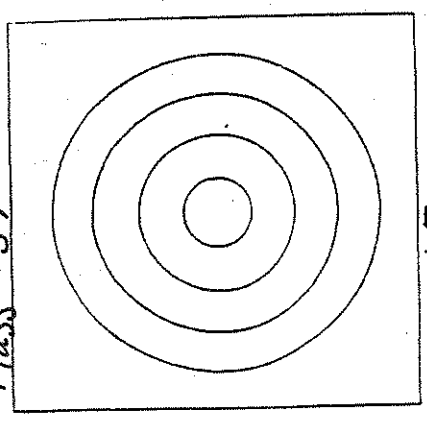
Atomic number = 10
Mass number = 20



SODIUM

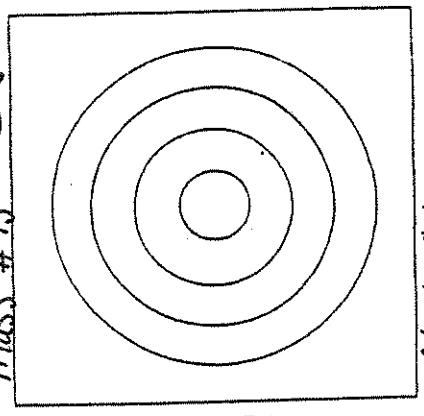
Atomic number = 11
Mass number = 23

Atomic #17 Cl
Mass #37



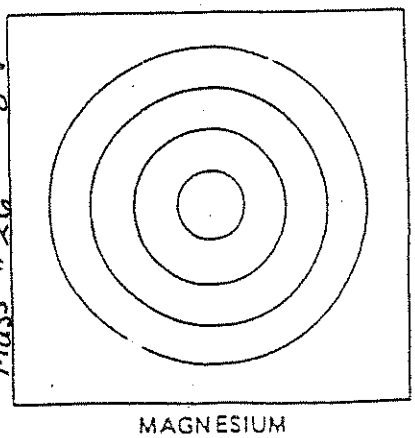
CHLORINE

Atomic #8 O
Mass #15



OXYGEN

Atomic #12 Mg
Mass #26



MAGNESIUM

THE MODEL OF THE ATOM

You have studied several models of the atom. In addition to the models of Dalton, Thomson, Rutherford, and Bohr.

Which of these models is described by the following statements? Place a check (✓) in the box or boxes that answer each question. (More than one model may be described by each statement.)

current model of the atom !!!

	Dalton	Thomson	Rutherford	Bohr	Wave
1. Atoms of different elements are different.					
2. Atoms contain negatively charged particles.					
3. At the center of the atom is a massive, positively-charged nucleus.					
4. Electrons move around the nucleus of an atom in only certain allowed orbits.					
Electrons in atoms occupy the lowest possible energy level.					
6. When an electron moves from a higher energy level to a lower energy level, light of a definite color is given off.					
7. It is impossible to predict exactly where an electron in an atom is located.					

ISOTOPES

The element chlorine (atomic number 17) consists of two isotopes, chlorine-35 and chlorine-37. Three out of every four chlorine atoms are chlorine-35; the fourth is chlorine-37.

1. What is the relative mass of an atom of chlorine-35? _____

2. How many neutrons does it contain? _____

3. What is the relative mass of an atom of chlorine-37? _____

4. How many neutrons does it contain? _____

5. What is the atomic mass of chlorine? _____

Writing About Science

21. Since Dalton's atomic model was first proposed, scientists have learned more and more about the inside of atoms. Summarize the major changes in the model of the atom from Dalton's time to the present. You might want to draw sketches to go along with your discussion.

22. Hydrogen atoms can have a mass number of 1, 2 or 3. Yet the atomic mass of hydrogen is 1.0080. How do you account for this fact?

23. How did John Dalton's approach to studying matter differ from the way the ancient Greeks studied matter? Discuss which approach you think is more useful.