

Review #1: The Atom

- Calculate the number of protons and neutrons in the nuclei of each of the following atoms:
a. iodine-127 b. neon-22 c. magnesium-26 d. boron-10 e. aluminum-27
- Define the following terms:
a. atomic number b. mass number c. atomic mass d. average atomic mass
- Why does the nucleus have a charge?
- Why does the nucleus of a carbon atom have a greater charge than the nucleus of a helium atom?
- In what respect is the nucleus of the lightest isotope of hydrogen unique among atomic nuclei?
- Two atoms are characterized by $Z=15, A=30$ and $Z=14, A=30$. Are they isotopes of the same element? Explain.
- Argon, potassium, and calcium all have mass numbers of 40. How many protons and neutrons are there in each of the three nuclei?
- Copy the chart below into your notes and fill in accordingly:

	Z (atomic #)	# p	#n	#e	A (mass #)
$^{34}_{16}\text{S}$					
$^{34}_{16}\text{S}^{2-}$					
	26		28	24	
		90		88	231
$^{65}_{29}\text{Cu}^{2+}$					
I^{-}					

- Use the information below to calculate the average atomic mass for each of the elements below. **Note:** in order to calculate the most accurate average atomic mass, use the values in the third column (accurate atomic mass).

Isotope	%	Accurate Atomic Mass (u)
N-14	99.63%	14.00307
N-15	0.37%	15.00011
Ag-107	51.83%	106.9051
Ag-109	48.71%	108.9047

Isotope	%	Accurate Atomic Mass (u)
Mg-24	78.99%	23.9850
Mg-25	10.00%	24.9858
Mg-26	11.01%	25.9826

- Complete the following table:

Isotope Name	Z (atomic #)	A (mass #)	Symbol	# Protons	# Neutrons
a. carbon-14					
b.	8	16			
c.				84	128
d.	92				146
e. hydrogen-2					
f.	2	4			
g.				90	142
h.		12		6	
i. lawrencium-257					
j.		1			0

- How is hydrogen-1 different from hydrogen-2?
- How do different isotopes of the same element differ?