Name: Date: Period:

**Problem 1.** For practice, determine the number of electrons, protons, and neutrons in the atoms of aluminum and cesium listed below.

a.	aluminum-27;	$^{27}_{13}A1$	protons:	electrons:	neutrons

b. cesium–133; <sup>133</sup><sub>55</sub>Cs protons: electrons: neutrons

**Problem 2.** The element uranium has three different isotopes. In the blanks below, write the number of electrons, protons, and neutrons for each isotope of uranium.

a.	<sup>234</sup> 92 U	protons:	electrons:	neutrons :
b.	<sup>235</sup> 92 <sup>U</sup>	protons:	electrons:	neutrons :
c.	<sup>238</sup> 92U	protons:	electrons:	neutrons :

Problem 3. Supply the missing information in the table below.

Isotope	Nuclear Notation	At.No.	Mass No.	No. e's	No. p's	No. n's
a. aluminum-27						
b. bismuth-209						
c. calcium-40						
d. copper-64						
e		2	4			
f			207	<u>82_</u>		and the second sector prime with
g		8				8
h					<u>50</u>	69
i				30		36

**Problem 4.** In nature, copper is found to exist in two forms: copper-63 and copper-65. Copper-63 atoms have a mass of 62.93 amu, while copper-65 atoms have a mass of 64.93 amu. Naturally-occurring copper contains 69.40% copper-63. Calculate the atomic mass of naturally-occurring copper atoms. Show all of your work.

Does your answer to Problem 4 compare favorably to the atomic mass of copper appearing on the periodic table?

Chemistry Mr. Noble

30

Name: KEY Date: Period:

Problem 1. For practice, determine the number of electrons, protons, and neutrons in the atoms of aluminum and cesium listed below.

a. aluminum-27; <sup>27</sup><sub>13</sub>Al protons: 15 electrons: 15 neutrons: 14

b. cesium-133; <sup>133</sup><sub>55</sub>Cs protons: 55 electrons: 55 neutrons : 78

Problem 2. The element uranium has three different isotopes. In the blanks below, write the number of electrons, protons, and neutrons for each isotope of uranium.

a.	<sup>234</sup> 92 U	protons: <b>92</b> .	electrons: 92	neutrons : 142
b.	<sup>235</sup> 92 U	protons: <b>92</b>	electrons: <b>12</b>	neutrons: 145
	220			

c. <sup>238</sup><sub>92</sub>U protons: 92 electrons: 92 neutrons : 146

Problem 3. Supply the missing information in the table below.

Isotope	Nuclear Notation	At.No.	Mass No.	No. <b>e's</b>	No. p's	No. n's
a. aluminum-27	27 13A1	13	27	13	13	14
b. bismuth-209	209 Bi	83	209	83	83	126
c. calcium-40	40 Ca	20	40	20	20	20
d. copper-64	64 Cu	29	64	29	29	35
e. helium-4	2 He	2	4	2	2	2
f. lead - 207	an Pb	82	207	82	82	125
g. Oxygen-16	140	8	16	8	8	8
h. tin - 119	119 50 Sh	50	119	50	50	69
i. Zinc-66	66 Zn	30	66	30	30	<u>36</u>

Problem 4. In nature, copper is found to exist in two forms: copper-63 and copper-65. Copper-63 atoms have a mass of 62.93 amu, while copper-65 atoms have a mass of 64.93 amu. Naturally-occurring copper contains 69.40% copper-63. Calculate the atomic mass of naturally-occurring copper atoms. Show all of your work.

Does your answer to Problem 4 compare favorably to the atomic mass of copper appearing on the periodic table? <u>Qes</u> 19. 44 m 44 M 44 M

0	29 Cu 62.93	R.	69.40%	-	45.67
100% 67.4%	65 Cu 64.93	×	30.60%	ŋ	19.87
30.60%	29				

43.67 + 19.87= 63.54