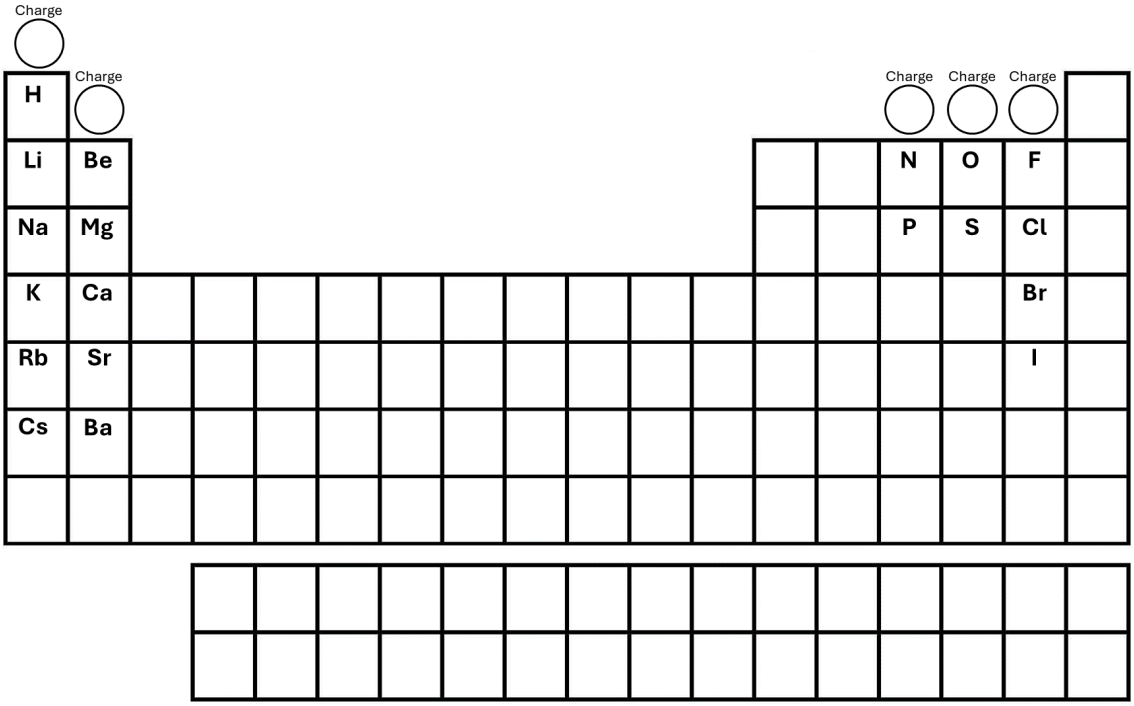
Part I: Ionic Charges Based on Periodic Trends

1. Use the periodic table to answer parts **a** and **b**.

a. What are the expected ionic charges for the groups listed on the periodic table? Fill in the expected charges above each group.

b. What are the expected charges of each element shown on the periodic table? Fill in the expected charge of each element.



c. What observation can you make about the charges on the left side of the periodic table?

d. What observation can you make about the charges on the right side of the periodic table?

e. What observations can you make about the charges of elements in the same group?

Part II: Isotopes

2. The table below contains information about 3 possible atoms. Use this information to answer the questions that follow:

	# of protons	**# of neutrons**	**# of electrons**
Atom #1	11	7	7
Atom #2	9	18	9
Atom #3	8	10	8

a. Which of the above atoms (#1-3) would have a mass of approximately 18 amu and have a neutral charge? Show your work to explain why.

b. For the other two atoms, briefly explain why they aren't the right answer.

Atom # ____ is not the right answer because…

Atom # ____ is not the right answer because…

c. Use X-A notation to write the isotope symbol for the atom you identified in question **2a**.

3. Carbon has two stable, naturally occurring isotopes, carbon-12 and carbon-13.
   a. Regardless of which isotope it is, how many protons does an atom of carbon always have? How do you know this?

   b. Determine the number of neutrons of each of these carbon isotopes. Beneath each answer, show how you figured this out.

   c. What is the name and symbol given to the "number of protons" in an element?

Part III: Ions and Isotopes

4. Fill in the table below. Assume the number of protons and electrons are equal unless otherwise stated

	$^{32}_{16}O$	$^{109}_{\square}Ag$	$^{\square}_{\square}Br^{-1}$	$^{56}_{\square}X^{+2}$	$^{\square}_{\square}X^{\square}$
# of protons					
# of neutrons			**46**		
# of electrons				**28**	**79**
Atomic Mass					
Mass Number					**201**
Charge					**+1**