

NAME: _____ Date: _____

Worksheet 4-2 Atoms and Ions (Nelson p.174-177)

1. Fill in the blanks.

electrons **full** **ion** **ionic charge** **metal**
neutral **non-metal** **protons** **same** **stable** **zero**

- a) _____ have a positive charge, and _____ have a negative charge.
- b) An atom has an overall charge of _____ since it always has the _____ number of protons and electrons.
- c) An _____ is formed when an atom gains or loses electrons.
- d) Positively charged ions are usually formed from atoms of _____ elements.
- e) Negatively charged ions are usually formed from atoms of _____ elements.
- f) Because ions have unequal numbers of protons and electrons, they are no longer _____.
- g) Ions have either a positive or a negative _____.
- h) The _____ is the sum of the ion's positive and negative charges.
- i) Atoms gain or lose electrons to have a _____ outer orbit of eight electrons. This arrangement of electrons is most _____.

2. Fill in the chart below.

Atom	# of proton in atom	# of electron in atom	Lost/Gained how many e⁻ to make atom stable?	# of proton in ion	# of electron in ion	Ionic charge
Na						
Mg						
K						
O						
P						
F						

3. Fill in the chart below.

Element	Metal or non-metal or metalloid	Group	# of electrons in the outermost orbit	How many e ⁻ are gained/lost to make atom stable?	Charge on Ion (Ionic Charge)
Na					
Cl					
Ne					
Be					
S					
B					

4. What is the **charge** of the **ion** of each of the following elements?

- (a) chlorine _____
(b) potassium _____
(c) nitrogen _____
(d) calcium _____

5. How can **metal elements** become stable?

6. How can **non-metal elements** become stable?

7. The metal **cesium** has one electron in its outer orbit. Will cesium atoms form positively charged or negatively charged ions? Predict their charge.

8. How is the **stability** of an atom or ion related to its **electron arrangement**?
