

Part I: Monoatomic Ion Charges

1. Provide the appropriate charges for elements in their ionic form.

a.

Ion	Charge
Li	+1
Na	
K	
Rb	
Cs	

b.

Ion	Charge
Be	+2
Mg	
Ca	
Sr	
Ba	

c.

Ion	Charge
F	-1
Cl	
Br	
I	

d.

Ion	Charge
O	
S	

e.

Ion	Charge
N	
P	

2. Answer the following questions about the ions from question 1.

a. What do you notice about all the charges in 1-a?

b. What about the charges in 1-b, c, d, and e?

c. Do you notice a correlation between these ions and their groups within the periodic table?

d. What do you notice about the sign of these charges?

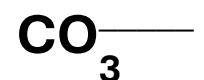
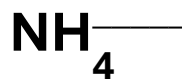
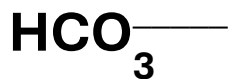
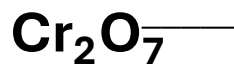
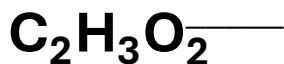
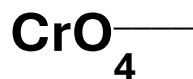
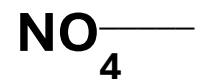
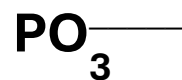
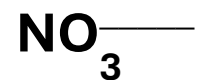
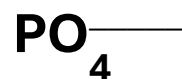
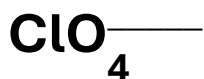
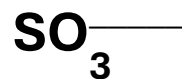
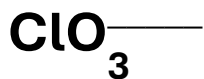
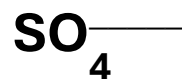
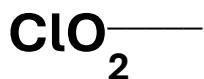
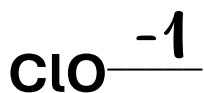
e. Is there a correlation between where the ion is found on the periodic table and the charge of the ion itself? Are there ions with the same charges? Where are they in relation to each other?

Part I: Polyatomic Ion Charges

Polyatomic ions can be a little trickier when determining their ionic charge. One important thing to remember is almost all of the polyatomic ions you will come across will have a negative charge (ammonium, NH_4^+ , being the exception). By learning the charges of specific polyatomic ions, you will be able to better determine the charges of ions formed from metals.

3. There are multiple polyatomic ion “families.” Many of these polyatomic ions are known as oxyanions; polyatomic ions that are made up of a non-metal and at least one oxygen atom. The good news is that a majority of the polyatomic ions within the same family will have the same charge. The only exceptions you are likely to come across are compounds which can have an additional hydrogen attached such as carbonate and bicarbonate.

The ions below are missing their charges. Fill in the missing charges. The first one has been done for you.



Part III: Forming Ionic Compounds

Bonds which form between ions are known as ionic compounds. It is important to remember that ionic compounds should have a net charge of 0. This means that if you add the charges together from the ions within the compound, they will completely cancel out and be equal to zero. Each ionic compound will be formed from a cation and anion.

4. The first column in the table below lists pairs of ions without their charges. For each pair of ions provide the cation, the cation charge, the anion, the anion charge, and then finally the number of cations and anions needed to form an ionic compound with the ion pair.

	Ions	Cation	Charge of cation	Anion	Charge of anion	Number of cations needed	Number of anions needed
Ex:	Na + Cl	Na	+1	Cl	-1	1	1
	Li + SO ₄						
	Na + CrO ₄						
	Ba + PO ₄						
	Mg + NO ₃						
	Zn + F						

5. Write the formula for the ionic compound that results from the combining of the following ions
- Example: Na and Cl = NaCl
 - Ca and Br = _____
 - H and NO₂ = _____
 - Al and SO₄ = _____
 - Na and O = _____
 - Rb and N = _____
 - Zn and Cr₂O₇ = _____