

Ionic Bonding Worksheet

Write the formula which results from combining the following ions:

- 1) K^{+1} and Br^{-} : KBr
- 2) Li^{+1} and O^{-2} : Li_2O
- 3) Ca^{+2} and Cl^{-1} : $CaCl_2$
- 4) Al^{+3} and S^{-2} : Al_2S_3
- 5) Fe^{+2} and S^{-2} : FeS
- 6) Na^{+1} and NO_3^{-1} : $NaNO_3$
- 7) Na^{+1} and SO_4^{-2} : Na_2SO_4
- 8) NH_4^{+1} and CO_3^{-2} : $(NH_4)_2CO_3$
- 9) Fe^{+3} and CrO_4^{-2} : $Fe_2(CrO_4)_3$
- 10) Al^{+3} and PO_4^{-3} : $AlPO_4$

11) For each of the following pairs of elements, use a periodic table to determine the charge on both the cation and the anion. Then determine the formula of the compound or compounds formed. When writing formulas, be sure to put the cation first.

Elements		Compound Formula(s)
Mg	Br	$MgBr_2$
K	S	K_2S
Cl	Al	$AlCl_3$
S	Cu^{+1} Cu^{+2}	Cu_2S, CuS
F	Zn^{+2}	ZnF_2
O	Co^{+2} Co^{+3}	CoO, Co_2O_3
Aluminum	Oxygen	Al_2O_3
Calcium	Iodine	CaI_2

12) Explain why oxygen is a fairly reactive element while neon is not.

Oxygen want to gain electrons to become like the nearest noble gas, according to the octet rule. Neon has a full outer shell of electrons, so there's not particular reason for it to form chemical compounds.

13) Explain why beryllium loses electrons when forming ionic bonds, while sulfur gains electrons.

It's easier for beryllium to lose 2 electrons than to gain 6 to become like the nearest noble gas; likewise, it is easier for sulfur to gain 2 electrons than to lose 6.

14) Explain why fluorine and chlorine have similar reactive qualities (the word "valence" should be somewhere in your answer.)

They have the same number of valence electrons, and since valence electrons are what are responsible for chemical reactivity, this gives them similar reactive qualities.