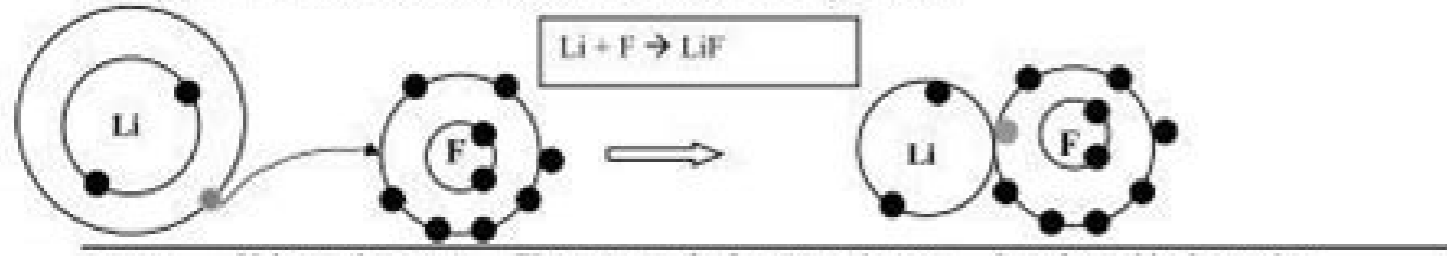


I'm not robot!

Ionic Bonding Worksheet

For each pair of elements below draw an atomic diagram showing electrons in different energy levels. Draw arrows to show where the outer electrons will go during a chemical reaction, then draw the resulting compound. Finally, fill in the table below each reaction. Refer to the sample shown.



Atoms: Li, F
 Valence electrons: 1, 7
 Electron transfer from/to each atom: from Li to F
 Ions formed in the product: Li⁺, F⁻

Reactions	Atoms	Valence electrons	Electron transfer from/to each atom	Ions formed in the product
1) $\text{Li} + \text{Cl} \Rightarrow \text{LiCl}$				
2) $\text{Ca} + \text{O} \Rightarrow \text{CaO}$				
3) $\text{Be} + \text{F} \Rightarrow \text{BeF}_2$				
4) $\text{Mg} + \text{S} \Rightarrow \text{MgS}$				
5) $\text{K} + \text{F} \Rightarrow \text{KF}$				

Ionic and Covalent Naming Practice Answers

For each of the following questions, determine whether the compound is ionic or covalent and name it appropriately.

- 1) Na_2CO_3 **sodium carbonate**
- 2) P_4O_{10} **tetraphosphorus decaoxide**
- 3) N_2O_5 **dinitrogen pentoxide**
- 4) FeSO_4 **iron (II) sulfate**
- 5) SiO_2 **silicon dioxide**
- 6) FeCl_3 **iron (III) chloride**
- 7) CoBr_2 **cobalt (II) bromide**
- 8) B_2H_4 **diboron tetrahydride**
- 9) CO **carbon monoxide**
- 10) PCl_3 **phosphorus trichloride**

For each of the following questions, determine whether the compound is ionic or covalent and write the appropriate formula for it.

- 11) dinitrogen trioxide **N_2O_3**
- 12) nitrogen dioxide **NO_2**
- 13) sulfur pentoxide **SO_5**
- 14) lithium acetate **$\text{LiC}_2\text{H}_3\text{O}_2$**
- 15) phosphorus trifluoride **PF_3**
- 16) vanadium (V) oxide **V_2O_5**
- 17) aluminum hydroxide **$\text{Al}(\text{OH})_3$**
- 18) zinc sulfide **ZnS**
- 19) silicon tetrafluoride **SiF_4**
- 20) silver phosphate **Ag_3PO_4**

1. A Covalent bond forms when atoms _____ electrons.
2. In the Hydrogen atom animation, what do the blue dots represent? _____ What do the black dots represent? _____
3. What happens to the black dots as you move the atoms closer together?
4. Can you get the blue dots really close to each other? Why do you think that happens?
5. So instead of saying covalent bonding is "sharing electrons," we should describe it as _____.
6. What type of element can attract another atom's electrons while still holding on to their own?
7. Generally, a covalent bond will form between two _____.
8. Another element that can form covalent bonds, but might be forgotten based on its location is _____.
9. How does potential energy change as you initially move the two atoms closer together?
10. As you continue to move the atoms even closer together, what happens to the potential energy?
11. What conclusion can you draw based on the changes in potential energy?
12. Lower in energy = _____.
13. What does a solid single line represent in a picture of a molecule?
14. What do two solid lines represent in a picture of a molecule?
15. What do three solid lines represent in a picture of a molecule?
16. Which of the following is the strongest type of covalent bond: single bond, double bond, or triple bond?
17. When naming covalent compounds, what do you notice about the second element ending?
18. What do you think the prefixes in covalent names mean?
19. What are the prefixes for the following numbers:

Name _____ Date _____ Period _____

Covalent Bonding Worksheet

Covalent bonding occurs when two or more NON-METALS share electrons, attempting to attain a stable octet (8 outer electrons) in their outer shell for at least part of the time. Draw a Lewis dot diagram for each element listed. Circle the unpaired electrons that will be shared between the elements.

1.) H ₂ hydrogen is diatomic	$H + H \rightarrow H \times H \rightarrow H-H$ Single Bond
2.) F ₂ fluorine is diatomic	$F + F \rightarrow \begin{array}{c} \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \\ \cdot\cdot \end{array} \rightarrow$
3.) O ₂ oxygen is diatomic	$O + O \rightarrow \rightarrow O=O$ Double Bond
4.) N ₂ nitrogen is diatomic. Is this a triple bond?	$N + N$
5.) BF ₃ you need 3 fluorine atoms here	$B + F$
6.) Ammonia NH ₃ hint: how many hydrogen atoms are needed?	$N + H$
7.) Carbon dioxide CO ₂	$O + C + O$
8.) Methane CH ₄ careful here 4 hydrogen atoms needed	$C + H$
9.) Dihydrogen monoxide: the most dangerous substance on the planet. It has killed more people than any other substance known to mankind!!	$H + O + H$
10.) SO ₂ hint: one pair of electrons from sulfur must be split up for this one to work.	$O + S + O$

