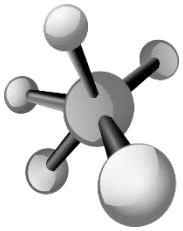
WLHS / Chem / Monson

Name_____
Date_____Per_____

WEBQUEST ACTIVITY: Computer Simulation of Chemical Bonding

Directions: Use the links as instructed. Answer the questions and/or draw the diagrams requested on this sheet of paper.
NOTE: this activity is posted as a pdf on my webpage, so you can access it there and click directly on the links to the webpages!

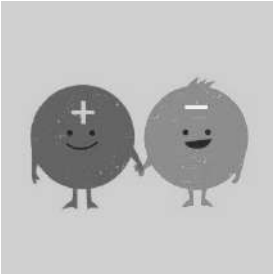


1st WEBPAGE: Go to **http://www.ausetute.com.au/ionicbond.html**

Read through the information and answer the following questions.

1) Diagram the ionic lattice (array of cations and anions) shown at the right side of the page.

2) What is an ionic bond?



3) List some **physical properties** of ionic compounds.

4) Provide an explanation as to **WHY** ionic compounds have **high melting points.**

5) What are the two major factors that lead to higher melting points in some ionic compounds (such as MgO) with a higher melting point than other ionic compounds (such as NaCl)? **Describe / explain each one.**

6) In what state(s) do ionic compounds conduct electricity? Why don't ionic compounds conduct electricity in the solid state?

7) Explain how the structure of ionic compounds makes them brittle.

2nd WEBPAGE: Go to **http://chemistry.tutorvista.com/physical-chemistry/ionic-bonding.html**

Click through the compounds in the ionic compound box and watch the animations.

1) Which elements tend to **GAIN electrons** and which elements tend to **LOSE electrons** in an ionic bond?

2) Draw a before and after picture for the formation of **Sodium Chloride (NaCl)** and **Calcium Fluoride (CaF_2)**. Include explanations in each picture.

Na and Cl before bonding	NaCl after bonding
Mg and F before bonding	MgF_2 after bonding

3rd WEBPAGE: Go to
https://app.schooltube.com/video/7870b1153b034ec08d7a/Comparing_Ionic_and_Covalent_Bonds.

Watch (& listen to) the video animation and answer the following questions.

1) How does forming an ionic bond satisfy the valence electrons (i.e. the octet rule) of sodium and chlorine in the formation of sodium chloride? Defend your answer with pictures.

2) How does forming a covalent bond satisfy the valence electrons (i.e. the octet rule or full outer valence shell) of hydrogen and oxygen in the formation of water? Defend your answer with pictures.

4th WEBPAGE: Go to **https://www.youtube.com/watch?v=LkAykOv1foc**

Watch the animation on Covalent Bonding. Either turn on the sound or turn on the captions ("CC") and read along. Answer the following questions.

1) Which elements are stable on their own? WHY are they stable?

2) How do other elements (i.e. NOT the noble gases) achieve this kind of stability?

3) How does a COVALENT BOND form?

4) Diagram the following covalently bonded molecules. Below each molecule, explain why that bonding configuration works.

Diagram	**Why it works / type of bond formed (i.e. single, double, triple, etc.)**
Cl_2	
O_2	
N_2	