

Name: _____ Period: _____ Date: _____

Chemistry Stations (15 minutes each)

Station 1: Building an Atom

- The atom is the building block of all matter, but even atoms are made up of three subatomic particles: the electron, the proton, and the neutron. Specify which of the three particles each statement is describing by putting an "E," a "P" or a "N" in the blanks.
 - Is positively charged _____
 - Neutral/no charge _____
 - Flying around the nucleus _____
 - Both weigh one amu _____
 - Determines the atomic # _____
 - Negatively charged _____
 - In the nucleus _____ & _____
 - Most important in bonding _____
 - Practically weightless _____
 - Differs in isotopes _____
- Split your group up into two teams. Keep the cards face down and the marbles in there containers unless actively building an atom. This is a RACE. Have one person flip a card over and the two teams must build their atom as fast as possible. Yell "atom bomb" when your group thinks it has successfully built their atom. I will check it. Discuss amongst your group (especially to the people who did not understand) how the atom was built. Repeat the rounds, one card at a time, until time is up.

Station 2: Types of Bonds

- Write the definitions to the following:

_____ Covalent Bond:
_____ Polar Covalent Bond:
_____ Ionic Bond:
_____ Hydrogen Bond:

- Look at the different types of bonds at the station. Label which letter represents which bond above.
- Go to page 38 in the green book. Draw the atom version of a salt molecule (NaCl) and the atom version of a carbon dioxide molecule (CO₂). Label which one is ionic and which once is covalent.
- Which one of these two types of bonds (covalent/ionic) would break easily, AKA, more readily dissolves in water? Why? Use the visuals you just drew to explain your answer.
- What element is this? Write the molecule using symbols & then tell me what kind of bond is shown.

Station 3: Molecules

- Go to page 40-41 in the green book and draw three water molecules as ACCURETELY as possible. There are two different types of bonds going on here. Both of these two bonds are between a hydrogen and oxygen, but what's the difference between them? Look at page 36 in the Cambridge book to help you.

- Build the following molecules using the molecular atom ball kit. Polarity is the unequal sharing of electrons. Beside them, label whether you think they are polar or nonpolar.
 - C_6H_6 _____ (pg. 11)
 - C_2H_6 _____ (pg.7)
 - CH_3Cl _____
- Build three polar and three nonpolar molecules. Draw them here and explain why you knew they were polar or nonpolar. You may use your phone.
- Why didn't we build any ionic compounds?

Station 4: Molecules

- Google "interactives ionic bonding" and click on the first link. Go through the first example and build sodium chloride. STOP after to answer the questions before moving on.
- Sodium is in valence electron group one on the periodic table, which means it has one lonely electron in its outer shell it wants to lose. Write the symbol of three more elements that want to lose one electron, followed by the charge it will have once it loses that electron.
- Chlorine is in valence electron group seven on the periodic table, meaning it wants to gain one electron to complete its outer shell (octet rule). Write the symbol of three more elements that want to gain one electron, followed by the charge it will have once it gains that electron.
- The elements you chose for questions 2 and 3 can form ionic bonds because the group 1 elements will give their electron to the group 7, changing the overall charges of both. Write the molecular formula of three possible molecules that could form from those elements you chose in questions 2 and 3.
- Make sodium oxide in the program. Why did you have to put two sodium atoms on one oxygen atom. When you explain your answer, talk about where each element is on the periodic table, how many valence electrons each has, and why the overall charge of the molecule adds up to zero.
- Keep going through building molecules until you get to "aluminum oxide." Draw your finished product here. Why does it look like this?