Unit 5 NAME

Class Work 1/13/14

5.8 Double and Triple Bonds – Rubber Band Lab

SPARK

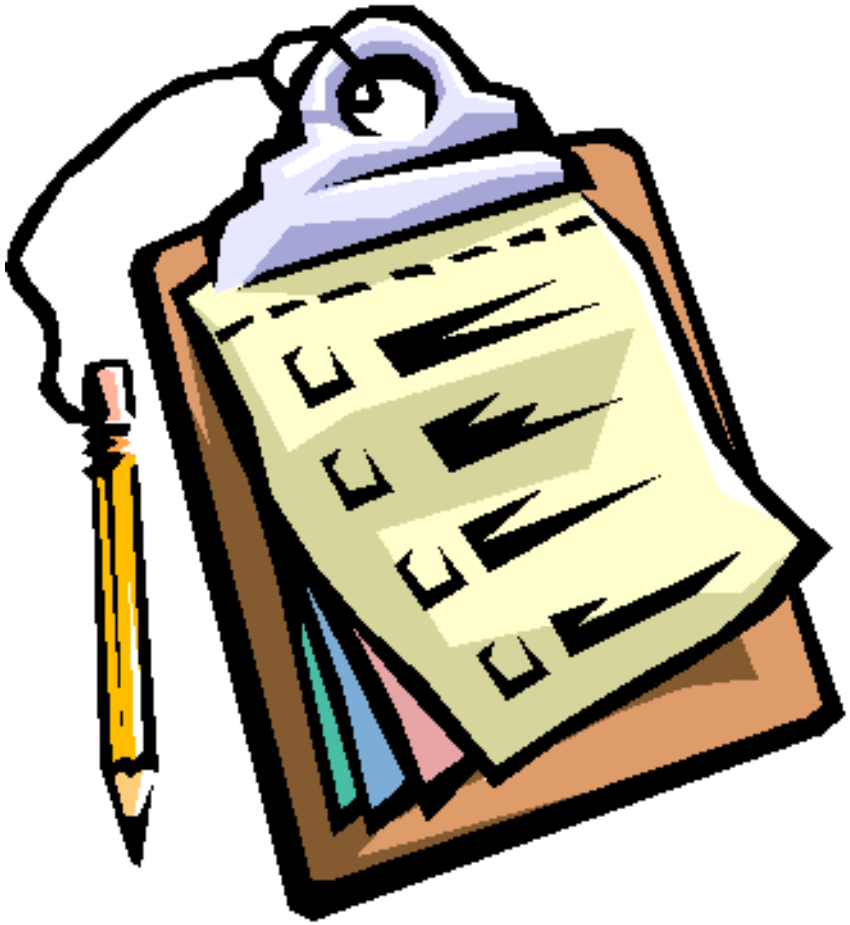
1. Write the name of: $Fe(NO_3)_2$
2. Write the formula for: Potassium chloride
3. What is the difference between ionic and covalent bonds?

Objective

SWBAT describe how atoms bond to form molecules and the strength of those bonds

Agenda:

- SPARK/Objective
- Lesson
- Practice
- Exit Ticket
- Homework



Objective: SWBAT describe how atoms bond to form molecules and the strength of those bonds

Diatomic Molecules

- Recall our diatomic molecules….
- Have No Fear of Ice Cold… Brisk!

Objective: SWBAT describe how atoms bond to form molecules and the strength of those bonds

DRAW!

- What do the Lewis dot structures look like for Br_2 Cl_2 F_2 and H_2 ?
- If you try to draw the Lewis Dot structure of O_2 and N_2, what do you notice?

Objective: SWBAT describe how atoms bond to form molecules and the strength of those bonds

Multiple Bonds

- Atoms can share more than one pair of electrons to form multiple bonds.

Objective: SWBAT describe how atoms bond to form molecules and the strength of those bonds

Double Bonds

- Double bonds form between atoms sharing two electron pairs.
- Example: O_2

Objective: SWBAT describe how atoms bond to form molecules and the strength of those bonds

Triple Bonds

- Triple bonds form between atoms sharing three electron pairs.
- Example: N_2

Objective: SWBAT describe how atoms bond to form molecules and the strength of those bonds

Steps to Draw Lewis Structures

6. If after assigning electrons, one atom does not have a full octet, a double or triple bond will form.

Objective: SWBAT describe how atoms bond to form molecules and the strength of those bonds

Step 1

Determine the type and number of atoms in the molecule

1 Carbon atom

2 Oxygen atoms

Objective: SWBAT describe how atoms bond to form molecules and the strength of those bonds

Step 2

Determine the total number of valence electrons in the atoms to be combined

CO_2

C = 4 e^- x 1 atom = 4

O = 6 e^- x 2 atoms = 12

Total = 16 valence electrons

Objective: SWBAT describe how atoms bond to form molecules and the strength of those bonds

Step 3

Arrange the atoms to form a skeleton structure for the molecule

O C O

CO_2

Objective: SWBAT describe how atoms bond to form molecules and the strength of those bonds

Remember:

1. The least-electronegative atom is central

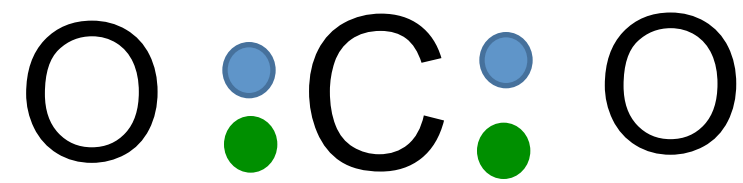
2. If Carbon is present, it is the central atom

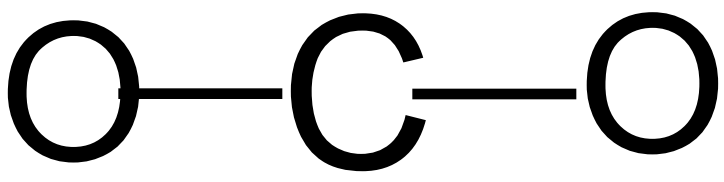
3. Hydrogen is NEVER central

Objective: SWBAT describe how atoms bond to form molecules and the strength of those bonds

Step 4

- Add valence electrons for the bonds or a single line.

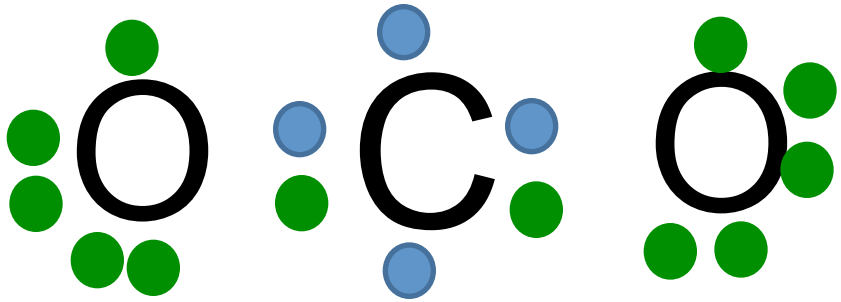




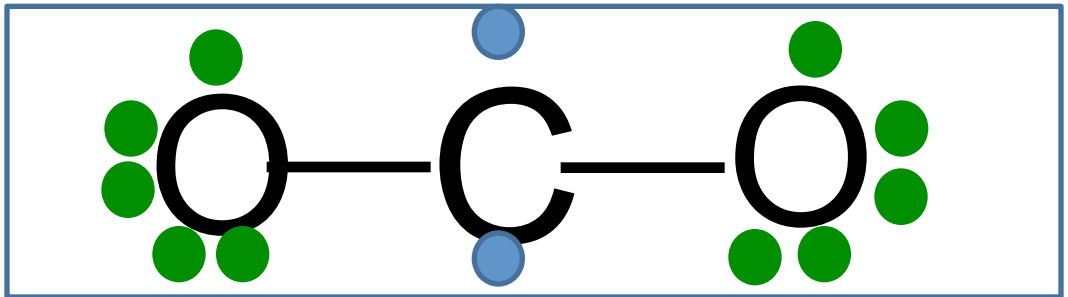
Objective: SWBAT describe how atoms bond to form molecules and the strength of those bonds

Step 5

- Add remaining electrons that will be (unshared pairs) of electrons so each atom has an octet (except H)

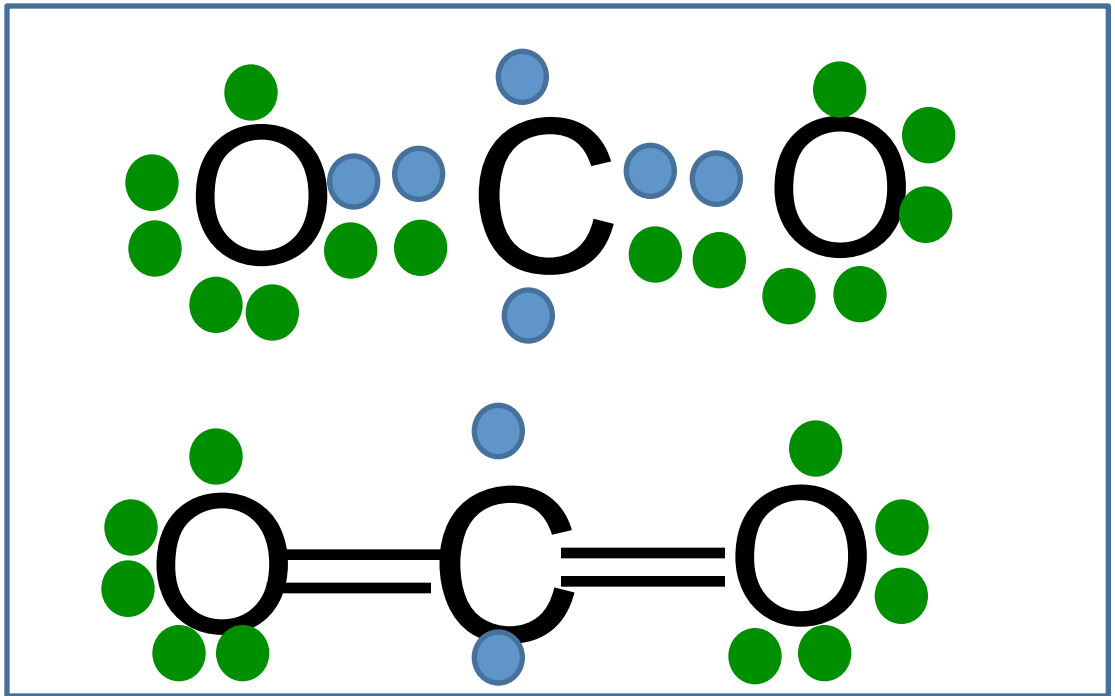


  - Check # of valence electrons used equals the number available.
  - Check that all atoms have 8 valence electrons (2 for H).



Step 6 (This is NEW for Today!!)

- **6. If after assigning electrons, one atom does not have a full octet, then a double or triple bond will form.**



Let’s Try Another…

HCN

Bond Dissociation Energy

- The amount of energy needed to break a bond
- As bond dissociation energy increases, the strength of a covalent bond increases.

LAB TIME!

- Finished early? Make sure your lab is finished and then work on your Winter Break packet silently at your desk!

Bond Dissociation Energy

- The amount of energy needed to break a bond
- As bond dissociation energy increases, the strength of a covalent bond increases.
- How does the relative strength of bonds change going from single to double to triple?

Exit Ticket

- Explain how you could determine whether or not a sample of an unknown substance contains ionic or covalent bonds.

Objective: SWBAT identify the type of bond based on the properties

HOMEWORK

Complete Winter Break Regents Questions

Complete Winter Break Study Guide questions!

Objective: SWBAT identify the type of bond based on the properties