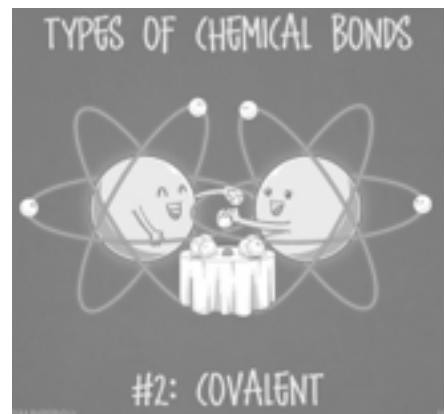


3.5 Notes Name\_\_\_\_\_ Date\_\_\_\_\_

## Covalent Bonds

### Warm Up

- i. What is the main difference between ionic and covalent bonding?  
Explain in terms of electrons.



- ii. What types of elements make up covalent bonds?
- iii. Which of the following are examples of covalent bonds?
- i. NaBr                    b. H<sub>2</sub>O                    c. CH<sub>4</sub>                    d. Li<sub>3</sub>N                    e. F<sub>2</sub>  
f. CaCl<sub>2</sub>

- iv. Draw the Lewis Dot Diagram for the following NEUTRAL atoms.

1. Carbon                    b. Oxygen  
c. Nitrogen
- d. Iodine                    e. Hydrogen  
f. Sulfur

# A Few Helpful Vocab Words...

## i. Element

A pure substance made of only one type of atom; CANNOT be broken down by \_\_\_\_\_ means.

Examples: \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

## ii. Compound

A pure substance made of \_\_\_\_\_ or more types of atoms that are CHEMICALLY BONDED together in \_\_\_\_\_ ratios; CAN be broken down by \_\_\_\_\_ means (undergoing a chemical reaction)

Examples: \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

## iii. Electronegativity - A measure of an atom's desire to \_\_\_\_\_ an electron.

# Covalent Bonding

A covalent bond occurs when two or more atoms \_\_\_\_\_ electrons in order for each individual atom to have a stable octet (aka having a \_\_\_\_\_)

In technical terms, a Covalent Bond occurs between 2 or more atoms that want to gain an electron (have a \_\_\_\_\_ EN) have to work together. Neither atom is strong enough to completely take the electron away from the other. If this was the case, it would be an \_\_\_\_\_ bond.



## Covalent Lewis Dot Diagrams

### Example 1: CH<sub>4</sub>

#### Step 1: Draw the Lewis Dot Diagram

Draw the Lewis Dot Diagram for ONE Carbon Atom	Draw the Lewis Dot Diagram for FOUR Hydrogen Atoms

**Step 3:** Connect the atoms into a structure.

**Remember:** a covalent bond

happens for an atom to

\_\_\_\_\_ its outer shell by  
\_\_\_\_\_ electrons.

Check:

ELEMENT	Valence e- it has	Valence e- it wants
Carbon		
Hydrogen		

Structure for CH<sub>4</sub>:

**Step 2:** Find the total number of valence electrons in ALL atoms:



## Covalent Lewis Dot Diagrams

### Example 2: $\text{NF}_3$

**Step 1:** Draw the Lewis Dot Diagram

Draw the Lewis Dot Diagram for <b>ONE</b> Nitrogen Atom	Draw the Lewis Dot Diagram for <b>THREE</b> Fluorine Atoms

**Step 3:** Connect the atoms into a structure.

**Remember:** a covalent bond happens for an atom to \_\_\_\_\_ its outer shell by \_\_\_\_\_ electrons.

Check:

ELEMENT	Valence e- it has	Valence e- it wants
Nitrogen		
Fluorine		

Structure for  $\text{NF}_3$ :

**Step 2:** Find the total number of valence electrons in ALL atoms:

