Covalent bonds are formed when two or more non-metals share their valence electrons. In this Exploration, you will create covalent compounds by selecting nonmetals and transferring valence electrons to their overlapping shell when they share electrons.

Questions:

Example: Select 1 Hydrogen as the non-metal 1 and 1 Hydrogen as the non-metal 2.

Draw the arrows of electron share
(one pair of arrow is one bond)

Explanation: 1 Hydrogen atom shared totally 2 electrons with 1 Hydrogen atom to form 1 single bond.

1. Select 1 Nitrogen as the non-metal 1 and 3 Hydrogens as the non-metal 2.
2. Select 1 Nitrogen as the non-metal 1 and 1 Nitrogen as the non-metal 2.

Non-Metals Symbols: \( \text{N} \), \( \text{N} \)  
Compound Formula: \( \text{N}_2 \)  
Compound Name: \( \text{dinitrogen} \)

Explanation:  
1 nitrogen atom shared totally 6 electrons with 1 nitrogen atom to form 1 triple bond.

3. Select 1 Carbon as the non-metal 1 and 2 Oxygen as the non-metal 2.

Non-Metals Symbols: \( \text{C}, \text{O}_2 \)  
Compound Formula: \( \text{CO}_2 \)  
Compound Name: \( \text{carbon dioxide} \)

Explanation:  
1 carbon atom shared totally 8 electrons with 2 oxygen atoms to form 2 double bonds.

4. Select 2 Hydrogen as the non-metal 1 and 1 Oxygen as the non-metal 2.

Non-Metals Symbols: \( \), \( \text{O} \)  
Compound Formula: \( \), \( \text{O} \)  
Compound Name: 

Explanation: 