

## Unit 7 – How Do Atoms Stick Together?

### Station 1 – Quick Quiz – Compounds to Bond Types

Match the following **compounds** to the three bond types.  
Each answer may be used once, more than once, or not at all.

**C) Covalent Bond**

**I) Ionic Bond**

**M) Metallic Bond**

\_\_\_1. KBr

\_\_\_6. CaCl<sub>2</sub>

\_\_\_11. ZnI<sub>2</sub>

\_\_\_2. Cu

\_\_\_7. Br<sub>2</sub>

\_\_\_12. Ag

\_\_\_3. CO<sub>2</sub>

\_\_\_8. Na<sub>2</sub>O

\_\_\_13. NaCl

\_\_\_4. Pb

\_\_\_9. SiO<sub>2</sub>

\_\_\_14. C<sub>(graphite)</sub>

\_\_\_5. CH<sub>4</sub>

\_\_\_10. brass (Cu + Zn)

\_\_\_15. C<sub>3</sub>H<sub>8</sub>

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### Station 2 – Lewis Dots of Elements & Ions

Draw Lewis Dot Symbols of the following elements and ions:

Na <b>Na</b>	Cl <b>Cl</b>	O <b>O</b>	I <b>I</b>	Al <b>Al</b>
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K <sup>+</sup> <b>K</b>	F <sup>-</sup> <b>F</b>	S <sup>2-</sup> <b>S</b>	Br <sup>-</sup> <b>Br</b>	Ca <sup>2+</sup> <b>Ca</b>
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### Station 3 – Electronegativity & Bond Type

Given the following pairs of elements and their electronegativities, decide on the type of bond the two atoms will exhibit and show any charge distribution that might occur (for example:  $A^+$  &  $B^-$  or  $A^{\delta+}$  &  $B^{\delta-}$ )

elements	X	X	$\Delta X$	Bond Type	charge distribution
C-O					C – O
Li-N					Li – N
N-I					N – I
H-Cl					H – Cl
N-N					N – N
B-F					B – F
O-H					O – H

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### Station 4 – Lewis Dots of Molecules

Draw the Lewis Symbols of the following molecules. Only single bonds are used.

$H_2$	$CH_4$	$H_2O_2$
$H_2O$	$NH_3$	$SiH_4$

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## Station 5 – Intermolecular Forces of Attraction

For each substance, state the type of IMF that holds the solid together. Place an  below the box.

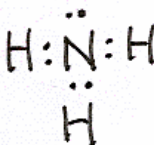
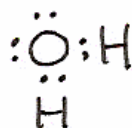
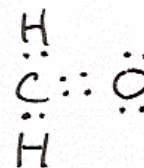
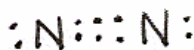
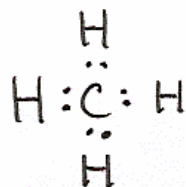
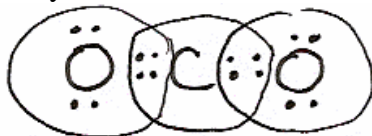
Substance	London Forces	Dipole-Dipole	Hydrogen Bonding	Metallic Bonds	Ionic Bonds	Covalent Bonds
C <sub>(graphite)</sub>						
Au						
KBr						
H <sub>2</sub> O						
CH <sub>3</sub> OH						
SiO <sub>2</sub>						
CO <sub>2</sub>						
SF <sub>2</sub>						
brass (Zn + Cu)						
He						

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## Station 6 – Lewis Diagrams: Who Follows the Octet Rule?

Consider the following Lewis Dot Symbols. Circle the elements (and electrons) that follow the octet rule.

Example:



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## Station 7 – Quick Quiz – Properties to Types of Bonds

Match the following **statements** to the three bond types.

Each answer may be used once, more than once, or not at all.

**C) Covalent Bond**

**I) Ionic Bond**

**M) Metallic Bond**

\_\_\_1. the strongest bond

\_\_\_2. conducts electricity as a solid

\_\_\_3. alternating positive and negative particles

\_\_\_4. sharing electrons between two atoms

\_\_\_5. positive ions in a “sea of electrons”

\_\_\_6. malleable and ductile

\_\_\_7. conducts electricity when dissolved in water

\_\_\_8. involves a transfer of electrons

\_\_\_9. involved in molecules and in network solids

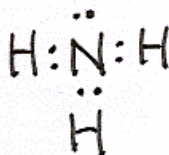
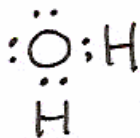
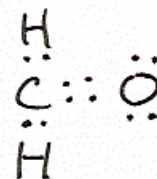
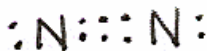
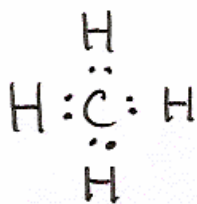
\_\_\_10. does not usually conduct electricity

Exception?: \_\_\_\_\_

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## Station 8 – Polar or Non-polar Molecule?

State whether each molecule below is polar or non-polar. Explain to each other why you made your choice.



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### Station 9 – Lewis Dots of Molecules

Draw the Lewis Symbols of these molecules that include double and triple bonds.

$N_2$	$O_2$	$C_2H_2$
$C_2H_4$	$CH_2O$	$CO_2$