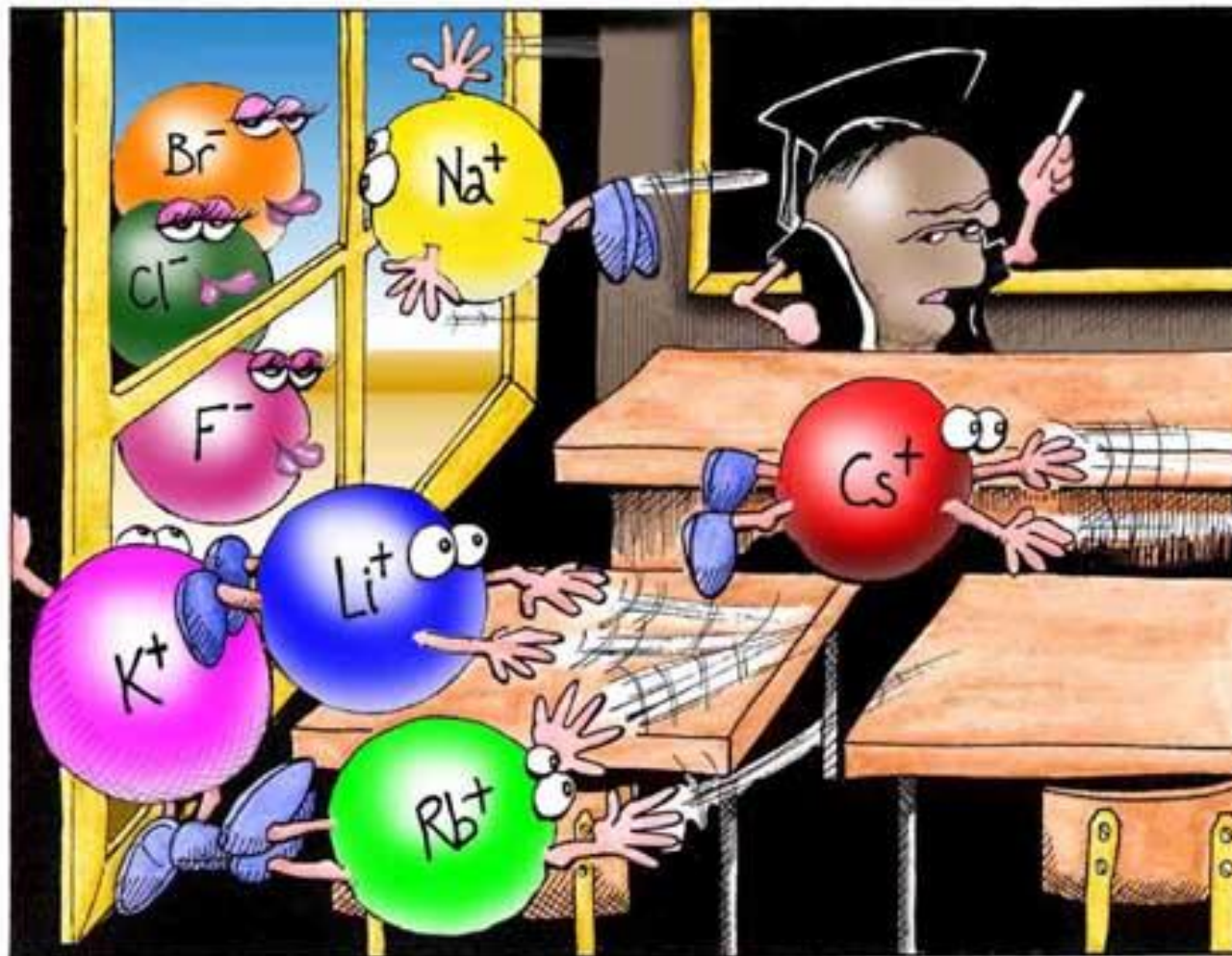


STRANGE MATTER  
by nick d. kim strange-matter.com



"Perhaps one of you gentlemen would mind telling me just what it is outside the window that you find so attractive...?"

## BONDING INTRODUCTION

Bonding makes reactions possible!!



## Bonding Questions to Ponder

*Try to answer these questions...without your notes, the textbook or any other outside resource. Just use your head.*

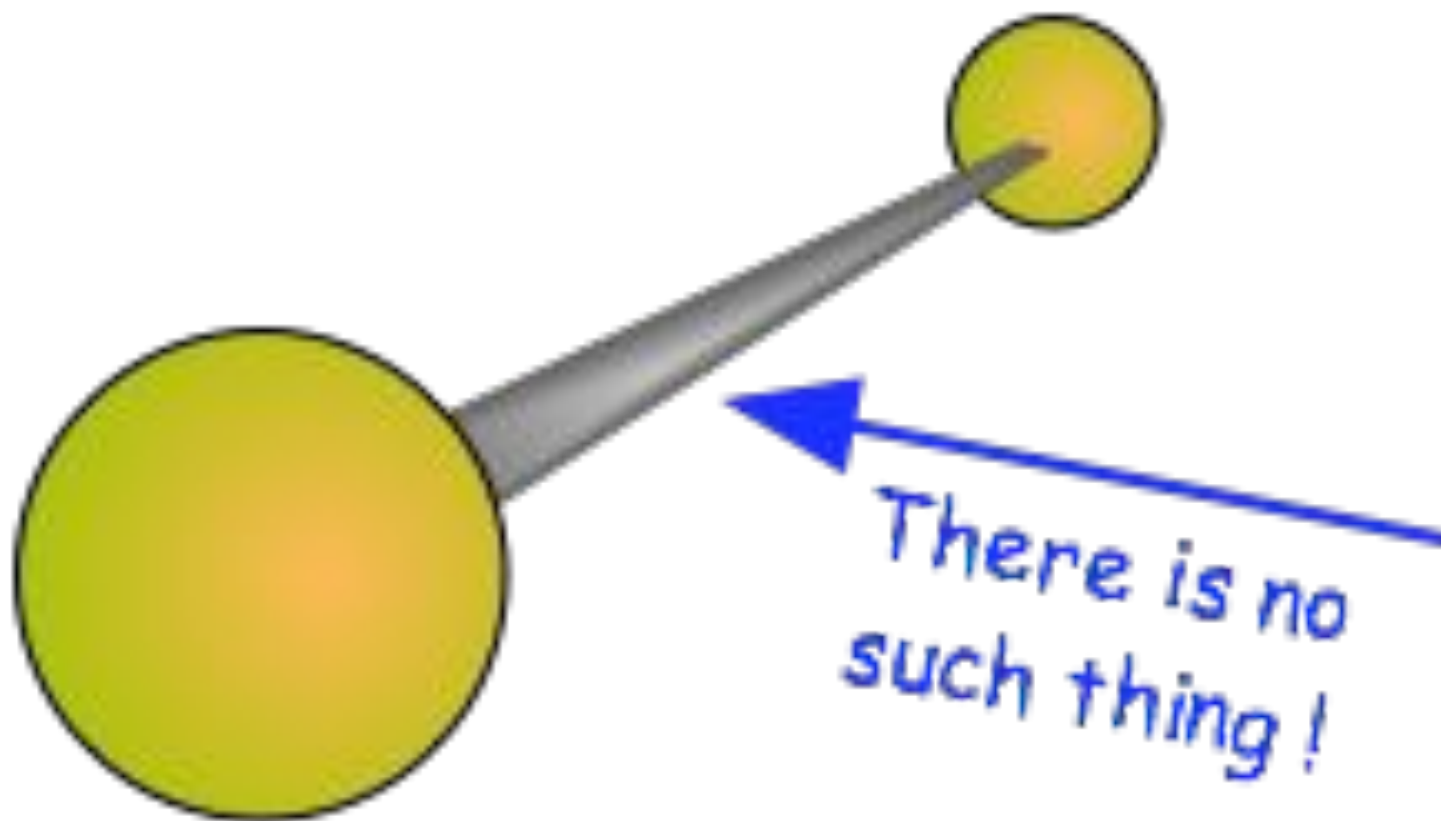
1. What is the difference between an ionic compound and a molecule?
2. What is the difference between a salt crystal, a sugar crystal and a piece of solid metal?
3. Are all bonds the same?
4. Why are the melting and boiling points of methane ( $\text{CH}_4$ ) higher than the melting and boiling points of  $\text{H}_2$ ?
5. Why doesn't solid table salt conduct electricity?
6. Why does molten table salt conduct electricity?
7. Why is the melting point of table salt is so high? (+ 800 °C)
8. Can you explain why plastics quite strong, yet some are flexible and some are hard and rigid?
9. Is an air freshener a solid or a gas? Explain.
10. How can pencil lead and diamond be the same substance?



# WHAT IS A CHEMICAL BOND?

1. What is a chemical bond?
2. Are there different types? How do you know?
3. Why do bonds forms?

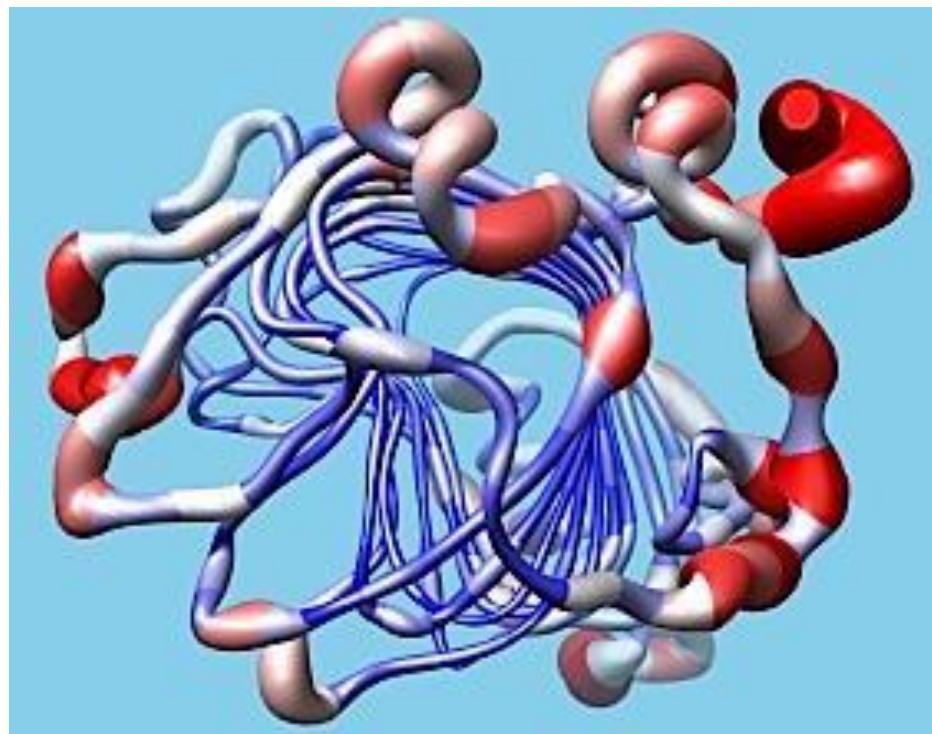
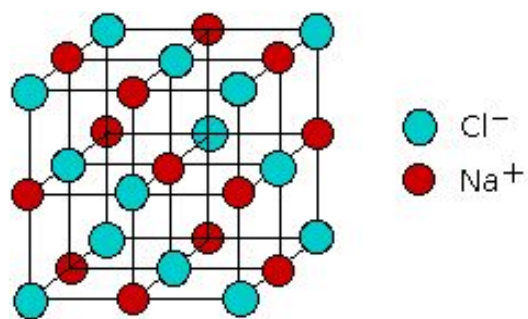
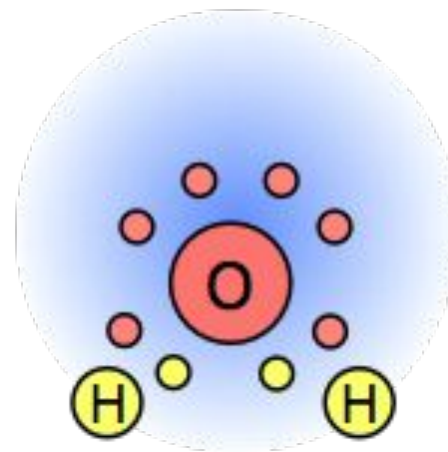
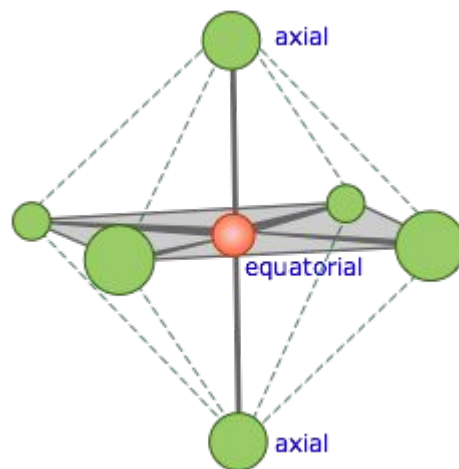
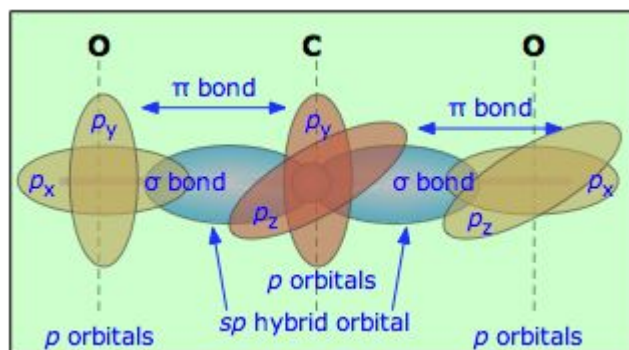




A Chemical Bond is **not** a physical structure.







## Chemical Bond:

The forces of attraction holding atoms or ions together



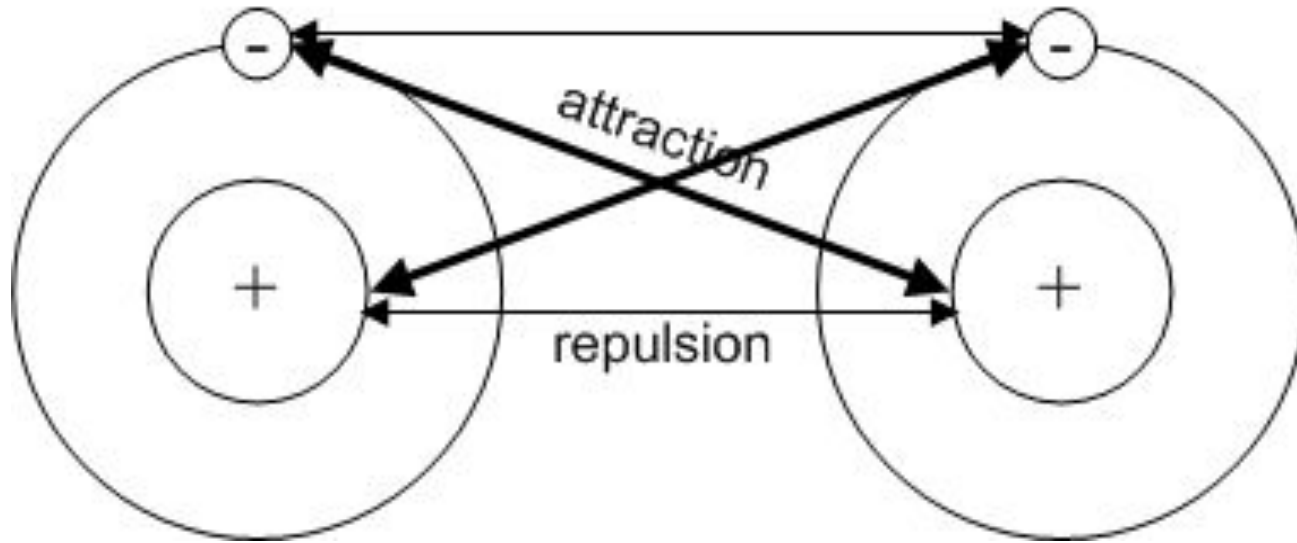
## WHEN DO BONDS FORM?

- When the attractive forces between atoms are stronger than the repulsive interactions, atoms can bond
- When one or more electrons are simultaneously attracted to *two* nuclei





# ATTRACTION VS. REPULSION...THE SWEET SPOT



# WHY DO BONDS FORM?

- The formation of a chemical bond is exothermic
- Since the resulting structure has released energy, it is lower in energy and thus more stable



# LEWIS SYMBOL OR ELECTRON DOT DIAGRAMS

- Shows the chemical symbol and the electrons in the valence energy level ONLY
- Useful in showing electron involvement in bond formation

element	group	electron configuration	Lewis Diagram
Na	1	$1s^2 2s^2 p^6 3s^1$	Na •
Be	2	$1s^2 2s^2$	Be ••
C	4	$1s^2 2s^2 p^2$	•C•• •
F	7	$1s^2 2s^2 p^5$	•• •F•• •

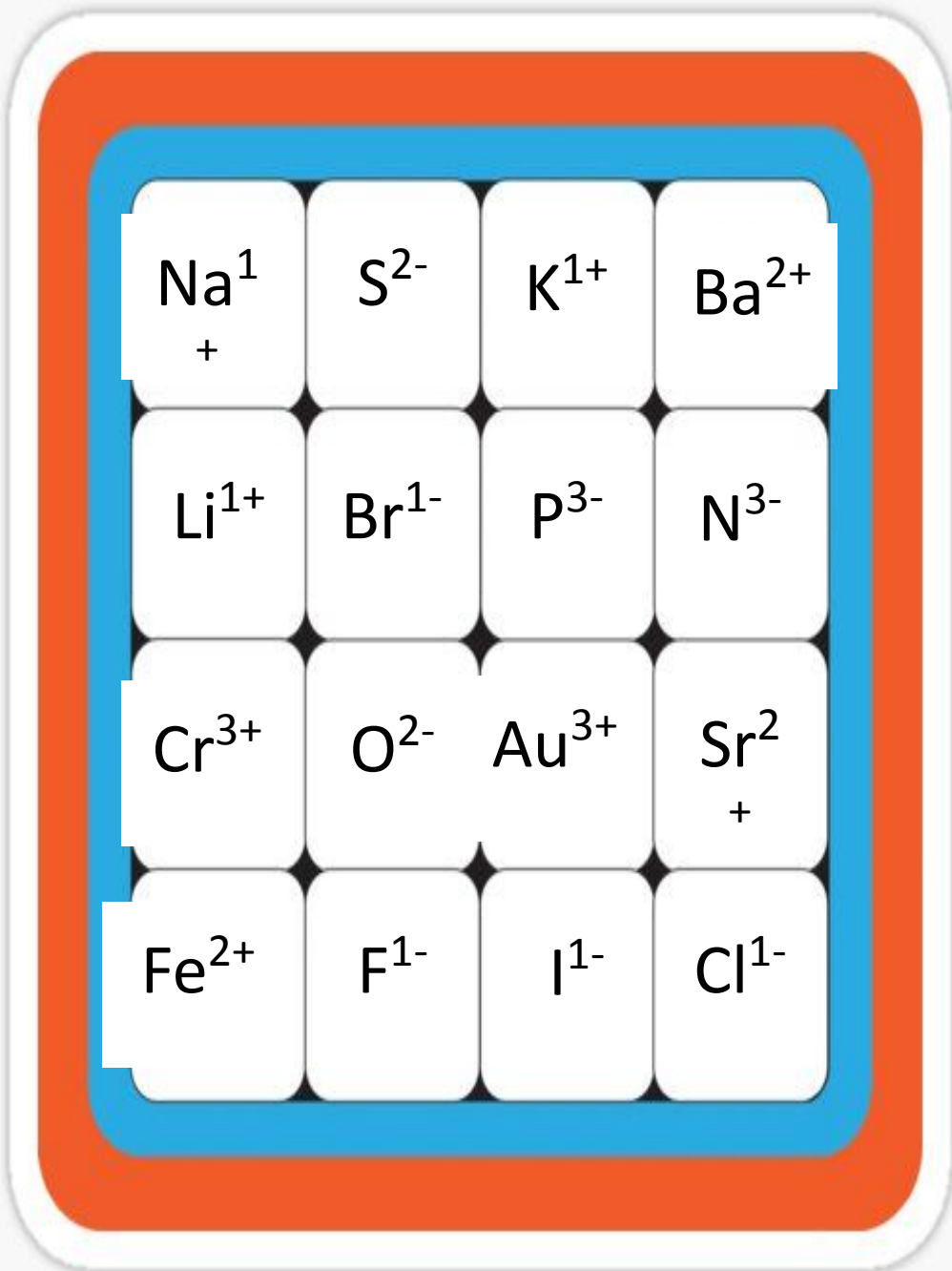


**Boggle**

# Rules:

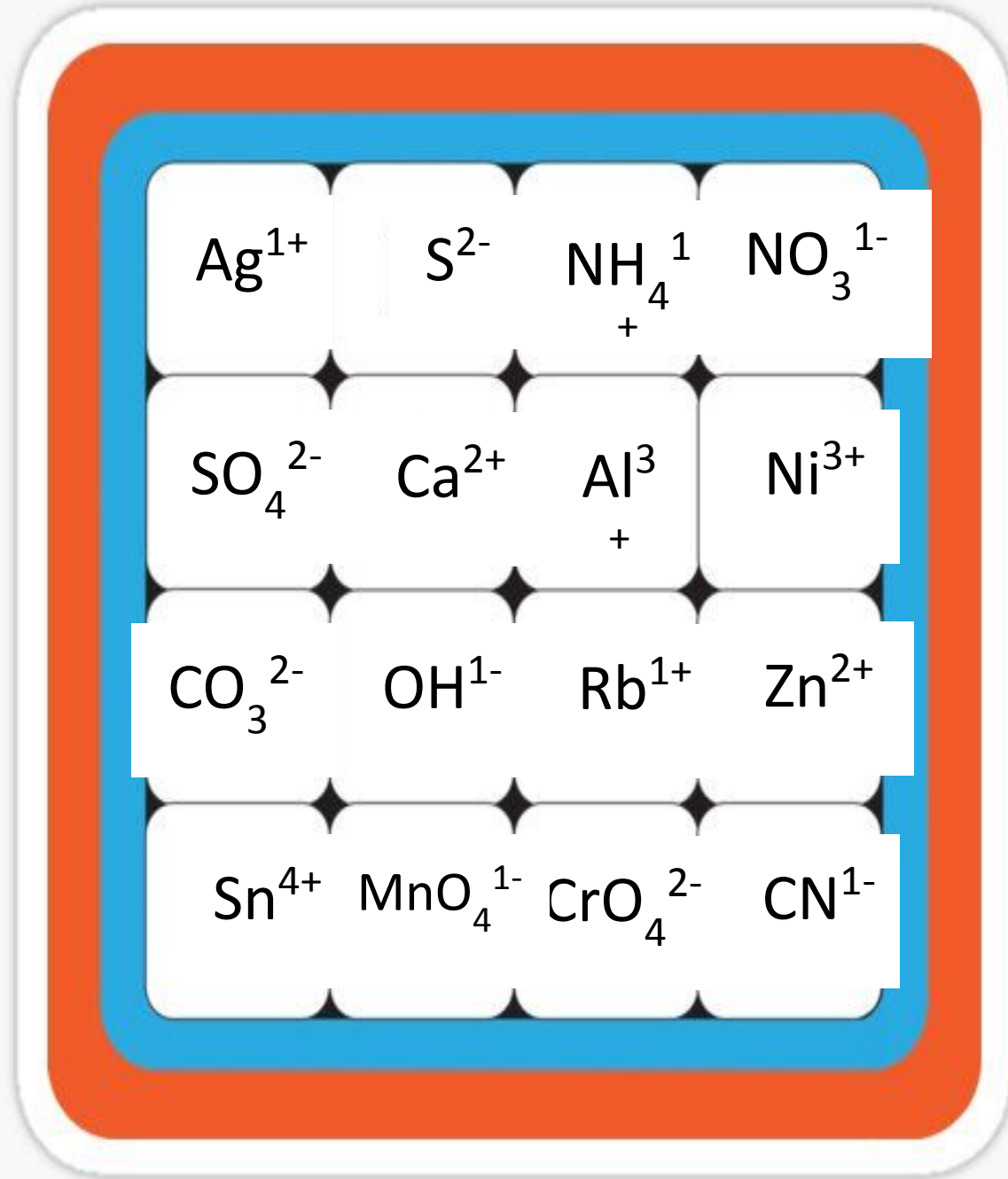
1. You only have 2 minutes to make as many compounds as you can
2. Once the timer goes work as fast as you can with the compounds on the slide
3. Once you have your compounds written down, you share your answers with the group
  - a. If you have a compound that no one else has, you get a point.
  - b. If other members have the compound too, no one gets points for that one.
4. The winner is the player after 2 rounds that gets the most points

# Boggle Board Number 1 (easier)





# Boggle Board Number 2 (harder)



## PRACTICE

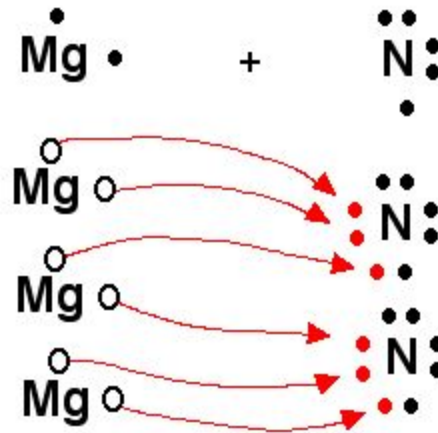
- Textbook
- P. 73 #8, 10
- Next up – Ionic vs covalent compound formation and properties



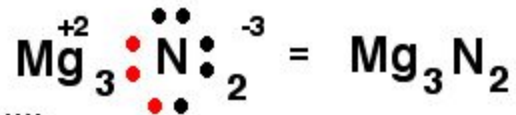
# IDENTIFY AS IONIC OR COVALENT ON WHITEBOARDS

1.

## Magnesium Nitride



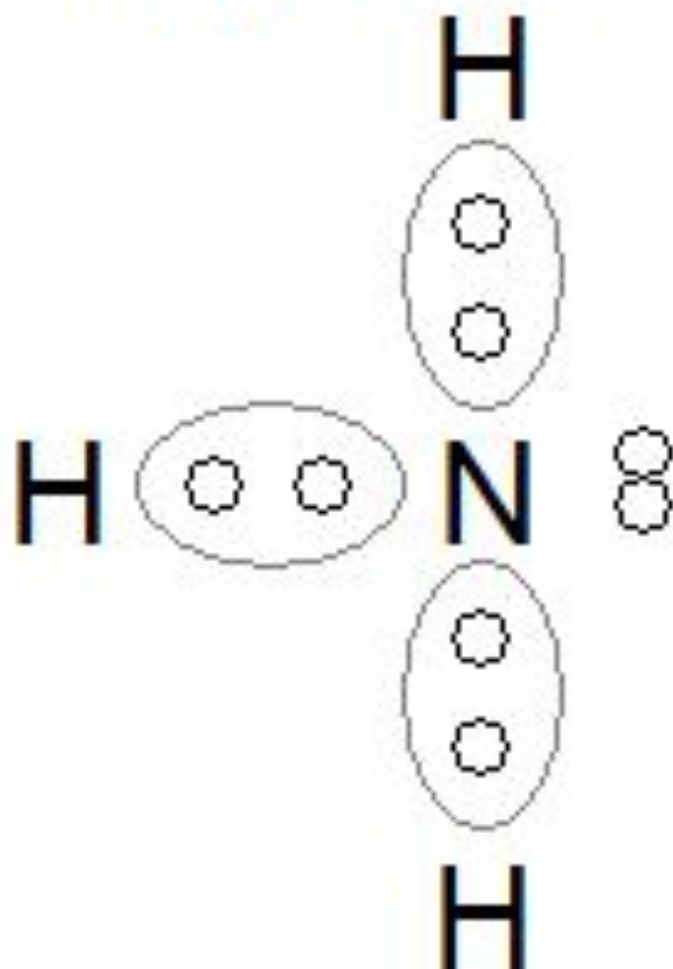
Magnesium loses 2 electrons, and  
Nitrogen gains 3 electrons to have an Octet.



C. Ophardt, c. 2003



2.



3.

What type of bond do the 4 dots between each atom pair represent? How do we show it in a structural formula?



4.

