



## Unplugged Lesson

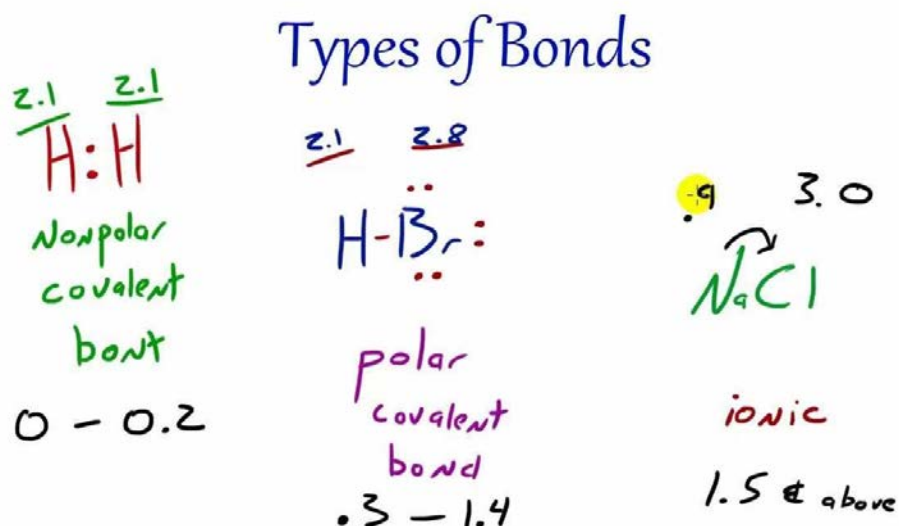
Lesson Title:	Types of Chemical Bonds
Grade Level:	High School
Subject:	Chemistry
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### Engagement:

- <https://www.youtube.com/watch?v=M9khs87xQ8>
- What did the dogs represent? What did the toys represent?
- How were the toys shared during covalent bonding?

### Exploration:

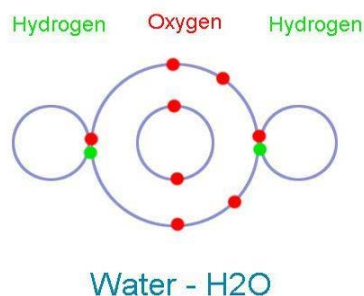
- Students will research which EN differences result in ionic, polar, and nonpolar covalent bonds
- They will write a python program
- Example Student Work: <https://repl.it/@ravelingman/Lookatallthosechickens>



Source: <https://www.youtube.com/watch?v=spdE3oxkllg>



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Source: <https://www.chem.fsu.edu/chemlab/chm1046course/complexions.html>

### Explanation:

- Students will use their code that will determine what type of bonding 2 elements will have. They will be given a list and must be able to tell us what each bond type will be.
- They must write a code (howsoever they choose) and provide comments explaining why they chose:
  - Their variable names
  - Their data collection methods
  - The calculation and presentation of their results
- When students are given the list (See evaluation). They will have to submit their answers, then they will share with each other (verbally) their codes, and critique/explain their various methods.

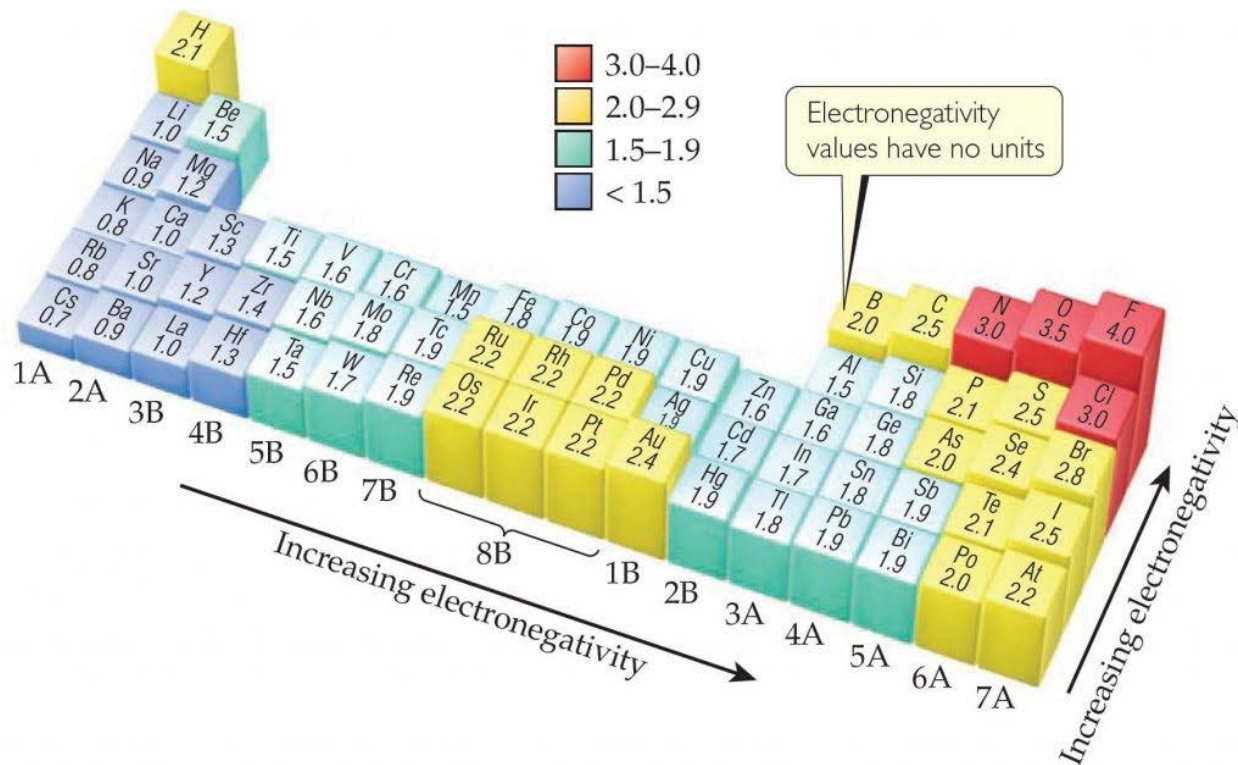
### Elaboration:

- **CHEM.A.1.2.5** Describe how chemical bonding can affect whether a substance dissolves in a given liquid
  - Oil is put in water. Students are asked to discuss their observations. Based on what we talked about and the observations, why do you think they don't mix? (because of polarity)
  - Students make predictions about molecules interacting together based on bonding types.

### Evaluation:

- Students are given a list of 6 molecules and use their codes to determine bonding types.
  - NaCl, N<sub>2</sub>, HF, OH, NH<sub>3</sub>, LI

- They will submit their codes



Source: <https://slideplayer.com/slide/6657742/>



## Bond Types and Electronegativity

<b>Electronegativity Difference</b>	<b>Bond Type</b>
< 0.4	Non- polar covalent
Between 0.5 and 1.9	Polar covalent
> 2.0	Ionic

Source: <https://chemicoolchemistry.tumblr.com/post/155422568534/electronegativity-and-polarity>