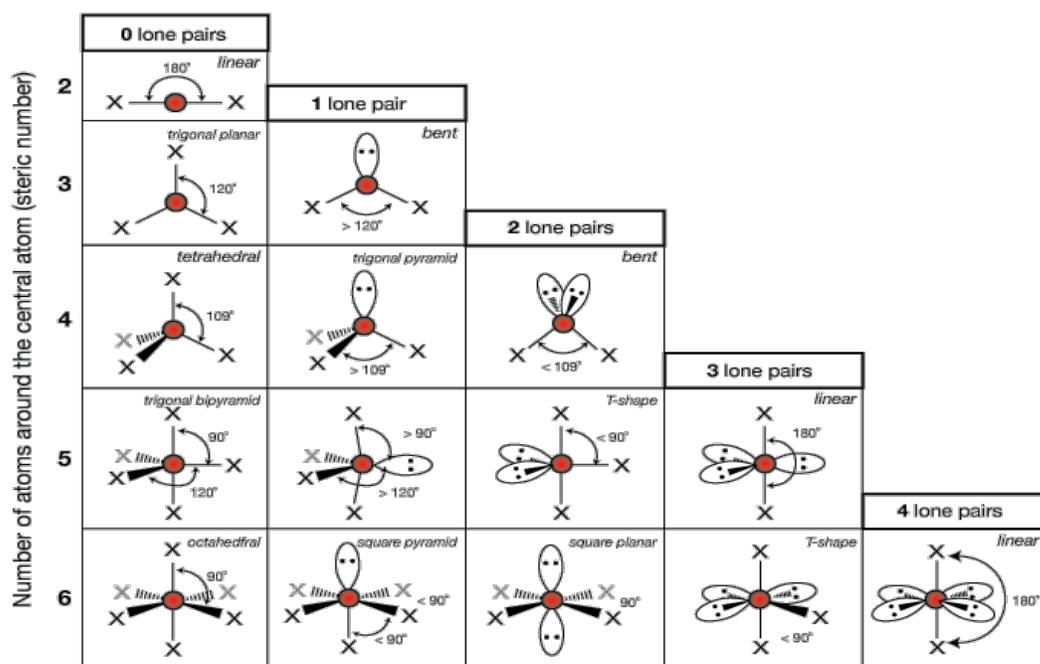


Lesson Title:	Valence Shell Electron Pair Repulsion Theory
Grade Level:	High School
Subject:	Chemistry
Contributed By:	M. Snier, P. Long, and D. Saugling

Engagement:

- VSEPR Yoga (see below)
 - As an intro to molecular geometries, students will be given molecules that are some of the given geometries and try to form the geometry with their bodies.
 - Ask students “If you are a molecule...”
 - What do your limbs represent?
 - What do your hands and feet represent?
 - Why do you think molecules can form different geometries/Why is your body in different shapes?



Source: http://xaktly.com/PDF_files/VSEPRGeometries.pdf



Block Coding Lesson

Exploration:

- Students go into co-space program and use knowledge of VSEPR to explore and create 6 different molecular geometries of their choice.
 - Students choose 6 different molecular geometries to create in partners in co-spaces.
 - They will make 3D models of them and use block coding to have the molecules identify themselves as you walk around them.

Example of student work: <https://cospac.es/jbHL>

Explanation:

- Students put the information into co-space through block coding.
 - Make and label the molecules
 - Students should use block coding to label the geometry, bond angles, total number of atoms and number of lone pairs on the central atom.
 - Example of what the molecule might say: "I am a tetrahedral molecule, I have five total atoms, four are centered around my central atom at bond angles of 109.5 degrees, and I have zero lone pairs on my central atom."
- Students should keep in mind
 - The effect lone pairs of the central atom have on the geometry of the molecule
 - How the geometry affects bonding

Elaboration:

- Students must decide how the geometry of a molecule would change if lone pairs were added.
- Have students go into co-spaces and change 2 geometries they created based on if more lone pairs were added.
- Students should also label the molecule, like before (number of lone pairs, how many total atoms, the geometry, and the bond angles)

Evaluation:

- Groups switch co-spaces. One group tries to identify geometries of another group before clicking through their program.
 - Have handout to write out what geometry they are and why (based on bond angles, # of atoms, other criteria)