1. The electron geometry for H2O is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Linear
   2. Trigonal planar
   3. **Tetrahedral**
   4. Bent
   5. Trigonal pyramidal
2. What is the molecular shape for PF3?
   1. Bent
   2. Trigonal planar
   3. **Trigonal pyramidal**
   4. Tetrahedral
3. What is the electron geometry for BH3?
   1. Bent
   2. **Trigonal planar**
   3. Tetrahedral
   4. Trigonal pyramidal
4. Which statement is true about electron and molecular geometries?
   1. Molecular geometry can be determined **only** by looking at a substance’s chemical formula.
   2. Electron geometry is the molecule’s real-world shape.
   3. Linear molecules always contain three atoms.
   4. Molecules with a bent molecular shape can only have a trigonal planar electron geometry.
   5. **None of the statements are true.**
5. What is true about a tetrahedral electron geometry?
   1. Four bonds are always present.
   2. There will never be a lone pair on the central atom.
   3. It always leads to a 3-dimensional molecular shape.
   4. **Four electron groups are always present.**
   5. The molecular shape must also be tetrahedral.
6. How many bonding regions are necessary for an octahedral molecular shape?
   1. 2
   2. 4
   3. **6**
   4. 8
7. A generic molecule with the formula AX3 has a trigonal pyramidal molecular shape. What is its electron geometry?
   1. Trigonal planar
   2. **Tetrahedral**
   3. Trigonal pyramidal
   4. It can’t be determined from the given information.
8. A generic molecule has the formula AX2. What is its electron geometry?
   1. Linear
   2. Trigonal planar
   3. Tetrahedral
   4. **It can’t be determined from the given information.**
9. The generic molecule AX4 has one lone pair on the central atom. What is its electron geometry?
   1. Tetrahedral
   2. Bent
   3. Octahedral
   4. Trigonal pyramidal
   5. **Trigonal bipyramidal**
10. Which pair of molecules have the same molecular shape?
    1. CO2 and SO2
    2. BF3 and PF3
    3. **OF2 and H2O**
    4. CH4 and NH3
    5. CO2 and H2O
11. Which bond(s) is/are polar? Select any that apply.
    1. **I-F**
    2. O=O
    3. **Cl-H**
    4. C-H
    5. B-H
12. Which bond shows the partial charges labeled correctly?
    1. δ- C=O δ+
    2. **δ- N-H δ+**
    3. δ+ Si-H δ+
    4. δ- F-F δ-
13. Rank the polarity of the bonds from lowest to highest based on estimated electronegativity differences from the trends we discussed in class:
    * 1. C-F
      2. C-N
      3. C-C
      4. C-H
      5. C-O
14. iv < iii < ii < v < i
15. i < v < ii < iii < iv
16. **iii < iv < ii < v < i**
17. i < v < ii < iv < iii
18. iii < iv < i < v < ii
19. Which molecules are nonpolar? Select any that apply. **ac**
    1. 
    2. 
    3. 
    4. 
20. Which molecules are polar? Select any that apply.
    1. **SO2**
    2. CO2
    3. **NF3**
    4. BF3
    5. **CO**
21. Which statements are true about molecular polarity? Select any that apply.
    1. All tetrahedral molecules are nonpolar.
    2. **All diatomic elements are nonpolar.**
    3. **All trigonal pyramidal molecules are polar.**
    4. Some bent molecules are nonpolar.
    5. **Some fluorine-containing molecules are nonpolar.**