Appendix A: Problem Prompts of Video-Recorded PLTL Sessions

Session 1 (Calculational)

3. Compute the de Broglie wavelength of an electron ejected from manganese (work function = 6.6×10^{-19} J) by one photon at each of the following wavelengths:

    (a) 3.0×10^{-7} m
    (b) 2.5×10^{-7} m

Session 2 (Data-Analysis)

3. Arrange each set of atoms and ions in terms of increasing electron affinity.

    (a) S, Cl
    (b) Be, B
    (c) Li, Li⁻, F
    (d) F, O, N
    (e) S, Cl, Ca
    (f) I, Ba, Tl
    (g) Br, At, I

In some tapes for session 2, we also looked at problem 1, which was:

1. Arrange each set of atoms in order of increasing atomic radius.

    (a) Rb, Cs, Li
    (b) B, Li, F
    (c) Cl, F, Br
    (a) F⁻, Br⁻, O^{2-}
    (b) Cs^+, Ba^{2+}, Al^{3+}

Session 3 (Model-Building)

1. Use the materials provided to build a model of each of the VSEPR geometries.

    Use the marshmallows as central atoms. The raisins can be used as bonded atoms. The gumdrops can be used as lone pairs, and the toothpicks connect them all.