Week 8 Worksheet Answer Key

1. Below are two stereoisomers of 2-butanol. For this example, we have 1.90 M of (R)-butanol in a 1-dm sample container.
   a. Label the following as R or S:

   ![S-2-butanol](image1)  ![R-2-butanol](image2)

   b. If the R configuration has a rotation of -34.5°, what is the rotation of the S configuration?
      i. The S configuration will have a rotation of 34.5°. The S configuration has the same magnitude as the R configuration, but in the opposite direction.

   c. What is the observed rotation if we have 1.90 M of (S)-2-butanol?
      i. If we have 1.90 M of (R)-2-butanol and 1.90 M of (S)-2-butanol, then we have a racemic mixture. Racemic mixtures do not rotate light, so it will be 0°.

2. Draw the products of the following reactions using the arrow-pushing mechanism.

   ![Reaction](image3)

   The arrow-pushing mechanism forms the following product below.

   ![Product](image4)
b. The arrow-pushing mechanism forms the following product below.

3. 1. Identify if the pair of molecules are constitutional isomers or stereoisomers.
   a. Constitutional Isomers
      b. Stereoisomers

4. Identify if the reaction is substitution or eliminations
   a. Substitution because H is replaced by Cl
   b. Elimination because a pi bond is formed