Week 2 Worksheet

1. How many different types of protons are present in each compound?

![Chemical structures](image1.png)

2. Label the multiplicity for the labeled hydrogen(s) in the compounds shown below.

![Chemical structures](image2.png)
3. Answer the following questions for each compound below.

   a) Number of HNMR signals in each compound? __________
   b) Number of CNMR signals in each compound? __________
   c) Multiplicity of the H* in each compound? __________
   d) Which H is furthest downfield in each compound?

4. Use the following compounds to answer the questions below.

   a. Which compound(s) has 4 different types of protons?
   b. Which compound(s) has 4 different types of carbons?
   c. Which compound(s) would give ONLY a singlet signal on the HNMR spectrum?
   d. Which compound(s) has an ester?
   e. Which compound(s) has 3 different types of carbons?
   f. Which compound(s) has 3 different types of protons?
5. Circle the structure of the product that would be consistent with the data below.