Week 3 Worksheet

1. The following questions refer to *Indomethacin*, an antiinflammatory drug commonly used for rheumatoid arthritis.

   ![Indomethacin structure](image)

   (a) Circle and label each of the functional groups in *Indomethacin*.

   (b) Is the carbon attached to the Cl more electrophilic or nucleophilic. Give a one sentence explanation explaining why.

   (b) Which hydrogen in the above molecule is the most acidic. Give a one sentence explanation.

   (c) One of the three oxygens in Indomethacin is more acidic than the others. Draw a triangle around this oxygen and give a one sentence explanation below as to why it is more acidic than the others.
2. Rank in order of decreasing acidity (1 = strongest acid). *Hint: use pKas rounded to the nearest 5!*

3. Would you expect HCl to be **more** or **less** acidic than HI. Is this due to the **element effect** or the **inductive effect**? (*Circle correct answers*)

4. Would you expect CH₃CH₂CH₂CH₂CH₂CHC(=O)OH be **more** or **less** acidic than CH₃CH₂CHC(=O)OH. Is this due to the **inductive effect** or the **hybridization effect**? (*Circle correct answers*)

5. Would you expect H₂CH—H to be **more** or **less** basic than HOH₂C—H. Is this due to the **hybridization effect** or the **element effect**? (*Circle correct answers*)

6. Which of the two molecules below has a higher boiling point? Which intermolecular force(s) is/are acting on each of the molecules.