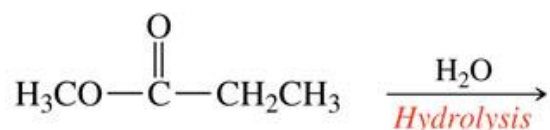
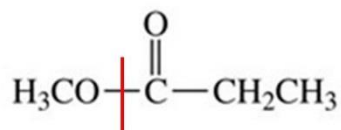
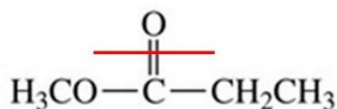


The key to writing/drawing products, is knowing the type of reaction that is taking place. In module 1.4, the reactions are condensation or hydrolysis. These are opposite reactions. Condensation involves multiple molecules combining to form one large molecule (plus water). In hydrolysis reactions, water is added to one large molecule to break it into multiple smaller molecules. To predict the products, think of the most reactive bonds...which would be the most unstable, because the electrons aren't equally shared...polar bonds. This is where the reaction occurs.

In the example shown in module 1.4, you are given the following molecule and asked to predict the products.



Since this is a hydrolysis reaction, you know that multiple products will be present. So the key to predict those products is to identify where the molecule will “break apart”. Again, think back to the polar bonds. This molecule contains C–H, C–C, and C–O (or C=O) bonds. Recall, C–H and C–C are nonpolar bonds; meaning that the electrons are equally shared (so the atoms are “happy”). The C–O (and C=O) bonds are polar bonds; meaning that the electrons are not equally shared. This makes the bonds more reactive. Therefore, this is where the molecule will “break”. If the double bond breaks, you would have only one molecule and one atom (remember a molecule contains two or more atoms). However, if the single bond breaks, you would then have two smaller molecules.



Since the reaction is a hydrolysis reaction, water is added, which actually helps to “break” the molecule. When the water causes the molecule to split, it will also split (into H and OH). Since we are breaking a bond between a carbon and oxygen, think back to intermolecular forces...opposites attract. Since oxygen is electronegative, it will attract an electropositive atom. Therefore, the oxygen (from the split C–O bond) will attract the H (from water) and the carbon (from the split C–O bond) will attract the OH (from water).

