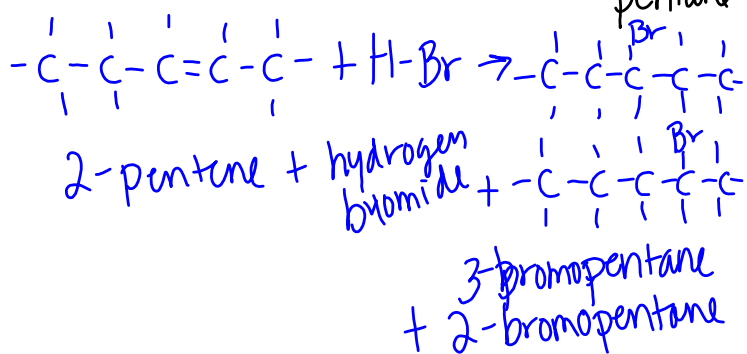
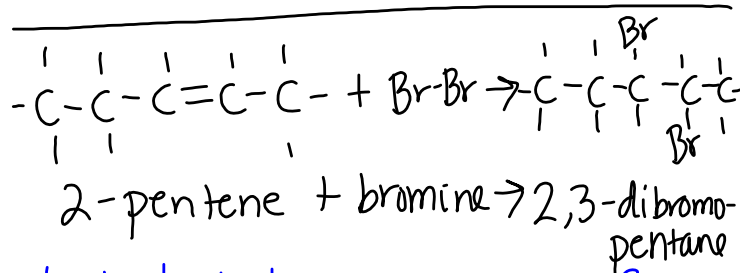
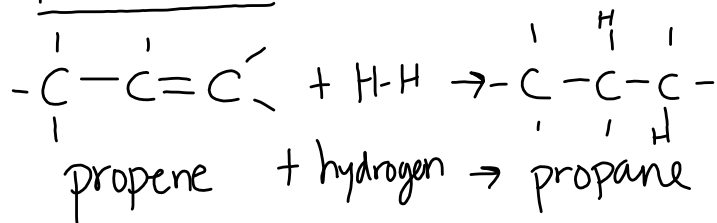


Combustion

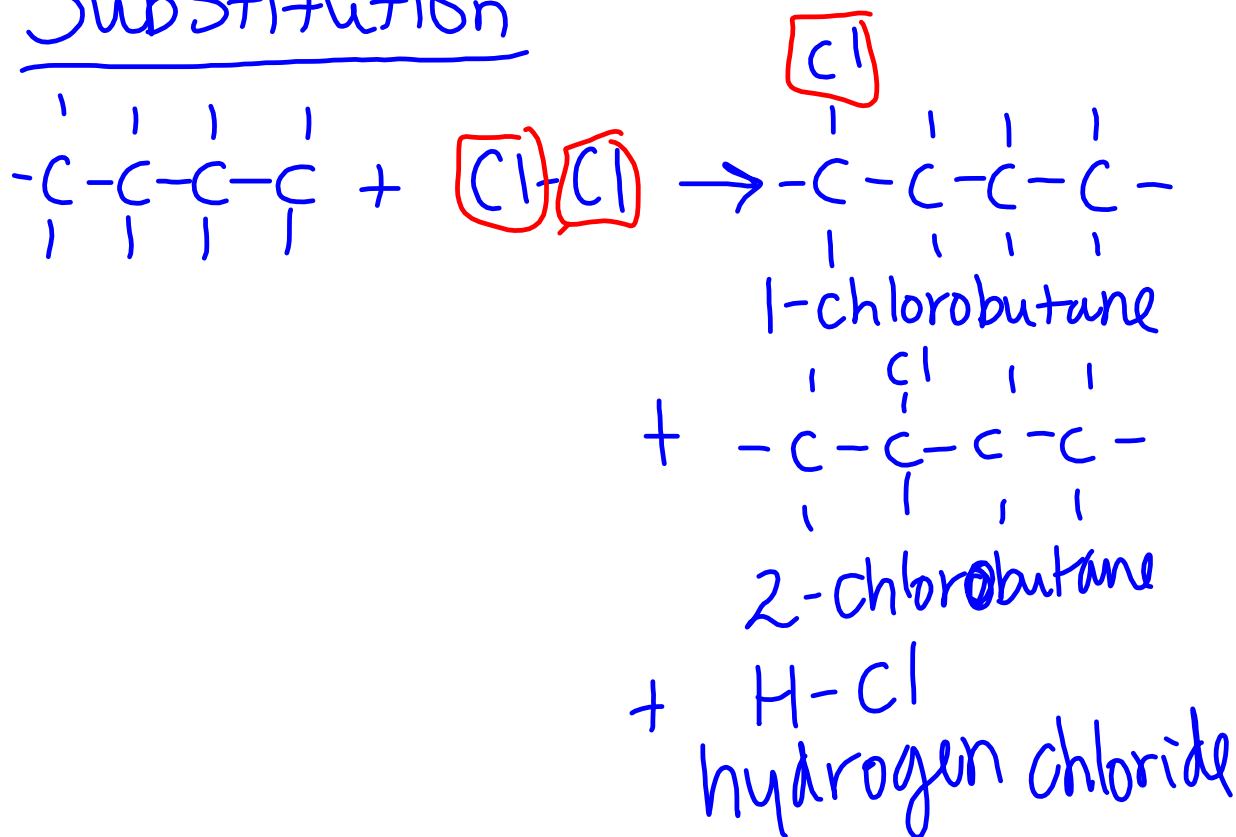


Carbon dioxide + water

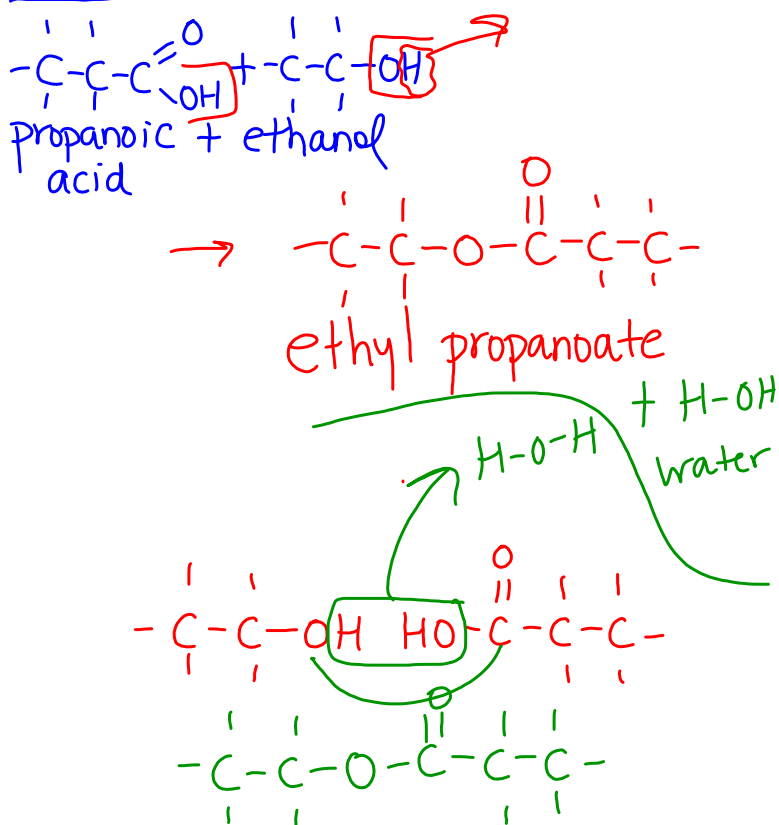
Addition

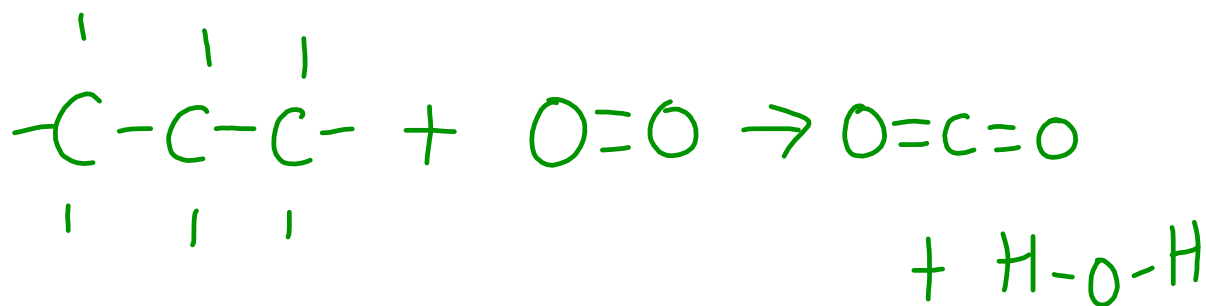
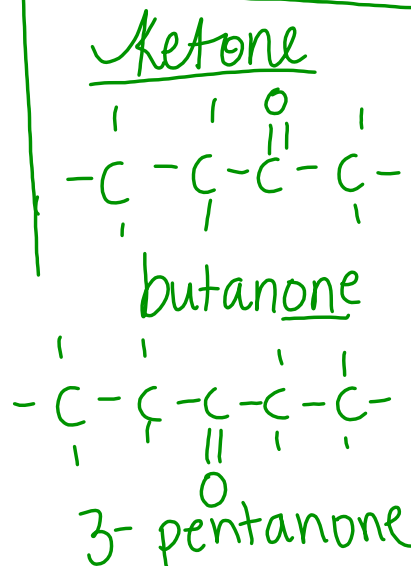
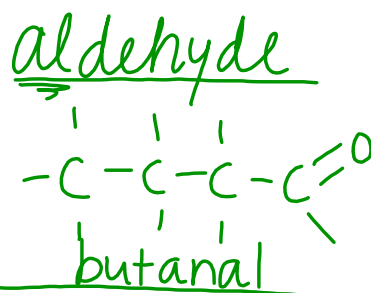
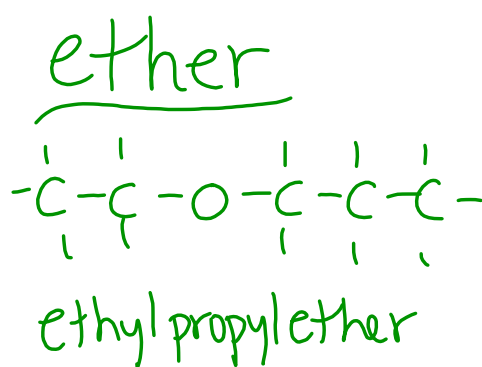


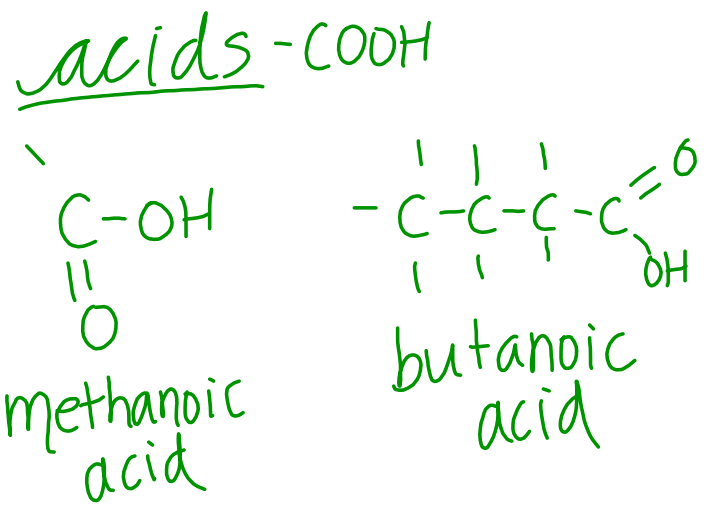
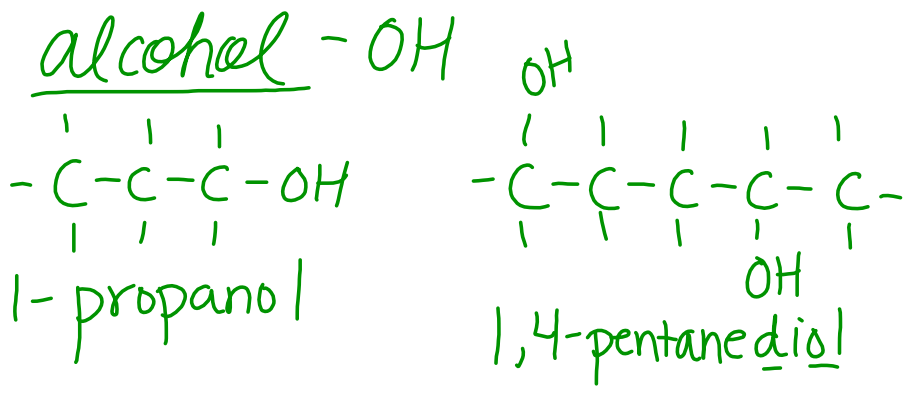
Substitution



Esterification







$$\Delta H = nH \qquad \Delta H = q_{\text{heat}} \qquad q = mc\Delta t \text{ or } Vc\Delta t$$

$n = \frac{\text{mass}}{\text{Molar mass}}$

$n \cdot H_{\text{sol}} = V C \Delta t$

↑ enthalpy change
 ↑ molar enthalpy
 ↑ volume of H₂O
 ↑ specific heat capacity of H₂O
 ↑ change in temp.

5.0g Al
 $60^\circ\text{C} = t_i$
 $C = ?$

$t_f = 35^\circ\text{C}$
 $\Delta t = 25^\circ\text{C}$

$q_{\text{sys}} = -q_{\text{water in calorimeter}}$
 $m[C]\Delta t = V C \Delta t$

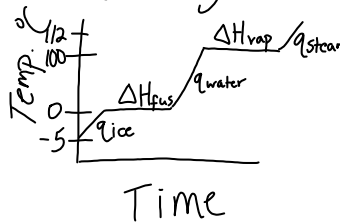
$(5\text{g}) C (25^\circ\text{C}) = (0.100\text{L})(4.19\frac{\text{kJ}}{\text{L}\cdot^\circ\text{C}})$
 $(125\text{g}\cdot^\circ\text{C}) C = \frac{6.285\text{kJ}}{125\text{g}\cdot^\circ\text{C}}$

$C = 0.050\text{kJ/g}\cdot^\circ\text{C}$

$V = 0.100\text{L}$
 H_2O
 $C = 4.19\frac{\text{kJ}}{\text{L}\cdot^\circ\text{C}}$
 $t_i = 20^\circ\text{C}$
 $t_f = 35^\circ\text{C}$
 $\Delta t = 15^\circ\text{C}$

Ice at -5°C heated through to ^{10.0g} Steam at 112°C .

a) Heating Curve



i) $q = mc\Delta t$
 $= (10\text{g})(2.01\frac{\text{kJ}}{\text{g}\cdot^\circ\text{C}})(5^\circ\text{C})$
 $= 100.5\text{J}$

ii) $\Delta H_{\text{fus}} = n \Delta H_{\text{fus}}$
 $= \frac{10.0\text{g}}{18.02\text{g/mol}} \cdot 6.0\text{kJ/mol}$
 $= 3.35\text{kJ}$

$q_{\text{water}} = mc\Delta t$
 $= (10)(4.19)(10)$
 $= 419\text{J}$

$\Delta H_{\text{vap}} = n \Delta H_{\text{vap}}$
 $= \frac{10.0\text{g}}{18.02\text{g/mol}} \cdot 40.9\text{kJ/mol}$
 $= 22.64\text{kJ}$

$q_{\text{steam}} = mc\Delta t$
 $= (10)(2.01)(12)$
 $= 241.2\text{J}$

$\Delta E_{\text{tot}} = q_{\text{ice}} + \Delta H_{\text{fus}} + q_{\text{water}} + \Delta H_{\text{vap}} + q_{\text{steam}}$
 $= 0.1005 +$