Quiz 8c — Tips & Practice Problems

disclaimer: Of course, this worksheet doesn't cover everything that might be on Quiz 8. (or later, on Exam 4)

- Carbon Cycle for atmosphere, to remove & **add** CO_2 : page 124 pairs - (into ocean & **from ocean**), (photosynthesis & **respiration**), (reforestation & **deforestation**), **burn fossil fuels**. CO_2-storage in carbonate minerals + fossil fuels, ocean, sand/silt, soil, atm, forest.

- Use page 378 and lectures (#30-Nov26, #31-Nov28) to know **properties-and-uses** (related!) for plastics in Big Six. (later, nylon,...)

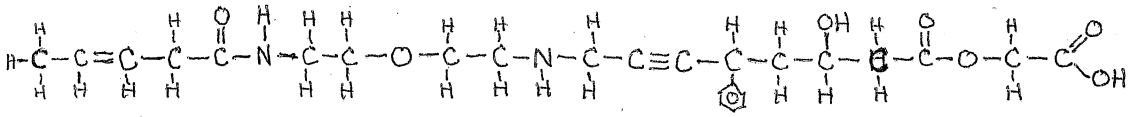
- Energies of Combustion: it's "more fair" to compare kJ/gram, not kJ/mole. (e.g. in lab, $C_{135}H_{96}O_9NS$ vs $C_{40}H_{82}$ in kJ/g, 10 g each)
- **octane rating** and **fuel energy** are not correlated: e.g., n-octane (low octane, -20) has more kJ/g than ethanol (high octane, 108).

1. What has more fuel-energy in kJ/g: propane vs 1-octene , 2-propanol vs 4-octanol , ethanol vs MTBE , benzene vs hexane , pentane vs butanol

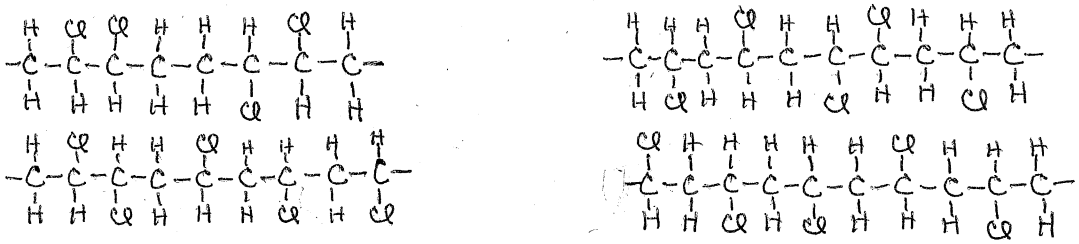
2a. Write rxn-equation for combustion of ethanol:

2b. and for ethanoic acid + magnesium hydroxide:

3. find, **name**, and **circle** (what is required?) all functional groups
* or bracket

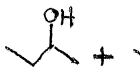


4. Mark each as Random, "head-to-tail, head-to-tail", "head-to-head, tail-to-tail".



5. Write rxn-equation for polymerization of styrene:

6. Draw all 7 isomers (4 alcohols, 3 ethers) for $C_4H_{10}O$; always "answer" with formula like $CH_3CH_2CH_2CH_2OH$, to show what it actually is.

7. Write reactions for: (**7a**) methanoic acid + ethanol, (**7b**) 2-butanol + propanoic acid, (**7c**)  (examples in lower-right corner)

8. Write a reaction-equation for polymerization of $HOOCCH_2CH_2COOH + HOCH_2(CH_2)_8CH_2OH$.

draw ⬡, not ⬠