

Chapter 2: Formative Assessment

1. You need to know and be able to use the generic formulas for: (2 Questions)

- Acyclic alkanes: $C_n H_{2n+2}$
- Cycloalkanes: $C_n H_{2n}$

2. You need to be able to name organic compounds and draw the correct structure given the name. (10 Questions)

- Name an acyclic molecule with 8 carbon atoms in its longest chain: **Octane**
- Name a cycloalkane with 9 carbons: **Cyclononane**
- Draw a 1,2 dimethyl hexane:



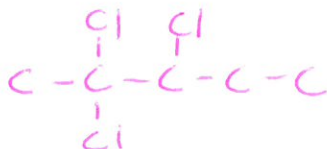
oops! Did you catch Name error? Should be 3-methyl heptane

- Draw a 1ethyl cyclopropane

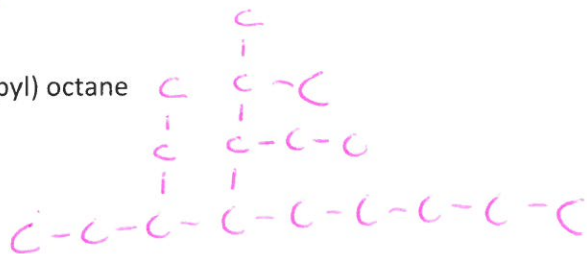


3. You need to be able to name complex branches and halogen substitutions. (7 Questions)

- Draw 2,2,3 trichloropentane



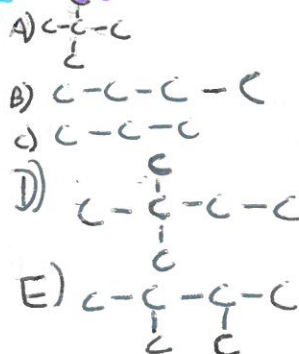
- Draw the complex branch of 3 ethyl 4 (1 ethyl 2 methyl propyl) octane



4. Fill in the table below regarding isomers: (6 Questions)

	Types of Isomers		
	Structural	Configuration	Conformer
How do these form? (How do you recognize them)	bonded in diff order	substituents on opposite sides of ring	single bond rotation or ring flip
Example	diff names/numbering: 1-chloropropane vs. 2-chloropropane	cis/trans cis-1,2-dichlorocyclopropane trans-1,2-dichlorocyclopropane	axial/equatorial boat/chair staggered/eclipse

5. Boiling Points: See Review Questions 5 and 6 from notes. (2 Questions)



6. Boats and Chairs (2 Questions)

	Draw a Boat	Draw a Chair
Label Each with Axial and Equatorial Markings		
Put a Chlorine atom on Carbon 1 Axial and Carbon 3 Equatorial.		
Are the molecules Cis/Trans?		Trans
Ring flip the molecule. Does that change the initial Cis/Trans label?		 still trans

7. Hydrogen Bonding: (1 Question)

- What molecules do not engage in hydrogen bonding? Why?

Alkanes made of only C-H b/c they are non polar

- Is there another force at play? VanderWaals attractions

- What molecules do engage in hydrogen bonding? Why?

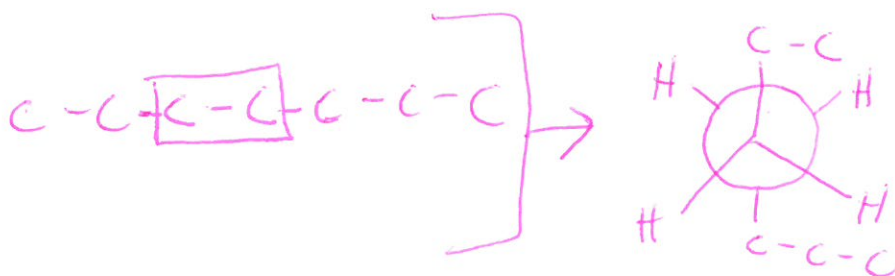
Polar O-H (water, alcohols)
 δ^- O δ^+ H \rightarrow attract each other

8. Newman Projections:

- How does stability tie into Newman projections?

staggered always more stable than eclipsed. Then how far apart large groups are.

- Draw a Newman projection of heptane using Carbon 3 and 4 as a lens. (3 Questions)



9. Combustion Reactions (1 Question)

- Write the equation for the combustion of cyclobutane using abbreviated formula.



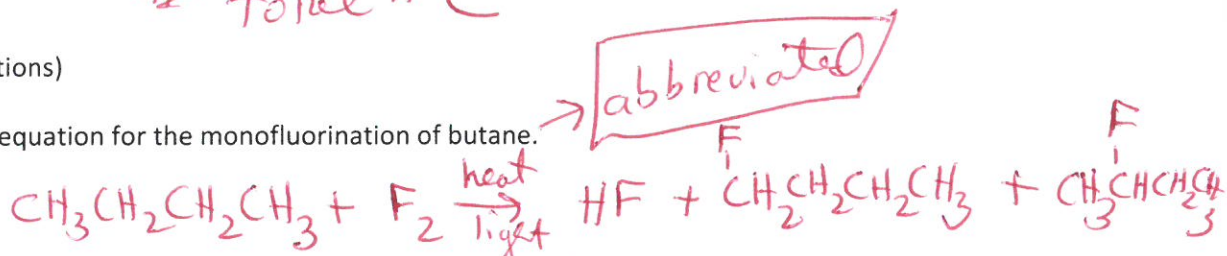
10. Oxidation (1 Question)

- How do you calculate oxidation levels?

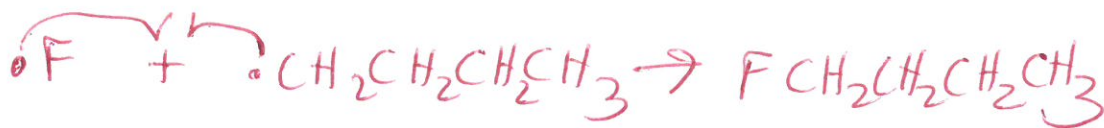
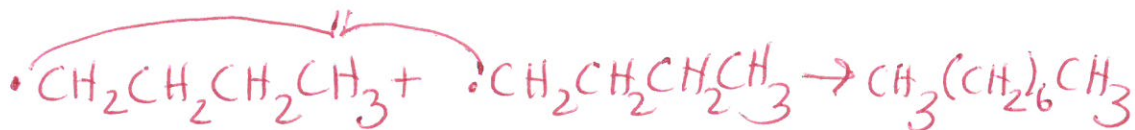
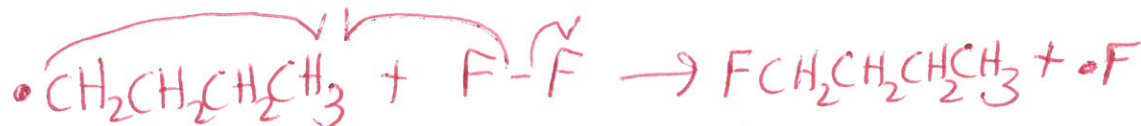
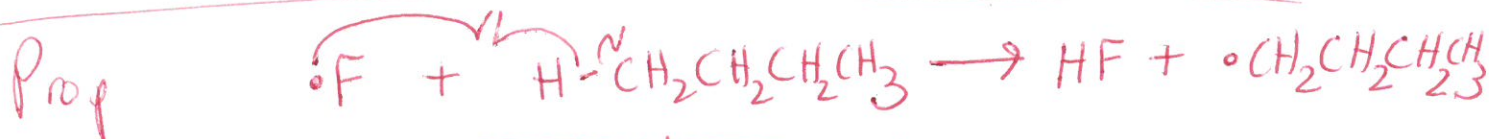
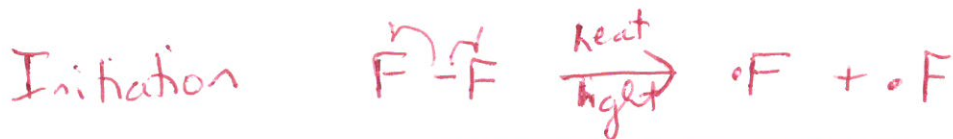
$$\frac{\# \text{ C-O bonds}}{\# \text{ total \# C}}$$

11. Halogenation (4 Questions)

- Write the overall equation for the monofluorination of butane.



- Show me labeling each step, initiation, propagation, and termination the monofluorination of butane. There should be 3 different termination possibilities included. *Use arrows to show bond broken*



- Write the overall equation for the complete fluorination of butane.

