Organic Chemistry Review

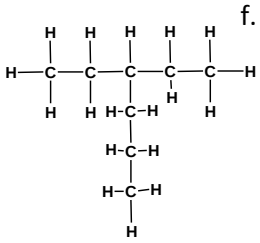
1. C_4H_{10} exists in the form of two structural isomers. Draw the structural formula and write the IUPAC name of each.

2. Draw the condensed straight-chain structures for heptane and nonane.

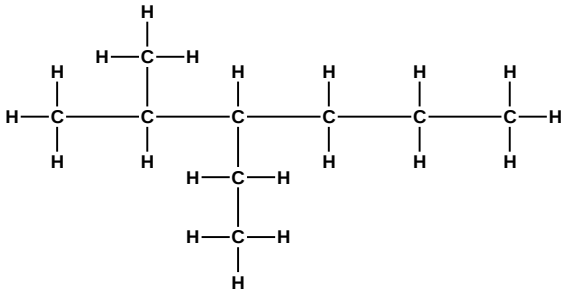
3. Match each name in a-d with the correct structure in e-h.

    a. 3-ethyl-2-methylhexane
    b. 3-ethyl-4-methylhexane
    c. 2,2- dimethylhexane
    d. 3-ethylhexane

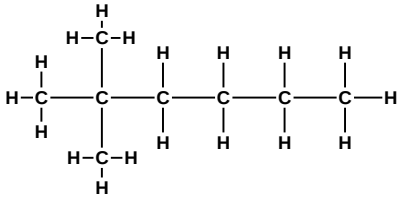
    e.



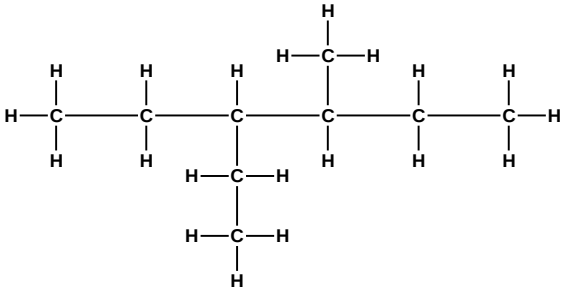
    f.



    g.

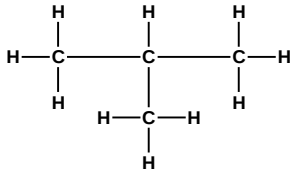


    h.

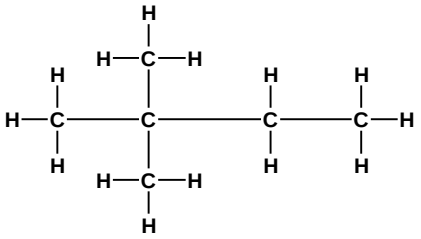


4. Write the names of the following alkanes:

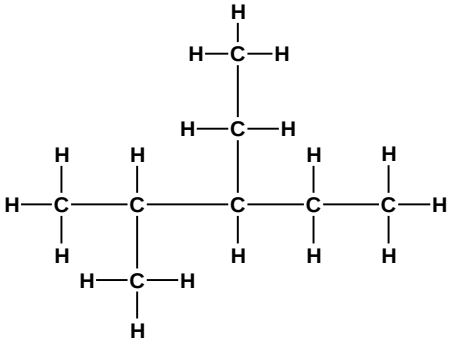
    a.



b.



c.



5. How many hydrogen atoms would be in a molecule of an alkane containing 15 carbon atoms? 50 carbon atoms?

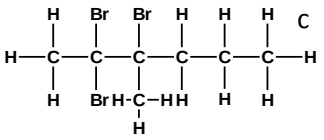
6. Draw the condensed structural formulas of the following compounds:
   a. 2-methylbutane

   b. 3,3-dichlorohexane

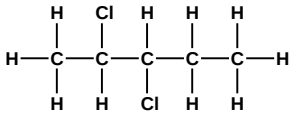
   c. 4-ethyl-2,3,4-trimethyldecane

7. Write the correct name for each of the following structures:

a.



c



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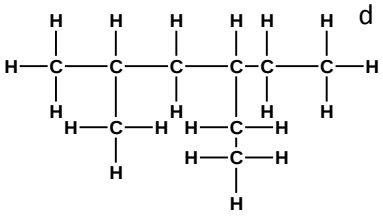
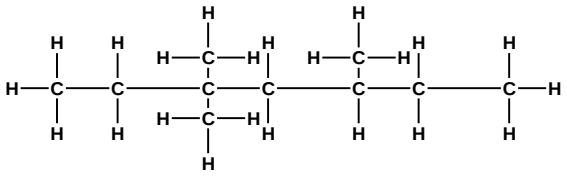
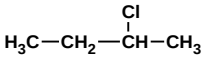
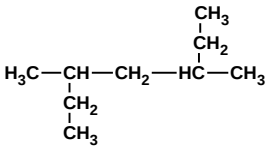
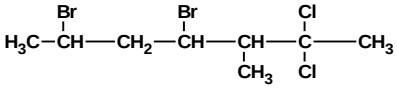
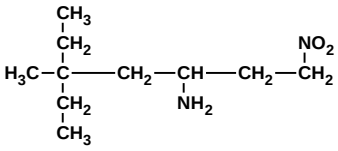
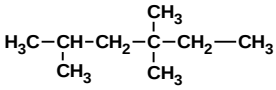
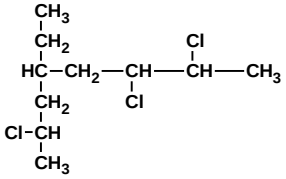
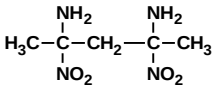
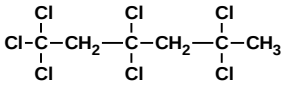
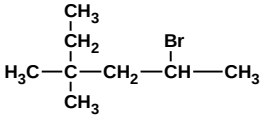


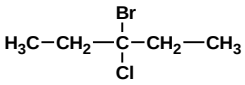
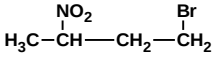
d



Alkanes, Alkenes, Alkynes and Cyclic Hydrocarbons

Name or draw the following compounds. Insert other functional groups to change the compound (and therefore, its name).

	Chemical structure	IUPAC Name
1		
2		
3		
4		
5		
6		
7		
8		
9		

10		
11		
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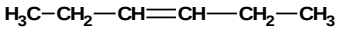
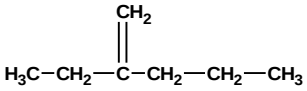
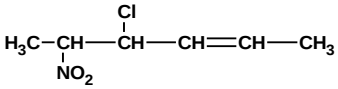
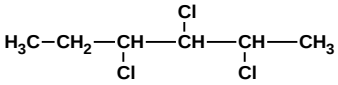
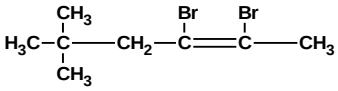
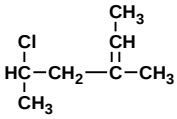
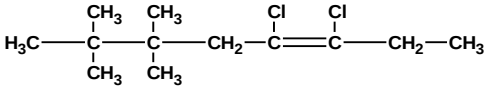
13		3-bromo-2-methylheptane
14		*trans*-1,2-dichloropropene
15		4,4-diamino-2,3,6-trichlorooctane
16		2,2,3,3,4-pentachloropentane
17		
18		
19		
20		

21		
22		
23		
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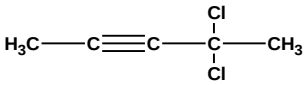
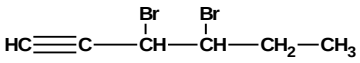
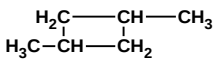
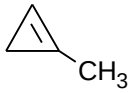
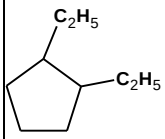
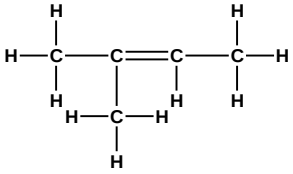
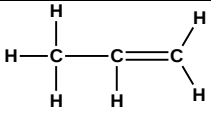
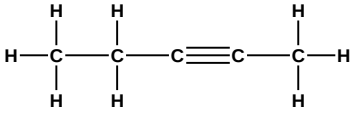
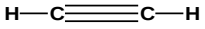
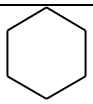
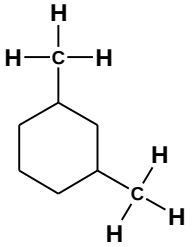
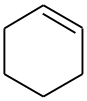
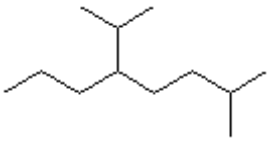
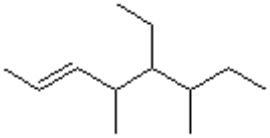
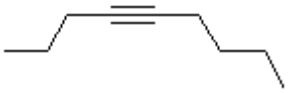
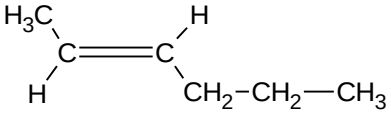
26		4-chloro-2,2-dinitro-3-heptene
27		*trans*-3-octene
28		
29		
30		
31		5,5-dimethyl-2-hexyne
32		5-amino-3-heptyne
33		a. pentane

		b. 2-pentene c. 1-pentyne
34		
35		
36		
37		
38		
40		
41		
42		
43		
44	 (C_6H_{10})	

45	 ($C_{12}H_{26}$)	(recall that in line diagrams, lines represent carbon-carbon bonds; this contains isopropyl)
46	 ($C_{12}H_{24}$)	
47	 (C_9H_{16})	
48		1,3-diaminopropane (line diagram)
49		*trans*-5-ethyl-4,5-dimethyl-2-heptene (line diagram)
50		(indicate if it is *cis or trans* isomer)

please remember to try and add functional groups to the above compounds
Add a –COOH group or make your own amine! It's easy to do...you could try with a partner

2. Make a chart like the following on a separate piece of paper. Fill it in with each organic compound's name.

Organic Compound	General Structure	Suffix/Prefix	Sample Names

3. What is the name for a pair of molecules with the same molecular and structural formulas, but that are non-superimposable mirror images?

5. Draw structural diagrams of all C_6H_{14} isomers. Name these structures.

9. Draw the resulting polymer from the following monomers. What type of polymerization occurs when they link?