

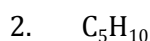
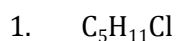
18. ORGANIC CHEMISTRY

CHE 112 Q & A

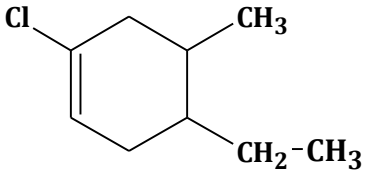
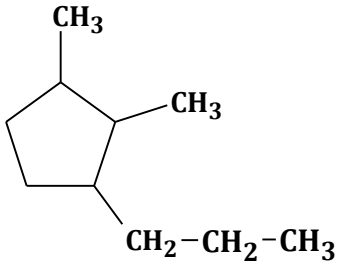
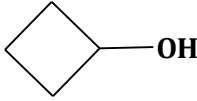
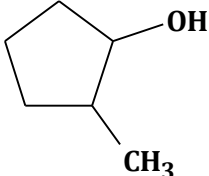
These problems are intended to *supplement* the problems in the textbook, not *replace* them.

Questions

Give names and draw condensed structural formulas for all of the different isomers for these compounds.



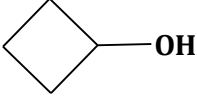
Give IUPAC names for the following.

<p>3.</p> $\begin{array}{ccccccc} & & Cl & & & & \\ & & & & & & \\ CH_3 & - & CH & - & CH & - & CH_2 - CH - CH_2 - CH_3 \\ & & & & & & \\ & & Cl & & & & CH_3 \end{array}$	<p>10.</p> $\begin{array}{ccccccc} CH_3 & - & CH & - & CH_2 & - & CH & - & CH_3 \\ & & & & & & & & \\ & & Cl & & & & OH & & \end{array}$
<p>4.</p> $\begin{array}{ccccccc} & & CH_3 & & & & \\ & & & & & & \\ CH_3 & - & C & - & CH_2 & - & CH_3 \\ & & & & & & \\ & & CH_2 - CH_3 & & & & \end{array}$	<p>11.</p> 
<p>5.</p> $\begin{array}{ccccccccccc} & & & & Br & & & & I & & CH_3 \\ & & & & & & & & & & \\ CH_3 & - & CH_2 & - & C & - & CH_2 & - & CH & - & CH & - & C & - & CH_3 \\ & & & & & & & & & & & & & \\ & & & & \triangle & & & & Br & & & & CH_3 & \\ & & & & & & & & & & & & & \end{array}$	<p>12.</p> $\begin{array}{ccccccccccc} & & & & & & CH_3 & & & & CH_3 \\ & & & & & & & & & & \\ CH \equiv C & - & CH_2 & - & C & - & CH_2 & - & CH_2 & - & CH_2 & - & CH_2 & - & Br \\ & & & & & & & & & & & & & \\ & & & & & & CH_3 & & & & & & & \end{array}$
<p>6.</p> $\begin{array}{ccccccc} & & Cl & & & & \\ & & & & & & \\ Cl & - & C & - & CH_3 \\ & & & & & & \\ & & Cl & & & & \end{array}$	<p>13.</p> $\begin{array}{ccccccc} CH_3 & - & CH_2 & - & C \equiv C & - & CH & - & CH_3 \\ & & & & & & & & \\ & & & & & & CH_3 & & \end{array}$
<p>7.</p> 	<p>14.</p> $\begin{array}{ccccccc} & & & & & & Cl \\ & & & & & & \\ CH_3 & - & CH_2 & & & & CH_2 & - & CH & - & CH_2 & - & CH_3 \\ & & & & & & & & & & & & \\ & & & & & & C = C & & & & & & \\ & & & & & & & & & & & & \\ & & & & & & H & & & & & & H \end{array}$
<p>8.</p> $\begin{array}{ccccccc} CH_2 = CH & - & CH & - & CH_2 & - & CH_3 \\ & & & & & & \\ & & & & & & CH_3 \end{array}$	<p>15.</p> 
<p>9.</p> $\begin{array}{ccccccc} CH_3 & - & CH_2 & - & CH_2 & & & & Cl \\ & & & & & & & & \\ & & & & & & C = C & & \\ & & & & & & & & \\ & & & & & & Cl & & CH_3 \end{array}$	<p>16.</p> 

Draw condensed structural formulas for the following.

- | | |
|---|-----------------------------------|
| 17. 1,2,3-tribromopropane | 21. 3,4-diiodocyclopentene |
| 18. 2-cyclobutyl-3,6-diethyl-4-propylnonane | 22. cis-3-heptene |
| 19. 1,3-dichloro-4-isopropylcyclohexane | 23. 4,7-diethyl-5-chloro-2-decyne |
| 20. trans-1,4-dichloro-2-butene | 24. 3-methyl-2-butanol |

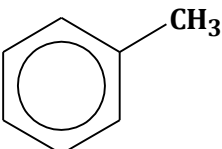
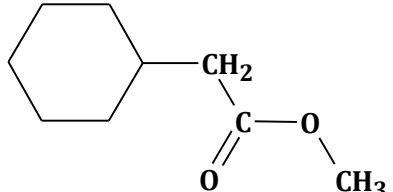
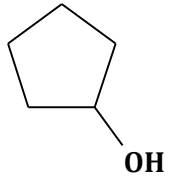
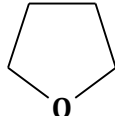
Give common names for the following.

25.	$\text{CH}_3-\text{CH}=\text{CH}_2$	29.	$\text{CH}_3-\text{NH}-\text{CH}_3$
26.	$\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{OH}$	30.	
27.	$\text{CH}_3-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-\text{CH}_3$	31.	$\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_3$
28.	$\text{HC}\equiv\text{CH}$	32.	$\text{CH}_3-\underset{\text{CH}_3}{\text{CH}}-\underset{\text{CH}_3}{\text{N}}-\text{CH}_2-\text{CH}_3$

Draw condensed structural formulas for the following.

- | | | |
|-----------------------|-------------------------|-----------------------------------|
| 33. isopropyl alcohol | 36. methyl pentyl ether | 38. cyclobutyl cyclopropyl ketone |
| 34. ethylene | 37. butylethylamine | 39. octyl alcohol |
| 35. triethylamine | | |

Identify the primary functional group or structural feature for the following molecules. Choose from these: alkene, alkyne, aromatic hydrocarbon, alcohol, ether, aldehyde, ketone, carboxylic acid, ester, amine, amide.

40.	$\text{CH}_3-\text{CH}_2-\underset{\text{CH}_3}{\text{CH}}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$	44.		48.	$\text{CH}_3-\underset{\text{CH}_3}{\text{N}}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$
41.		45.	$\text{CH}_3-\text{CH}_2-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH}$	49.	
42.	$\text{CH}_3-\text{CH}_2-\underset{\text{CH}_3}{\text{CH}}-\text{C}\equiv\text{C}-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_3$	46.	$\overset{\text{O}}{\parallel}{\text{HC}}-\text{CH}_2-\text{CH}_3$	50.	
43.	CH_3-NH_2	47.	$\text{CH}_2=\underset{\text{CH}_3}{\text{CH}}-\text{CH}-\text{CH}_3$		

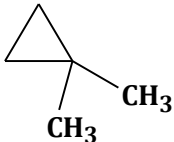
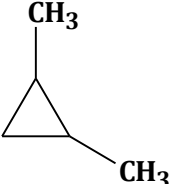
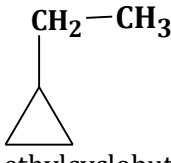
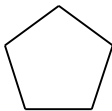
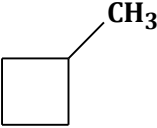
Answers

If you cannot figure out how to get the correct answer, go to your instructor, Science Tutoring Center, etc.

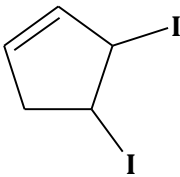
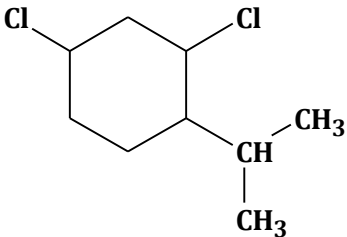
1.

$\begin{array}{c} \text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_3 \\ \\ \text{Cl} \\ \text{1-chloropentane} \end{array}$	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3-\text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_3 \\ \\ \text{Cl} \\ \text{1-chloro-3-methylbutane} \end{array}$	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3-\text{CH}-\text{CH}-\text{CH}_3 \\ \\ \text{Cl} \\ \text{2-chloro-3-methylbutane} \end{array}$
$\begin{array}{c} \text{CH}_3-\text{CH}_2-\text{CH}-\text{CH}_2-\text{CH}_3 \\ \\ \text{Cl} \\ \text{3-chloropentane} \end{array}$	$\begin{array}{c} \text{CH}_3-\text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_3 \\ \\ \text{Cl} \\ \text{2-chloropentane} \end{array}$	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3-\text{C}-\text{CH}_2-\text{Cl} \\ \\ \text{CH}_3 \\ \text{1-chloro-2,2-dimethylpropane} \end{array}$
$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3-\text{C}-\text{CH}_2-\text{CH}_3 \\ \\ \text{Cl} \\ \text{2-chloro-2-methylbutane} \end{array}$	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_2-\text{CH}-\text{CH}_2-\text{CH}_3 \\ \\ \text{Cl} \\ \text{1-chloro-2-methylbutane} \end{array}$	

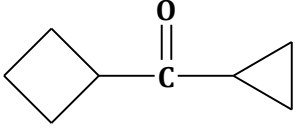
2.

$\begin{array}{c} \text{CH}_2=\text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_3 \\ \text{1-pentene} \end{array}$	$\begin{array}{c} \text{CH}_3 \quad \text{CH}_2-\text{CH}_3 \\ \diagdown \quad / \\ \text{C}=\text{C} \\ / \quad \diagdown \\ \text{H} \quad \text{H} \\ \text{cis-2-pentene} \end{array}$	$\begin{array}{c} \text{CH}_3 \quad \text{H} \\ \diagdown \quad / \\ \text{C}=\text{C} \\ / \quad \diagdown \\ \text{H} \quad \text{CH}_2-\text{CH}_3 \\ \text{trans-2-pentene} \end{array}$
$\begin{array}{c} \text{CH}_2=\text{C}-\text{CH}_2-\text{CH}_3 \\ \\ \text{CH}_3 \\ \text{2-methyl-1-butene} \end{array}$	$\begin{array}{c} \text{CH}_3-\text{C}=\text{CH}-\text{CH}_3 \\ \\ \text{CH}_3 \\ \text{2-methyl-2-butene} \end{array}$	$\begin{array}{c} \text{CH}_2=\text{CH}-\text{CH}-\text{CH}_3 \\ \\ \text{CH}_3 \\ \text{3-methyl-1-butene} \end{array}$
 <p>1,1-dimethylcyclopropane</p>	 <p>1,2-dimethylcyclopropane</p>	 <p>ethylcyclobutane</p>
 <p>cyclopentane</p>	 <p>methylcyclobutane</p>	

3. 2,3-dichloro-5-methylheptane
 4. 3,3-dimethylpentane
 5. 4,6-dibromo-6-cyclopropyl-3-iodo-2,2-dimethyloctane
 6. 1,1,1-trichloroethane
 7. 1,2-dimethyl-3-propylcyclopentane
 8. 3-methyl-1-pentene
 9. trans-2,3-dichloro-2-hexene
 10. 4-chloro-2-pentanol
 11. 1-chloro-4-ethyl-5-methylcyclohexene
 12. 8-bromo-4-isopropyl-4-methyl-1-octyne
 13. 2-methyl-3-hexyne
 14. cis-6-chloro-3-octene
 15. cyclobutanol
 16. 2-methylcyclopentanol

17.	$ \begin{array}{c} \text{CH}_2-\text{CH}-\text{CH}_2 \\ \quad \quad \\ \text{Br} \quad \text{Br} \quad \text{Br} \end{array} $	21.	
18.	$ \begin{array}{c} \text{CH}_2\text{CH}_3 \quad \text{CH}_2\text{CH}_3 \\ \quad \quad \\ \text{CH}_3-\text{CH}-\text{CH}-\text{CH}-\text{CH}_2-\text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_3 \\ \quad \quad \quad \\ \text{Cyclobutane} \quad \text{CH}_2\text{CH}_2\text{CH}_3 \end{array} $	22.	$ \begin{array}{c} \text{CH}_3-\text{CH}_2 \quad \quad \text{CH}_2-\text{CH}_2-\text{CH}_3 \\ \diagdown \quad \quad \diagup \\ \text{C}=\text{C} \\ \diagup \quad \quad \diagdown \\ \text{H} \quad \quad \quad \text{H} \end{array} $
19.		23.	$ \begin{array}{c} \text{Cl} \\ \\ \text{CH}_3-\text{C}\equiv\text{C}-\text{CH}-\text{CH}-\text{CH}_2-\text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_3 \\ \quad \quad \quad \quad \quad \\ \quad \quad \quad \text{CH}_2\text{CH}_3 \quad \text{CH}_2\text{CH}_3 \end{array} $
20.	$ \begin{array}{c} \text{Cl}-\text{CH}_2 \quad \quad \text{H} \\ \diagdown \quad \quad \diagup \\ \text{C}=\text{C} \\ \diagup \quad \quad \diagdown \\ \text{H} \quad \quad \quad \text{CH}_2-\text{Cl} \end{array} $	24.	$ \begin{array}{c} \text{CH}_3-\text{CH}-\text{CH}-\text{CH}_3 \\ \quad \quad \\ \text{OH} \quad \text{CH}_3 \end{array} $

25. propylene
 26. pentyl alcohol
 27. ethyl propyl ether
 28. acetylene
 29. dimethylamine
 30. cyclobutyl alcohol
 31. dibutyl ketone
 32. ethylisopropylmethylamine

33. $\begin{array}{c} \text{CH}_3-\text{CH}-\text{OH} \\ \\ \text{CH}_3 \end{array}$	37. $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{NH}-\text{CH}_2-\text{CH}_3$
34. $\text{CH}_2=\text{CH}_2$	38. 
35. $\begin{array}{c} \text{CH}_3-\text{CH}_2-\text{N}-\text{CH}_2-\text{CH}_3 \\ \\ \text{CH}_2\text{CH}_3 \end{array}$	39. $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{OH}$
36. $\text{CH}_3-\text{O}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_3$	

40. ketone

41. ester

42. alkyne

43. amine

44. aromatic hydrocarbon

45. carboxylic acid

46. aldehyde

47. alkene

48. amide

49. alcohol

50. ether