Name: KEY Official Class: _____ Date: _____

Teacher: _____ Period: _____ Class: _____

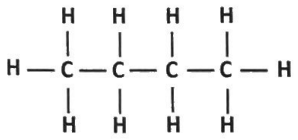
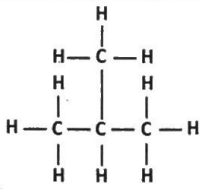
Isomers

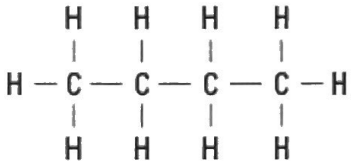
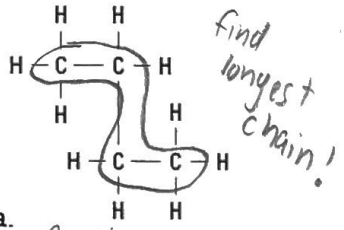
YOYO: On a separate paper, draw as many different structures using the formula C_5H_{12}. Each compound you draw must have 5 carbons and 12 hydrogens.

What is an isomer?

- Isomers are compounds with the same chemical formula, but different molecular structures.
- A good tip: If you are not sure if something is an isomer, name it. If it has a different name then the original compound, it IS an isomer. If the name is the same, it is NOT and isomer. Some things may looks like isomers but aren't actually.

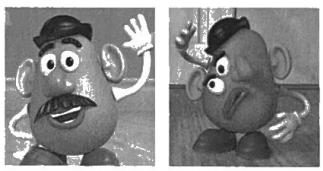
Are These Isomers?

Compound 1	Compound 2	Are these isomers? Explain.
 Formula: C_4H_{10} Name: butane	 Formula: C_4H_{10} Name: 2-methyl propane	yes! same formula different structure

Compound 1	Compound 2	Are these isomers? Explain.
 Formula: C_4H_{10} Name: butane	 Formula: C_4H_{10} Name: butane	NO! same formula & same structure - just because it is bent - it is still butane - remember how to name branches

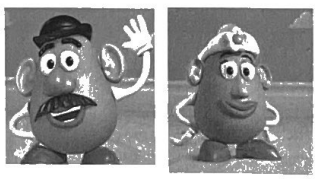
Check Point Question:

1. Are these pictures of Mr. Potato Head Considered to be isomers? Explain in terms of structure.



Yes - same pieces, different arrangement of pieces/ different structure

2. Are these pictures of Mr. and Mrs. Potato Head Considered to be isomers? Explain in terms of structure.



NO - different pieces used (different formula)

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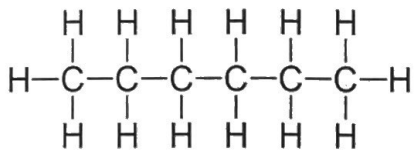
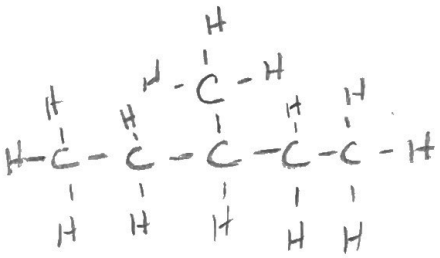
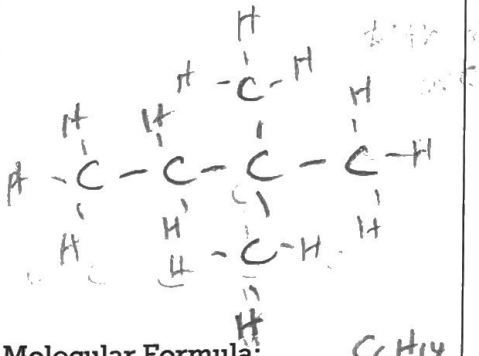
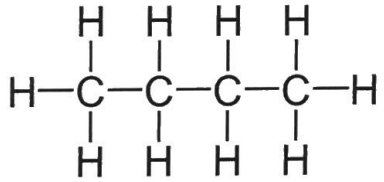
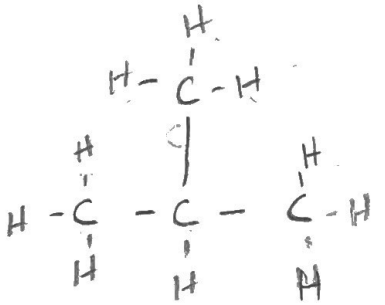
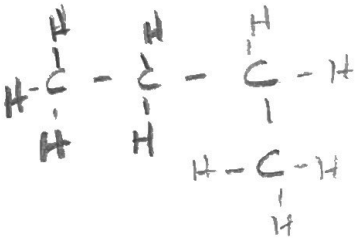
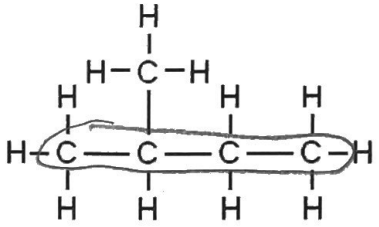
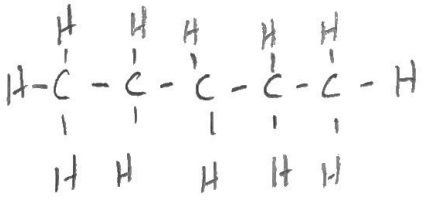
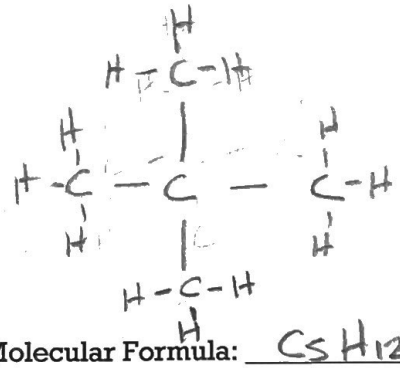
Creating Alkane Isomers

- Use the **same molecular formula**
- Draw a different structural formula
  - If the name of the compound is different but it has the same molecular formula, it is an isomer.

Original Compound	Isomer #1	Isomer #2
		
Molecular Formula: C_6H_{14} Compound Name: hexane	Molecular Formula: C_6H_{14} Compound Name: 3 methyl pentane	Molecular Formula: C_6H_{14} Compound Name: 2,2 dimethyl butane

Original Compound	Isomer #1	Isomer #2
		NOT AN ISOMER 
Molecular Formula: C_4H_{10} Compound Name: butane	Molecular Formula: C_4H_{10} Compound Name: 2-methyl propane	Molecular Formula: C_4H_{10} Compound Name: butane

Original Compound	Isomer #1	Isomer #2
		
Molecular Formula: C_5H_{12} Compound Name: 2 methyl - butane	Molecular Formula: C_5H_{12} Compound Name: pentane	Molecular Formula: C_5H_{12} Compound Name: 2,2 dimethyl propane

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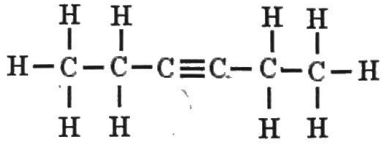
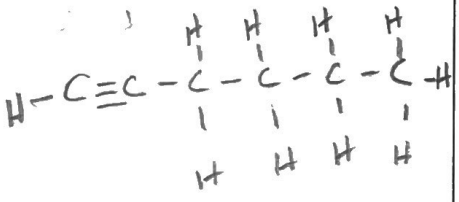
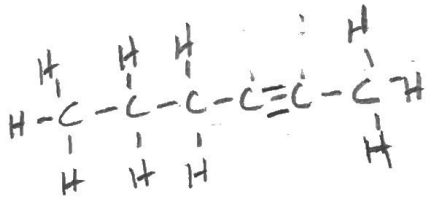
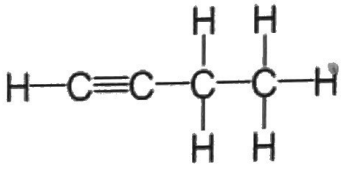
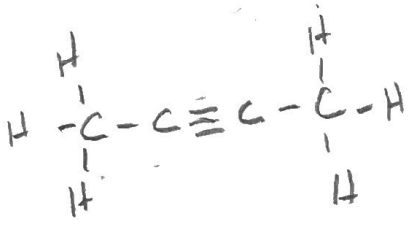
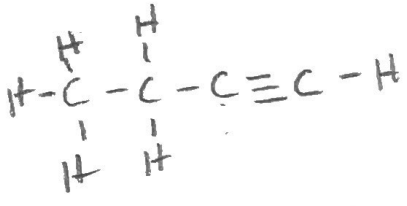
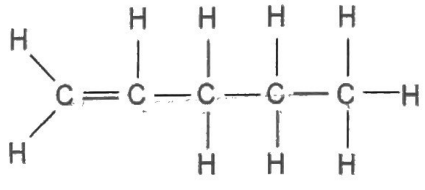
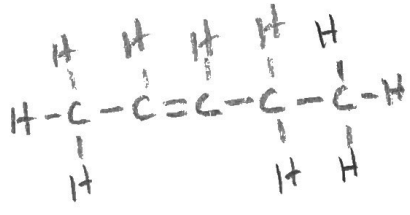
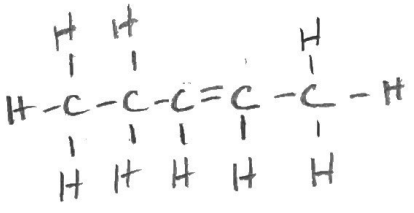
Creating Alkene and Alkyne Isomers

- Use the **same molecular formula**
- Move the location of the double or triple bond
  - *NOTE:* Be careful not to move it into the same position. Remember you can read compounds left to right or right to left.

• Original Compound	Isomer #1	Isomer #2
		★ THERE ARE MORE! 
Molecular Formula: C_6H_{10} Compound Name: 3-hexyne	Molecular Formula: C_6H_{10} Compound Name: 1-hexyne	Molecular Formula: C_6H_{10} Compound Name: 2-hexyne

Original Compound	Isomer #1	Isomer #2
		★ NOT AN ISOMER! 
Molecular Formula: C_4H_6 Compound Name: 1-butyne	Molecular Formula: C_4H_6 Compound Name: 2-butyne	Molecular Formula: C_4H_6 Compound Name: 1-butyne

Original Compound	Isomer #1	Isomer #2
		★ NOT AN ISOMER! 
Molecular Formula: C_5H_{10} Compound Name: 1-pentene	Molecular Formula: C_5H_{10} Compound Name: 2-pentene	Molecular Formula: C_5H_{10} Compound Name: 2-pentene

Name: KEY Official Class: _____ Date: _____

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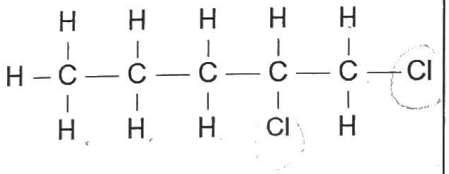
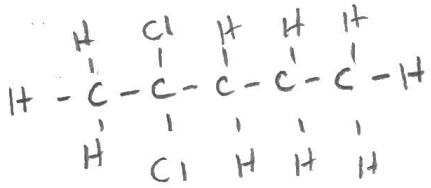
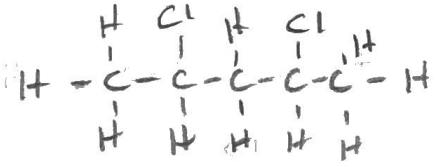
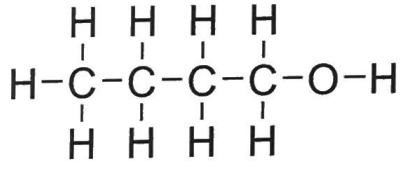
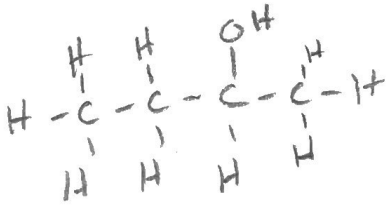
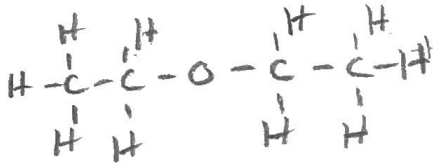
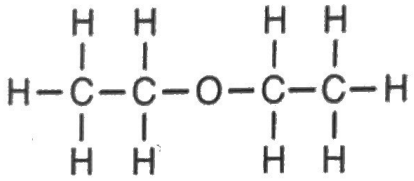
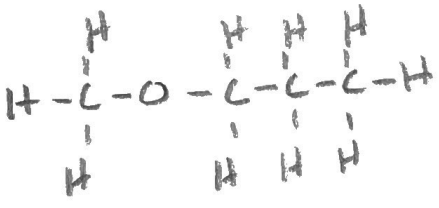
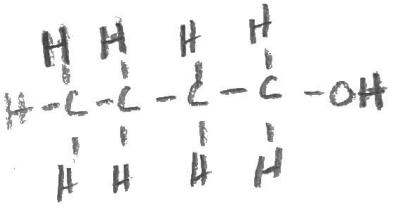
Creating Isomers with Functional Groups

- Use the **same molecular formula**
- Move the location of the functional group (if possible) or shift part of a carbon chain.
- These are a bit more challenging, and only basic isomers with functional groups will be asked.

Original Compound	Isomer #1	Isomer #2
		★ THERE ARE MORE 
Molecular Formula: $C_5H_{10}Cl_2$	Molecular Formula: $C_5H_{10}Cl_2$	Molecular Formula: $C_5H_{10}Cl_2$
Compound Name: 1,2 dichloro pentane	Compound Name: 2,2 dichloropentane	Compound Name: 2,4, dichloro pentane

Original Compound	Isomer #1	Isomer #2
		★ THERE ARE MORE 
Molecular Formula: $C_4H_{10}O$	Molecular Formula: $C_4H_{10}O$	Molecular Formula: $C_4H_{10}O$
Compound Name: 1-butanol	Compound Name: 2-butanol	Compound Name: di ethyl ether

Original Compound	Isomer #1	Isomer #2
		
Molecular Formula: $C_4H_{10}O$	Molecular Formula: $C_4H_{10}O$	Molecular Formula: $C_4H_{10}O$
Compound Name: di ethyl ether	Compound Name: methyl propyl ether	Compound Name: 1-butanol