

Anions or Cations

- Differences:

### Isomer questions:

1. The compounds  $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$  and  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$

- (1) Hydrocarbons (3) allotropes  
(2) isomers (4) carbohydrates

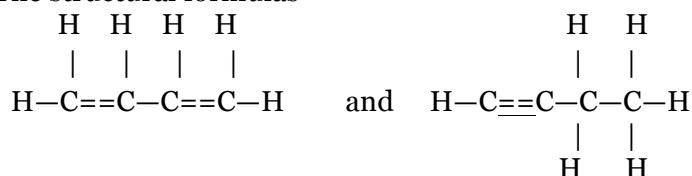
2. The compound  $\text{C}_4\text{H}_9\text{OH}$  is an isomer of

- (1)  $\text{C}_3\text{H}_7\text{COCH}_3$  (3)  $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$   
(2)  $\text{CH}_3\text{COOC}_2\text{H}_5$  (4)  $\text{CH}_3\text{COOH}$

3. If a compound has a molecular formula of  $\text{CH}_2\text{O}_2$ , then its structural formula must be

- (1)  $\text{H}-\text{O}-\text{C}-\text{O}-\text{H}$  (3)  $\begin{array}{c} \text{H}-\text{C}-\text{O}-\text{H} \\ | \\ \text{O} \end{array}$   
(2)  $\begin{array}{c} \text{O}-\text{H} \\ / \\ \text{C} \\ \backslash \\ \text{O}-\text{H} \end{array}$  (4)  $\begin{array}{c} \text{O} \\ || \\ \text{H}-\text{C}-\text{O}-\text{H} \end{array}$

4. The structural formulas



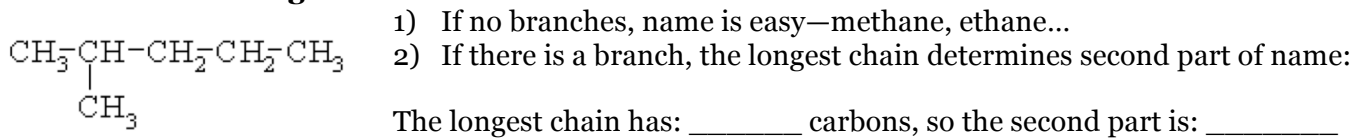
Represent molecules which both are

- (1) halogen addition (3) members of alkynes  
(2) unsaturated hydrocarbons (4) isomers of butane

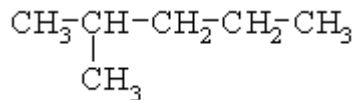
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**Side Chains** are one way to create isomers of hydrocarbons.

**Here is how you name these hydrocarbons:**

#### STEP 1: Find the longest chain of carbons



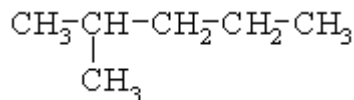
**STEP 2: Assign each carbon in the parent chain a number, starting with the carbon closest to the branch.**



Write in numbers above each carbon in the longest chain.

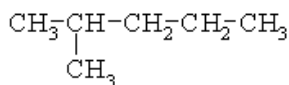
#### STEP 3: How many carbons are in the branch?

- A) Branches of alkanes are always “missing” one hydrogen.  
B) The missing H is where a bond forms with a longer chain.  
C) We name these branches by replacing the -ane prefix with the prefix -yl



**Name of side chain:** \_\_\_\_\_

**STEP 4: The side chain is numbered according to what carbon they come from in the chain.**



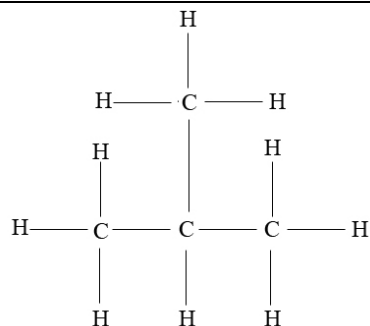
Number of side chain: \_\_\_\_\_

**STEP 5:** If there are more than 1 of a specific chain the prefixes di or tri etc are used.

**STEP 6:** If there are more than two different chains they are put in alphabetical order.

**Final name:** \_\_\_\_\_

### CLASSWORK

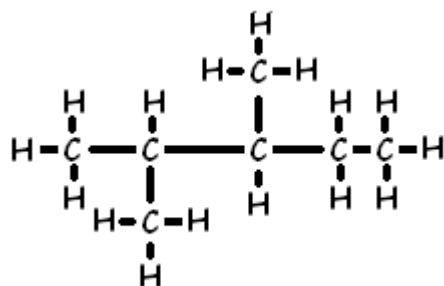
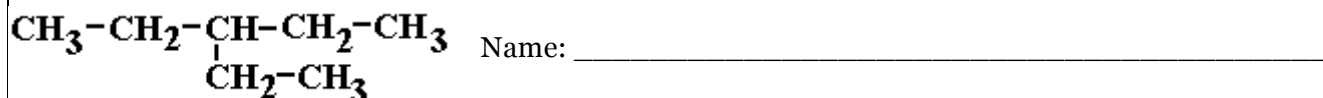


Longest chain: \_\_\_\_\_ carbons; second part of name: \_\_\_\_\_

Number carbons in longest chain: \_\_\_\_\_ number that side chain is attached: \_\_\_\_\_

Name of side chain: \_\_\_\_\_

Full name: \_\_\_\_\_



Name: \_\_\_\_\_

**Draw the following structure:**

2-methylbutane

**Draw the following structure:**

3-ethyl,2-methylpentane

**Draw the following structure:**

2,2-dimethylpropane

## 12.2 HOMEWORK

- Compounds which have the same molecular formula but different molecular structures are called
  - isomers
  - isotopes
  - allotropes
  - homologs
- Which compound is an isomer of  $\text{CH}_3\text{CH}_2\text{OH}$ ?
  - $\text{CH}_3\text{CHO}$
  - $\text{CH}_3\text{COCH}_3$
  - $\text{CH}_3\text{OCH}_3$
  - $\text{CH}_3\text{CH}_2\text{COOH}$
- Which compound is an isomer of  $\text{CH}_3\text{COOCH}_3$ ?
  - $\text{CH}_3\text{OCH}_3$
  - $\text{CH}_3\text{COCH}_3$
  - $\text{CH}_3\text{CH}_2\text{COOH}$
  - $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
- Which compound is an isomer of  $\text{CH}_3\text{COOH}$ ?
  - $\text{HCOOCH}_3$
  - $\text{CH}_3\text{CH}_2\text{COOH}$
  - $\text{CH}_3\text{CH}_2\text{OH}$
  - $\text{CH}_3\text{COOCH}_3$

Name the following:

$\begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\   \quad   \\ \text{CH}_3\text{CHCH}_2\text{CHCH}_3 \end{array}$	b) $\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_2 \\   \\ \text{CH}_3\text{CHCH}_2\text{CH}_2\text{CHCH}_2\text{CHCH}_3 \end{array}$	$\begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\   \quad   \\ \text{CH}_3\text{CHCH}_2\text{CHCH}_2\text{CH}_3 \end{array}$
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Draw the following structural formulas:

2-methyl butane	3-ethyl,2-methylpentane	2,4dimethylhexane
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### Review:

Which formula may represent an unsaturated hydrocarbon?

- $\text{C}_2\text{H}_6$
- $\text{C}_4\text{H}_{10}$
- $\text{C}_3\text{H}_6$
- $\text{C}_5\text{H}_{12}$

Which is a saturated hydrocarbon?

- $\text{C}_3\text{H}_8$
- $\text{C}_2\text{H}_5\text{OH}$
- $\text{C}_6\text{H}_6$
- $\text{C}_2\text{H}_4\text{O}_2$

The compound  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$  belongs to the series that has the general formula

- $\text{C}_n\text{H}_{2n-2}$
- $\text{C}_n\text{H}_n-6$
- $\text{C}_n\text{H}_{2n+2}$
- $\text{C}_n\text{H}_n+6$