

Naming Alkanes

NAME _____

DATE _____

CLASS _____

1 Find the longest chain.

Count the longest continuous chain of carbons. It doesn't have to be straight across the page. This chain gives the parent name.

2 Number the chain.

Start from the end closest to the first branch, so the branches get the lowest possible numbers.

3 Name the branches.

Each branch is an alkyl group: change -ane to -yl (methane becomes methyl). Give each branch the number of the carbon it's attached to.

4 Group identical branches.

Use di- (2), tri- (3) or tetra- (4), and give a number for each one: 2,2-dimethyl, not 2-dimethyl.

5 Put it all together.

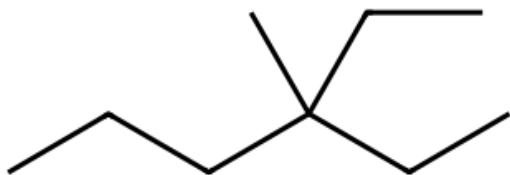
List branches in alphabetical order (ignore di-, tri-), then the parent name. Use commas between numbers and hyphens between numbers and words.

PARENT CHAIN NAMES

1	2	3	4	5	6	7	8	9	10
methane	ethane	propane	butane	pentane	hexane	heptane	octane	nonane	decane

Number of carbons in the chain · name of the alkane

WORKED EXAMPLE



- 1 Longest chain: 6 carbons, so the parent is hexane.
- 2 Number from the end closer to the branches: both branches are on carbon 3.
- 3 Branches: one ethyl group and one methyl group, both on carbon 3.
- 4 Alphabetical order: ethyl before methyl.

3-ethyl-3-methylhexane

Part A: Name It

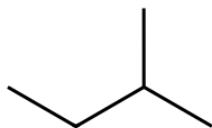
NAME _____

DATE _____

CLASS _____

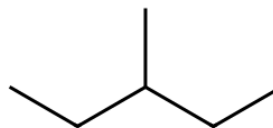
Write the IUPAC name for each alkane. Each corner and line end is a carbon atom. Hint: look for the longest chain first. It may bend!

1.



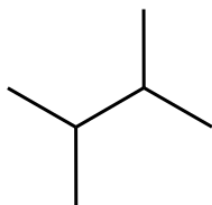
NAME _____

2.



NAME _____

3.



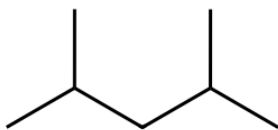
NAME _____

4.



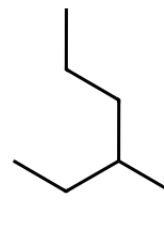
NAME _____

5.



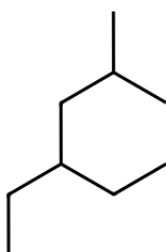
NAME _____

6.



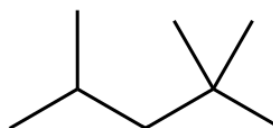
NAME _____

7.



NAME _____

8.



NAME _____

Part B: Draw It

Draw the skeletal (bond-line) structure for each alkane. Circle or highlight the longest chain. Print this page to draw.

1. 2-methylpentane

2. 3,3-dimethylhexane

3. 4-ethyloctane

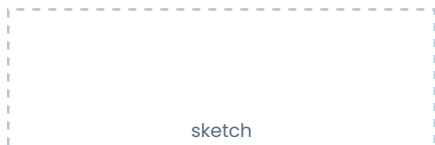
4. 2,3,4-trimethylhexane

5. 4-propylheptane

6. 3-ethyl-2,4-dimethylpentane

Part C: Fix It

Each name below breaks an IUPAC rule. Sketch the structure it describes, write the correct name, and explain what went wrong.

1. 4-methylpentane

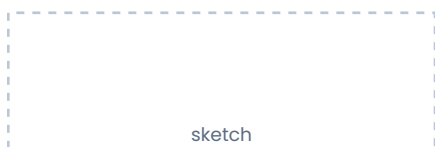
CORRECT NAME _____

WHAT WAS WRONG? _____

2. 2,2-methylbutane

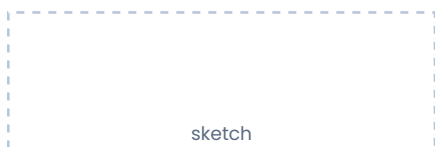
CORRECT NAME _____

WHAT WAS WRONG? _____

3. 2-methyl-3-ethylpentane

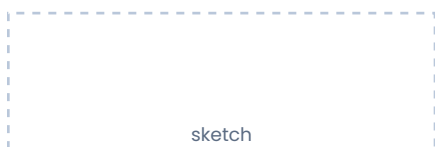
CORRECT NAME _____

WHAT WAS WRONG? _____

4. 1-methylbutane

CORRECT NAME _____

WHAT WAS WRONG? _____

5. 2-ethylpropane

CORRECT NAME _____

WHAT WAS WRONG? _____

6. 3,4-dimethylpentane

CORRECT NAME _____

WHAT WAS WRONG? _____