Draw the structure of \( \text{CH}_3\text{O}_2\text{C(CH}_2\text{)}_2\text{CH(CH}_3\text{)}_2 \).

E. None of the above
Exam 1

- **Time:**
  - Friday, **May 27 @ 10:30 AM**
  - There are no alternate exam arrangements

- **Location – Soc/Anthro Testing Center**

- **Practice Exams are Posted**
  - B4-02-90 Exam 1A (Practice)
  - B4-02-91 Exam 1B Drawing (Practice)

- **YouTube Tutorials will be turned off at 10:00 am on Friday, May 27 and will remain off.**
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Naming Compounds

IUPAC Nomenclature
- International Union of Pure and Applied Chemistry
- Developed by fuddy, duddy old men in Europe
- Will always result in a unique name
- Name focuses on the carbon part of the molecule

Common Nomenclature
- Nicknames
- Name often arises
  - from isolation source
  - Location of usage
  - Name not necessarily unique
- Name focuses on non-carbon part of the molecule
IUPAC Nomenclature

- $(C_1)$ Methane – $CH_4$
- $(C_2)$ Ethane – $CH_3CH_3$
- $(C_3)$ Propane
- $(C_4)$ Butane
- $(C_5)$ Pentane
- $(C_6)$ Hexane
- $(C_7)$ Heptane
- $(C_8)$ Octane
- $(C_9)$ Nonane
- $(C_{10})$ Decane
IUPAC Nomenclature

1. Find the longest continuous chain – apply parent hydrocarbon name containing the functional group

2. Identify substituents and name them
   a. Change “-ane” to “-yl” (e.g., methyl)
   b. No space between substituent name and parent hydrocarbon name (e.g., methylpropane)
   c. Two substituents – di; Three substituents – tri; Four Substituents – tetra.
IUPAC Nomenclature

4. Arrange the substituents in alphabetical order
   a. Alphabetize on name (i.e., ignore di, tri, tetra, sec, tert)
   b. Number the substituents so as to give the lowest possible number (not the sum of the numbers)
   c. Find the longest continuous chain – apply parent hydrocarbon name

   ![Diagram of a molecule]

   5-ethyl-3-methyloctane, NOT 4-ethyl-6-methyloctane

d. In writing the name, separate numbers from text with a “-” and numbers from other numbers with a “,”.

e. If a compound has two or more chains of the same length, the parent hydrocarbon is the chain with the greatest number of substituents
2-methylpentane

3-methylpentane

hexane

2-methylbutane

2-methylbutane "1-methylbutane"

2,3-dimethylbutane

2,2-dimethylbutane

Unambiguous - no other possibilities number is not needed.
Correct in the WE-LEARN System is methylbutane.
Halogen as substituents change “ine” to “o”

IUPAC

\[
\begin{align*}
\text{Br} & \quad \text{Common space} \\
\text{bromoethane} & \quad \text{ethyl bromide} \\
\text{Br} & \quad \text{propyl bromide} \\
\text{Br} & \quad \text{isopropyl bromide} \\
\text{Br} & \quad \text{butyl bromide} \\
\text{Br} & \quad \text{sec-butyl bromide}
\end{align*}
\]
Give the IUPAC name for the following compound.

A. 5-bromopentane
B. 1-bromopentane
C. Bromopentane
D. Pentyl bromide
E. The correct name is not shown here.
Give the IUPAC name for the following compound.

2016-05-18 Q3

A. 3-methyl-4-sec-butylhexane
B. 4-sec-butyl-3-methylhexane
C. 4-ethyl-3,5-dimethylheptane
D. 3,5-dimethyl-4-ethylheptane
E. The correct answer is not shown here.
Give the IUPAC name for the following compound.

A. 1-Cyclohexyl-2-methylpropane
B. 2-Methyl-1-cyclohexylpropane
C. 2-Methylpropylcyclohexane
D. sec-Butylcyclohexane
E. Isopropylcyclohexane
F. t-Butylcyclohexane

G. The correct answer is not shown here.

iso butyl cyclohexane
Which of the following compounds is 2-methylpentane?

A. \((\text{CH}_3)_2\text{CHCH}_2\text{CH}_2\text{CH}_3\)
B. \((\text{CH}_3)_2\text{CHCH}_2\text{CH}_2\text{CH}_2\text{CH}_3\)
C. \((\text{CH}_3)_2\text{CHCH}_2\text{CH}_3\)
D. \((\text{CH}_3)_2\text{CHCH}_3\)
E. None of the above choices is correct.
Which of the following compounds is cis-1,2-dimethylcyclopentane?

A  B  C

D  E  F

G  H  I

J. The correct answer is not shown here.