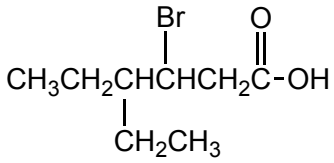
CONCEPT: NAMING CARBOXYLIC ACIDS

- **Recall:** Carboxylic acids possess a carbonyl carbon connected to a _____ (OH) group.
- Set of rules for naming carboxylic acids are similar to aldehydes.
  - □ The carbonyl carbon of the carboxylic acid is always numbered ___.
  - □ Modify the ending from -____ to -_____.

location-substituent-parent-modifier

EXAMPLE: Provide the systematic name for the following carboxylic acid.



STEP 1: Find the longest carbon chain (parent chain) and assign name according to the prefixes and modifier.

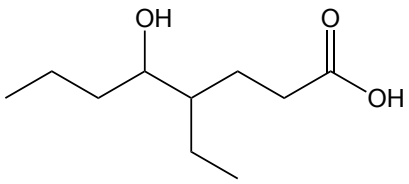
- □ Parent chain should include the COOH group and have _____ number of carbons.
- □ If a tie between longest chains, choose chain with more substituents.

STEP 2: Assign name to all the substituents.

STEP 3: Start numbering the chain at the carbon of the _____ group.

STEP 4 to 6: Repeat steps from previous naming topics.

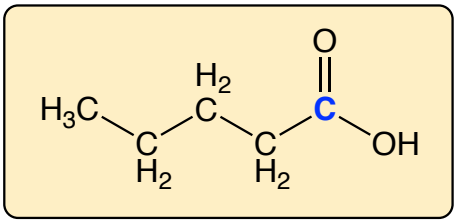
PRACTICE: If the substituent name of the OH group is hydroxy in the presence of a carboxylic acid, provide the systematic name for the following compound.



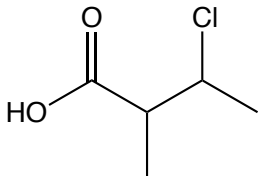
CONCEPT: NAMING CARBOXYLIC ACIDS

Common Naming

- Simple carboxylic acid name consists of a common name prefix and ends with -_____.
- Substituted carboxylic acids utilize Greek symbols (_____) to indicate location of substituents.
  - □ Greek symbols are assigned to carbons adjacent to the _____ **carbon**.



EXAMPLE: Provide a common name for the following carboxylic acid.



STEP 1: Find the longest carbon chain and assign name according to common name prefixes and ending.

- □ Parent chain should include the COOH group and have _____ number of carbons.
- □ If a tie between longest chains, choose chain with more substituents.

STEP 2: Assign name to all the substituents.

STEP 3: Assign Greek _____ (location) for each substituent.

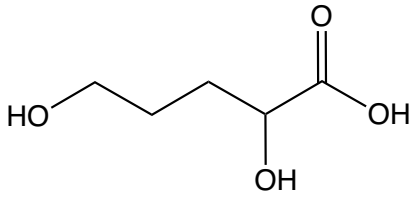
- □ When more than 1 identical substituents, use prefixes: _____ 2, _____ 3, _____ 4.

STEP 4: Name substituents in _____ order; prefixes do not count.

STEP 5: Use _____ between Greek symbols, and _____ to separate Greek symbols from letters.

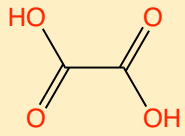
- □ Letters are not separated from letters.

PRACTICE: Provide a common name for following molecule.



CONCEPT: NAMING CARBOXYLIC ACIDS

Naming Dicarboxylic Acids



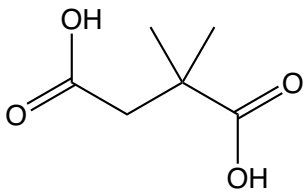
IUPAC: ethane_____ acid
Common: oxalic acid

- Dicarboxylic acids contain 2 _____ groups.
- IUPAC: same rules as carboxylic acids but replace -____ suffix with -_____.
  - □ Parent chain name is not modified.
- Common names are used more often for dicarboxylic acids.

MEMORY TOOL: **O**h **M**y **S**uch **G**ood **A**pple **P**ie.

Dicarboxylic Acid Common Names			
Oxalic acid	HOOCCOOH	Glutaric acid	$HOOC(CH_2)\_COOH$
Malonic acid	$HOOCCH_2COOH$	Adipic acid	$HOOC(CH_2)\_COOH$
Succinic acid	$HOOC(CH_2)\_COOH$	Pimelic acid	$HOOC(CH_2)\_COOH$

EXAMPLE: Provide a common name for the following carboxylic acid.

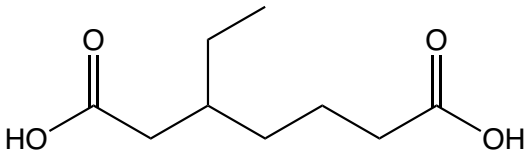


STEP 1: Find the longest carbon chain and assign name according to common name prefixes.

- □ Parent chain should include both _____ groups.

STEP 2-5: Repeat from Common Naming of Carboxylic Acids.

PRACTICE: Give IUPAC name for the following dicarboxylic acid.



CONCEPT: NAMING CARBOXYLIC ACIDS

PRACTICE: Draw a structure for the given common name: α-bromo-β-hydroxyadipic acid.