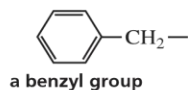
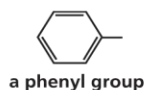


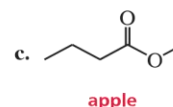
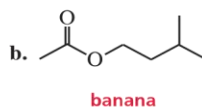
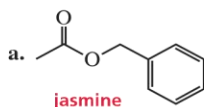
Visit our website for more information
<https://chemistwizards.com/>

USE THE STRATEGY

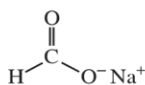


PROBLEM 1 ♦

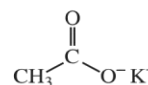
The aromas of many flowers and fruits are due to esters such as those shown in this problem. What are the common names of these esters? (Also see Problem 57.)



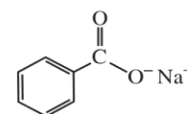
Salts of carboxylic acids are named similarly to the way esters are named. That is, the cation is named first, followed by the name of the acid, again with “ic acid” replaced by “ate.”



systematic name: sodium methanoate
 common name: sodium formate

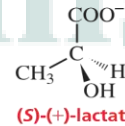
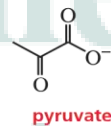
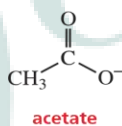


potassium ethanoate
 potassium acetate

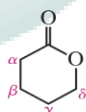


sodium benzenecarboxylate
 sodium benzoate

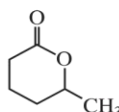
Frequently, the name of the cation is omitted.



Cyclic esters are called **lactones**. In systematic nomenclature, they are named as “2-oxacycloalkanes” (“oxa” designates the oxygen atom; “one” designates the doubly bonded oxygen). For their common names, the length of the carbon chain is indicated by the common name of the carboxylic acid, and a Greek letter specifies the carbon to which the oxygen is attached. Thus, six-membered ring lactones are δ -lactones (the carboxyl oxygen is on the δ -carbon), five-membered ring lactones are γ -lactones, and four-membered ring lactones are β -lactones.



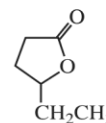
2-oxacyclohexanone
 δ -valerolactone
 a δ -lactone



3-methyl-2-oxacyclohexanone
 δ -caprolactone
 a δ -lactone



2-oxacyclopentanone
 γ -butyrolactone
 a γ -lactone

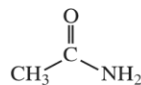


3-ethyl-2-oxacyclopentanone
 γ -caprolactone
 a γ -lactone

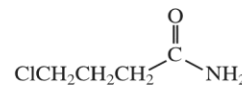
Naming Amides

LEARN THE STRATEGY

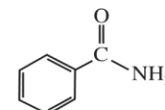
An **amide** has an NH_2 , NHR , or NR_2 group in place of the OH group of a carboxylic acid. Amides are named by replacing “oic acid,” “ic acid,” or “ylic acid” of the acid name with “amide.”



systematic name: ethanamide
 common name: acetamide

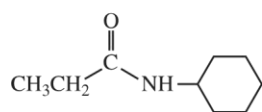
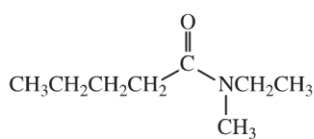
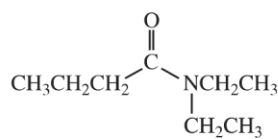


4-chlorobutanamide
 γ -chlorobutyramide

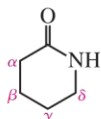
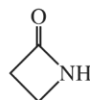


benzenecarboxamide
 benzamide

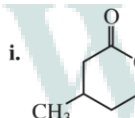
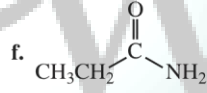
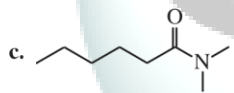
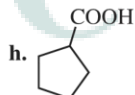
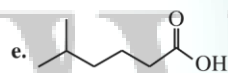
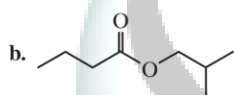
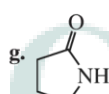
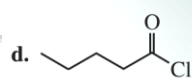
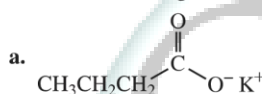
If a substituent is bonded to the nitrogen, the name of the substituent is stated first (if there is more than one substituent bonded to the nitrogen, they are stated alphabetically), followed by the name of the amide. The name of each substituent is preceded by an N to indicate that the substituent is bonded to a nitrogen.

**N-cyclohexylpropanamide****N-ethyl-N-methylpentanamide****N,N-diethylbutanamide**

Cyclic amides are called **lactams**. Their nomenclature is similar to that of lactones. In systematic nomenclature, they are named as “2-azacycloalkanones” (“aza” designates the nitrogen atom). For their common names, the length of the carbon chain is indicated by the common name of the carboxylic acid, and a Greek letter specifies the carbon to which the nitrogen is attached.

**2-azacyclohexanone**
 δ -valerolactam
a δ -lactam**2-azacyclopentanone**
 γ -butyrolactam
a γ -lactam**2-azacyclobutanone**
 β -propiolactam
a β -lactam**PROBLEM 2** ♦

Name the following:

**USE THE STRATEGY****PROBLEM 3**

Draw the structure for each of the following:

a. phenyl acetate

d. *N*-benzylethanamide

g. ethyl 2-chloropentanoate

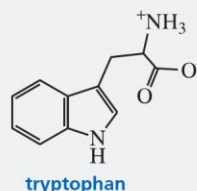
b. γ -caprolactame. γ -methylcaproic acid

h. cyclohexanecarbonyl chloride

c. sodium formate

f. β -bromobutyramidei. α -chlorovaleric acid**Nature's Sleeping Pill**

Melatonin, a naturally occurring amide, is a hormone synthesized by the pineal gland from the amino acid tryptophan. (An amino acid is an α -aminocarboxylic acid.) Melatonin regulates the dark–light clock in our brains that governs such things as the sleep–wake cycle, body temperature, and hormone production.



Melatonin levels increase from evening to night and then decrease as morning approaches. People with high levels of melatonin sleep longer and more soundly than those with low levels. The concentration of the hormone in our bodies varies with age—6-year-olds have more than five times the concentration that 80-year-olds have—which is one of the reasons young people have less trouble sleeping than older people. Melatonin supplements are used to treat insomnia, jet lag, and seasonal affective disorder.

