Functional groups

Before you answer the puzzles below fill in the table of functional groups using:

| ester | ketone | R-O-R | R-OH | nitrile | acid anhydride |

Functional group	Name	Functional group	Name
R-CN		R-NH₂	amine
R-C(=O)O⁻	carboxylate ion	R-C(=O)-O-R	
R-C(=O)-O-C(=O)-R		R-C(=O)-NH₂	amide
R-C(=O)H	aldehyde	R-C(=O)OH	carboxylic acid
R-C(=O)-R		R-X	haloalkane
	alcohol		ether

- The objective is to fill in the grid using information from the table at the top of the worksheet, so that each row, column and 2 x 2 box contains only one reference to any single item (or row) from the table.
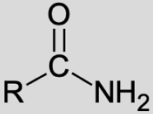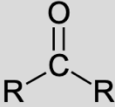
Gridlock 1

Each row, column and 2 x 2 box contains the functional groups ester, carboxylate ion, acid anhydride and aldehyde . Use your problem solving skills and the answers in the table above to fill in the blank boxes.

functional group		name	
R-C(=O)-O-R			aldehyde
	R-C(=O)H	ester	
	acid anhydride		
		R-C(=O)O⁻	

| name | | functional group | |

Gridlock 2

Each row, column and 2 x 2 box contains an amide, amine, ketone and nitrile.

functional group		name	
(amide structure: R–C(=O)–NH₂)			
		nitrile	
		(ketone structure: R–C(=O)–R)	
	amine		

name	functional group

Gridlock 3

Each row, column and 2 x 2 box contains an alcohol, carboxylic acid, haloalkane and ether.

functional group		name	
	R-OH		ether
			alcohol
carboxylic acid			R-X

name	functional group