

Shapes of molecules: distortion from the pure geometry

Before you answer the puzzles below fill in the table of molecules based on a tetrahedral geometry using:

tetrahedral 107° 104.5° bent

molecule	shape	bond angle	drawing
CH ₄		109.5°	
NH ₃	pyramidal		
H ₂ O			
NF ₃	pyramidal	102°	

Gridlock 1

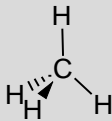
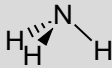
Each row, column and 2 x 2 box contains information about the molecules listed above. Use your problem solving skills and the answers in the table above to fill in the blank boxes.

molecule		shape	
NH ₃			tetrahedral
			NF ₃
bent			
shape		molecule	

gridlocks – can you unlock the grid?

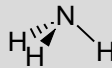
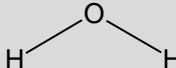
Gridlock 2

Each row, column and 2 x 2 box contains information about the molecules listed above.

molecule		shape	
NH ₃			
		pyramidal	
			
	104.5°		
bond angle		drawing	

Gridlock 3

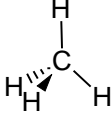
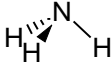
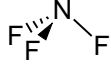
Each row, column and 2 x 2 box contains information about the molecules listed above.

molecule		shape	
	CH ₄		pyramidal
			tetrahedral
			
107°			
bond angle		drawing	

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Answers

Before you answer the puzzles below fill in the table of molecules based on a tetrahedral geometry using:

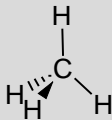
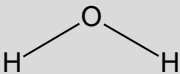
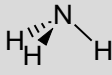
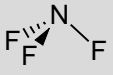
	tetrahedral	107°	104.5°	bent
molecule	shape	bond angle	drawing	
CH ₄	tetrahedral	109.5°		
NH ₃	pyramidal	107°		
H ₂ O	bent	104.5°		
NF ₃	pyramidal	102°		

Puzzle 1 – answers

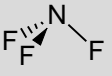
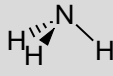
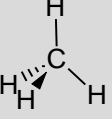
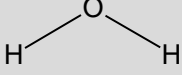
Each row, column and 2 x 2 box contains information about the molecules listed above. Use your problem solving skills and the answers in the table above to fill in the blank boxes.

molecule		shape	
NH ₃	H ₂ O	pyramidal	tetrahedral
NF ₃	CH ₄	pyramidal	bent
tetrahedral	pyramidal	H ₂ O	NF ₃
bent	pyramidal	CH ₄	NH ₃
shape		molecule	

Puzzle 2 – answers

molecule		shape	
NH ₃	NF ₃	bent	tetrahedral
H ₂ O	CH ₄	pyramidal	pyramidal
102°	107°		
109.5°	104.5°		
bond angle		drawing	

Puzzle 3 – answers

molecule		shape	
H ₂ O	CH ₄	pyramidal	pyramidal
NF ₃	NH ₃	bent	tetrahedral
109.5°	104.5°		
107°	102°		
bond angle		drawing	