

gridlocks – can you unlock the grid?

Organic formulas 1

Before you answer the puzzles below fill in the table of alkanes:

name	molecular formula	structural formula	displayed formula
methane	CH ₄		
ethane		CH ₃ CH ₃	<pre> H H H-C---C-H H H</pre>
propane	C ₃ H ₈	CH ₃ CH ₂ CH ₃	
butane	C ₄ H ₁₀	CH ₃ CH ₂ CH ₂ CH ₃	

Gridlock 1

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

name		molecular formula	
methane			C ₄ H ₁₀
	butane	CH ₄	
	CH ₃ CH ₂ CH ₃		
		<pre> H H H-C---C-H H H</pre>	
structural formula		displayed formula	

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Gridlock 2

In puzzle 2 you need to first work out which of the four alkanes are in the puzzle and then solve it.

name		molecular formula	
ethane			
		C ₄ H ₁₀	
		$\begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{H} \\ \\ \text{H} \end{array}$	
	CH ₃ CH ₂ CH ₃		
structural formula		displayed formula	

Gridlock 3

In puzzle 3 you need to first work out which of the four alkanes are in the puzzle and then solve it.

name		molecular formula	
	methane		C ₄ H ₁₀
			CH ₄
CH ₃ CH ₃			$\begin{array}{ccccc} & \text{H} & & \text{H} & & \text{H} \\ & & & & & \\ \text{H} & -\text{C} & - & \text{C} & - & \text{C} & -\text{H} \\ & & & & & \\ & \text{H} & & \text{H} & & \text{H} \end{array}$
structural formula		displayed formula	

Organic formulas 1 – answers

Before you answer the puzzles below fill in the table of alkanes:

name	molecular formula	structural formula	displayed formula
methane	CH ₄	CH ₄	<pre> H H — C — H H </pre>
ethane	C ₂ H ₆	CH ₃ CH ₃	<pre> H H H — C — C — H H H </pre>
propane	C ₃ H ₈	CH ₃ CH ₂ CH ₃	<pre> H H H H — C — C — C — H H H H </pre>
butane	C ₄ H ₁₀	CH ₃ CH ₂ CH ₂ CH ₃	<pre> H H H H H — C — C — C — C — H H H H H </pre>

Puzzle 1 – answers

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

name		molecular formula	
methane	ethane	C ₃ H ₈	C ₄ H ₁₀
propane	butane	CH ₄	C ₂ H ₆
CH ₃ CH ₃	CH ₃ CH ₂ CH ₃	<pre> H H H H H — C — C — C — C — H H H H H </pre>	<pre> H H — C — H H </pre>
CH ₃ CH ₂ CH ₂ CH ₃	CH ₄	<pre> H H H — C — C — H H H </pre>	<pre> H H H H — C — C — C — H H H H </pre>
structural formula		displayed formula	

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Puzzle 2 – answers

name		molecular formula	
ethane	butane	C_3H_8	CH_4
propane	methane	C_4H_{10}	C_2H_6
$CH_3CH_2CH_2CH_3$	CH_3CH_3	$\begin{array}{c} H \\ \\ H-C-H \\ \\ H \end{array}$	$\begin{array}{c} H & H & H \\ & & \\ H-C & -C & -C-H \\ & & \\ H & H & H \end{array}$
CH_4	$CH_3CH_2CH_3$	$\begin{array}{c} H & H \\ & \\ H-C & -C-H \\ & \\ H & H \end{array}$	$\begin{array}{c} H & H & H & H \\ & & & \\ H-C & -C & -C & -C-H \\ & & & \\ H & H & H & H \end{array}$
structural formula		displayed formula	

Puzzle 3 – answers

name		molecular formula	
propane	methane	C_2H_6	C_4H_{10}
butane	ethane	C_3H_8	CH_4
CH_4	$CH_3CH_2CH_3$	$\begin{array}{c} H & H & H & H \\ & & & \\ H-C & -C & -C & -C-H \\ & & & \\ H & H & H & H \end{array}$	$\begin{array}{c} H & H \\ & \\ H-C & -C-H \\ & \\ H & H \end{array}$
CH_3CH_3	$CH_3CH_2CH_2CH_3$	$\begin{array}{c} H \\ \\ H-C-H \\ \\ H \end{array}$	$\begin{array}{c} H & H & H \\ & & \\ H-C & -C & -C-H \\ & & \\ H & H & H \end{array}$
structural formula		displayed formula	