

gridlocks – can you unlock the grid?

Vanadium

Before you answer the puzzles below fill in the table of four oxidation states of vanadium using:

+2 mauve blue V³⁺

Some people remember the sequence of colours as you reduce vanadium (V) by:

Yellow budgies go mad (yellow blue green mauve)

oxidation state	formula	colour
+5	VO ₂ ⁺	yellow
+4	VO ²⁺	
+3		green
	V ²⁺	

Gridlock 1

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

oxidation state		formula	
+5			V ²⁺
	+2	VO ₂ ⁺	
	V ³⁺		
		blue	
formula		colour	

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Gridlock 2

Each row, column and 2 x 2 box contains information about the four oxidation states of vanadium listed above.

oxidation state		formula	
+4			
		V^{2+}	
		yellow	
	V^{3+}		
formula		colour	

Gridlock 3

Each row, column and 2 x 2 box contains information about the four oxidation states of vanadium listed above.

oxidation state		formula	
+4			VO_2^+
			mauve
	V^{3+}		
formula		colour	

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Vanadium – answers

Before you answer the puzzles below fill in the table of four oxidation states of vanadium using:

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Some people remember the sequence of colours as you reduce vanadium (V) by:

Yellow **b**udgies **g**o **m**ad (yellow blue green mauve)

oxidation state	formula	colour
+5	VO ₂ ⁺	yellow
+4	VO ²⁺	blue
+3	V ³⁺	green
+2	V ²⁺	mauve

Puzzle 1 – answers

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

oxidation state		formula	
+5	+4	V ³⁺	V ²⁺
+3	+2	VO ₂ ⁺	VO ²⁺
VO ²⁺	V ³⁺	mauve	yellow
V ²⁺	VO ₂ ⁺	blue	green
formula		colour	

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Puzzle 2 – answers

oxidation state		formula	
+4	+2	V^{3+}	VO_2^+
+3	+5	V^{2+}	VO^{2+}
V^{2+}	VO^{2+}	yellow	green
VO_2^+	V^{3+}	blue	mauve
formula		colour	

Puzzle 3 – answers

oxidation state		formula	
+4	+3	V^{2+}	VO_2^+
+2	+5	VO^{2+}	V^{3+}
VO_2^+	VO^{2+}	green	mauve
V^{3+}	V^{2+}	yellow	blue
formula		colour	