

gridlocks – can you unlock the grid?

Tests for Anions

Before you answer the puzzles below fill in the table of tests for anions:

Anion	Formula	Test	Result
carbonate	CO_3^{2-}	add $\text{HCl}(\text{aq})$	gas evolved (CO_2)
	Br^-	add $\text{AgNO}_3(\text{aq})$ to the solution	cream precipitate
nitrate		add Al powder and $\text{NaOH}(\text{aq})$ and warm gently. Test gas with damp red litmus	alkaline gas produced
sulfate	SO_4^{2-}	add $\text{BaCl}_2(\text{aq})$ to the solution	white precipitate
	Cl^-	add $\text{AgNO}_3(\text{aq})$ to the solution	white precipitate
iodide		add $\text{AgNO}_3(\text{aq})$ to the solution	pale yellow precipitate

Gridlock 1

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

anion		test	
bromide			add $\text{HCl}(\text{aq})$
	alkaline gas produced		sulfate
	result	anion	

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Gridlock 2

Each row, column and 2 x 2 box contains information about carbonate, iodide, chloride and sulfate anions.

anion		test	
carbonate			add BaCl ₂ (aq) to the solution
	sulfate		
			CO ₃ ²⁻
		I ⁻	
result		formula	

Gridlock 3

Each row, column and 2 x 2 box contains information about carbonate, iodide, chloride and bromide anions.

anion		test	
bromide			
		add AgNO ₃ (aq) to the solution	
		CO ₃ ²⁻	
	pale yellow precipitate		Cl ⁻
result		formula	