



## Cycle 7 Chemistry 2 Honors Topic

### Balance Redox Reactions by the Half-Reaction Method



What is oxidized and what is reduced?

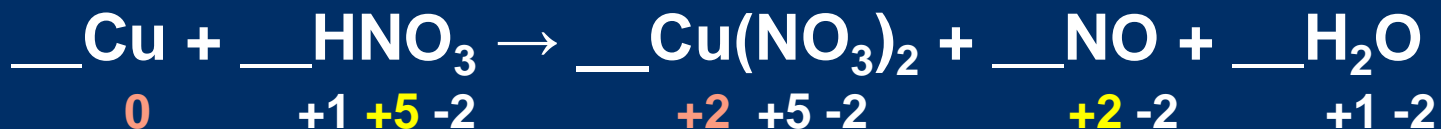
Remember this one? Can you *balance* it?

### Classwork: Balance these Redox Reactions





An old friend of ours – the ‘impossible’ equation from Cycle I



What is **OXIDIZED** and what is **REDUCED**?  
Split this reaction into TWO:

**OXIDATION (MUST GIVE OFF e<sup>-</sup>):**



**REDUCTION (MUST ACCEPT e<sup>-</sup>):**



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## Balance Oxidation Half-Reaction

OXIDATION (MUST GIVE OFF  $e^-$ ):



Why give off  $\text{H}^+$ ? Because H is +1 in  $\text{HNO}_3$ , so we balance it in the same +1 state..

How many  $e^-$ ? Cu loses 2  $e^-$  when becoming  $\text{Cu}^{+2}$

Try it yourself:



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## Balance Reduction Half-Reaction

**REDUCTION (MUST ACCEPT  $e^-$ ):**



How many  $e^-$ ? N(+5) gains 3  $e^-$  becoming N(+2)

Why  $H^+$ ? Produced in other half-reaction, lets us turn O from the left-side into  $H_2O$  on the right.

Try to balance this:





## Putting Them Together



**Oxidation** produces 2 electrons but **reduction** needs 3. How to fix? LCM is 6 e<sup>-</sup>. Multiply **oxidation** by 3 and **reduction** equation by 2.





## Putting Them Together





## Breaking up and balancing a Redox

Original Equation:



Half-Reactions:



Balance, Multiply up to L.C.M. of electrons, and  
Combine!





### Breaking up and balancing a Redox

Original Equation:



If you got this, congratulate yourselves!



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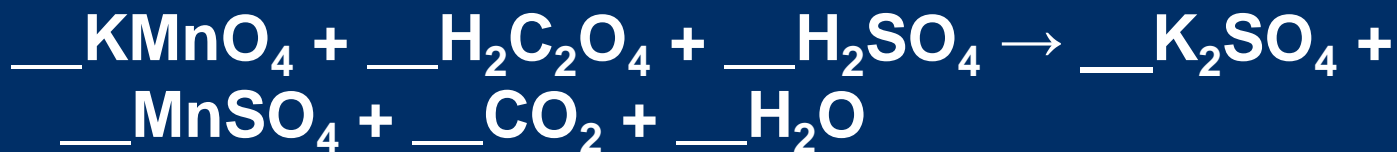


# Chapter 17

## Section 1 Oxidation-Reduction Reactions



### Your Turn!



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# Chapter 17

## Section 1 Oxidation-Reduction Reactions



### Your Turn!



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