

KEY

How many electrons are found a Cobalt +3 ion?

$$24 e^{-}$$

How many electrons are found a Bromine -1 ion?

$$36 e^{-}$$

What is the charge on the Titanium in the following compound:  $\text{Ti}_2\text{O}_3$ ?

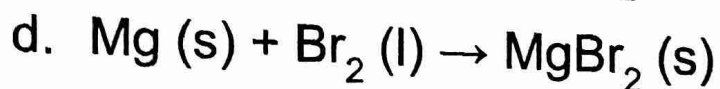
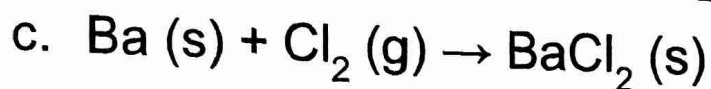
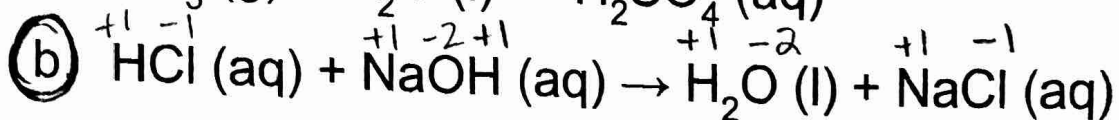
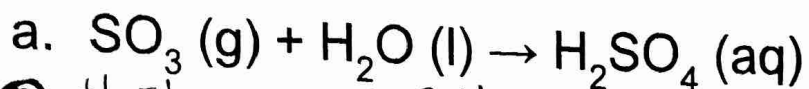
$$\frac{+6}{2} = (+3) \leftarrow \rightarrow -2 \cdot 3 = -6$$

What is the charge on the Sulfur in the hydrogen sulfate ion ( $\text{HSO}_4^{-1}$ )?

$$+1 \leftarrow \rightarrow -2 \cdot 4 = -8$$

(+6)

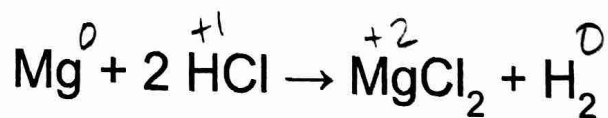
Which of the following reactions IS NOT redox?



NO  
changes!

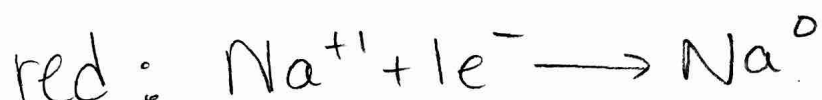
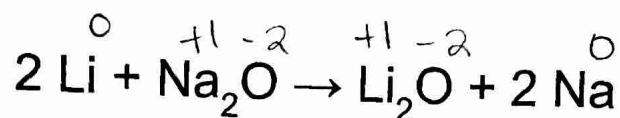
\*\*\*PROVE YOUR ANSWER USING OXIDATION STATES!!!!

In the following redox reaction, identify the species oxidized and the species reduced.

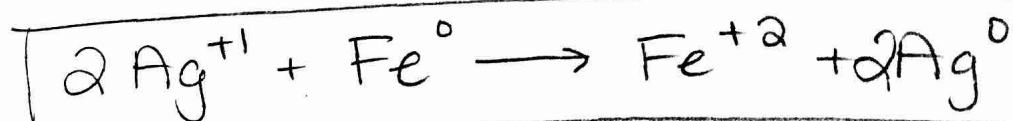
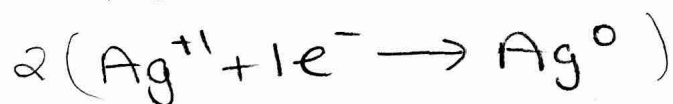
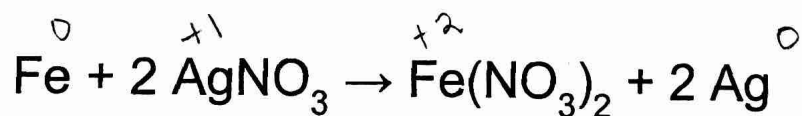


OX:  $\text{Mg}^0$       red:  $\text{H}^+$

For the given redox reaction, write the reduction and oxidation  $\frac{1}{2}$  reactions. (label which is which)



For the given redox reaction, write the net ionic equation.



Would the following redox reactions happen spontaneously?  
For each:

→ Explain why or why not

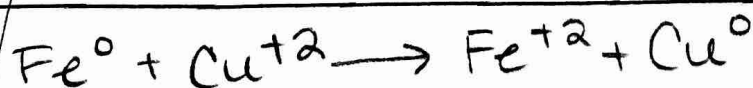
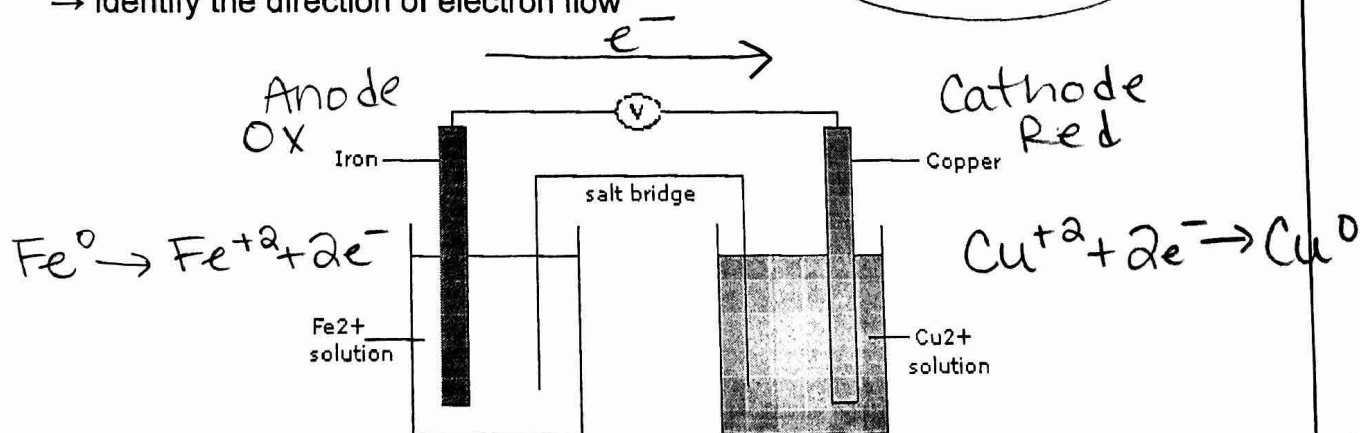
→ If NOT, propose a new solid metal that *could be used* that *would* react spontaneously.

- a.  $\text{Cr} + \text{BaCl}_2 \rightarrow \text{CrCl}_2 + \text{Ba}$  No! Cr is lower than Ba on Table J. Use K, Li, Cs, or Rb
- b.  $3 \text{Rb} + \text{Fe}_2\text{O}_3 \rightarrow 3 \text{Rb}_2\text{O} + 2 \text{Fe}$  Yes! Rb is higher than Fe on Table J
- c.  $\text{Mn} + \text{ZnBr}_2 \rightarrow \text{MnBr}_2 + \text{Zn}$  Yes! Mn is higher than Zn on Table J.

For the cell below:

- identify if this is a voltaic or an electrolytic cell
- identify which electrode will act as the anode and which will act as the cathode.
- identify who is oxidized and who is reduced
- write the  $\frac{1}{2}$  reactions and the net ionic equation
- identify the direction of electron flow

Voltaic



For the cell below:

- identify if this is a voltaic or an electrolytic cell
- identify which electrode will act as the anode and which will act as the cathode.
- identify who is oxidized and who is reduced
- write the  $\frac{1}{2}$  reactions and the net ionic equation
- identify the direction of electron flow

Electrolytic

