Solution Stoich. w/ REDOX

1. $2Cr_{(s)} + 3Sn^{+4} \rightarrow 2Cr^{+3} + 3Sn^{+2}$

? g

.0200 L $Sn(NO_3)_4$	1.00 mol $Sn(NO_3)_4$	1 mol Sn^{+4}	2 mol Cr	52.00 g Cr
	1 L $Sn(NO_3)_4$	1 mol $Sn(NO_3)_4$	3 mol Sn^{+4}	1 mol Cr

= **.693 g Cr**

2. $2Al_{(s)} + 6H^{+} \rightarrow 2Al^{+3} + 3H_2{}_{(g)}$

? g

.0400 L HCl	1.00 mol HCl	1 mol H^+	2 mol Al	26.98 g Al	= **.360 g Al**
	1 L HCl	1 mol HCl	6 mol H^+	1 mol Al	

3. $2MnO_4^- + 5S^{-2} + 16H^+ \rightarrow 2Mn^{+2} + 5S_{(s)} + 8H_2O_{(l)}$

? L

1.00 M

.0300 L Na_2S	2.00 mol Na_2S	1 mol S^{-2}	2 mol MnO_4^-	1 mol $KMnO_4$	1 L $KMnO_4$
	1 L Na_2S	1 mol Na_2S	5 mol S^{-2}	1 mol MnO_4^-	1 mol $KMnO_4$

= **.0240 L $KMnO_4$**

4. $Cu_{(s)} + SO_4^{-2} + 4H^+ \rightarrow Cu^{+2} + SO_{2(g)} + 2H_2O_{(l)}$

10.0 g ? L

.100 M

10.0 g Cu	1 mol Cu	1 mol SO_4^{-2}	1 mol K_2SO_4	1 L K_2SO_4 =	**1.57 L K_2SO_4**
	63.55 g	1 mol Cu	1 mol SO_4^{-2}	.100 mol K_2SO_4	

Soln Stoich. w/ REDOX

5. $5Fe^{+2} + MnO_4^- + 8H^+ \rightarrow Mn^{+2} + 5Fe^{+3} + 4H_2O(l)$

? L

.0500 L $KMnO_4$	2.00 mol $KMnO_4$ / 1 L $KMnO_4$	1 mol MnO_4^- / 1 mol $KMnO_4$	5 mol Fe^{+2} / 1 mol MnO_4^-	1 mol $Fe(NO_3)_2$ / 1 mol Fe^{+2}	1 L / .300 M

= **1.67 L $Fe(NO_3)_2$**

6. $6NO_3^- + S(s) + 6H^+ \rightarrow 6NO_2(g) + H_2SO_4 + 2H_2O(l)$

? L

20.0 g S	1 mol S / 32.06 g	6 mol NO_3^- / 1 mol S	1 mol KNO_3 / 1 mol NO_3^-	1 L KNO_3 / .300 mol KNO_3	= **12.5 L KNO_3**

7. $3Cu(s) + 2NO_3^- + 8H^+ \rightarrow 3Cu^{+2} + 2NO(g) + 4H_2O(l)$

15.0 g 50.0 mL

15.0 g Cu	1 mol Cu / 63.55 g	2 mol NO_3^- / 3 mol Cu	1 mol $NaNO_3$ / 1 mol NO_3^-	= .157 mol $NaNO_3$	/ .0500 L = **3.15 M $NaNO_3$**

8. $Zn(s) + 2Ag^+ \rightarrow Zn^{+2} + 2Ag(s)$

? g

.0300 L $AgNO_3$	0.400 mol $AgNO_3$ / 1 L $AgNO_3$	1 mol Ag^+ / 1 mol $AgNO_3$	1 mol Zn / 2 mol Ag^+	65.39 g Zn / 1 mol Zn	= **.392 g Zn**

Soln Stoich w/ REDOX

9. $CuS_{(s)} + 2NO_3^- + 4H^+ \rightarrow Cu^{+2} + 2NO_{2(g)} + S_{(s)} + 2H_2O_{(l)}$

? g 10.0 mL

0.800 M

.0100 L KNO_3	0.800 mol KNO_3 / 1 L KNO_3	1 mol NO_3^- / 1 mol KNO_3	1 mol CuS / 2 mol NO_3^-	95.61 g CuS / 1 mol CuS

= **.382 g CuS**

10. $2OH^- + 2NO_{2(g)} + ClO^- \rightarrow 2NO_3^- + Cl^- + H_2O_{(l)}$

30.00 g ? L

1.000 M

30.00 g NO_2	1 mol NO_2 / 46.01 g NO_2	1 mol ClO^- / 2 mol NO_2	1 mol NaClO / 1 mol ClO^-	1 L NaClO / 1.000 mol NaClO

= **.3260 L NaClO**

11. $14H^+ + 6Fe^{+2} + Cr_2O_7^{-2} \rightarrow 2Cr^{+3} + 6Fe^{+3} + 7H_2O_{(l)}$

? M 0.200 M

20.0 mL 50.0 mL

.0500 L $K_2Cr_2O_7$	0.200 mol $K_2Cr_2O_7$ / 1 L $K_2Cr_2O_7$	1 mol $Cr_2O_7^{-2}$ / 1 mol $K_2Cr_2O_7$	6 mol Fe^{+2} / 1 mol $Cr_2O_7^{-2}$

= .0600 mol Fe^{+2} | 1 mol $Fe(NO_3)_2$ / 1 mol Fe^{+2} = .0600 mol $Fe(NO_3)$

$M = \frac{mol}{L} = \frac{.0600 \text{ mol } Fe(NO_3)_2}{.0200 \text{ L } Fe(NO_3)_2} =$ **3.00 M $Fe(NO_3)_2$**

Soln Stoich w/ REDOX

12. OMIT, NO EQN.

13. $4OH^- + 6IO_3^- + 5H_2S_{(g)} \rightarrow 3I_{2(g)} + 5SO_3^{-2} + 7H_2O_{(l)}$

?L 12.00g

0.500 M

12.00 g H_2S	1 mol H_2S / 34.08 g H_2S	6 mol IO_3^- / 5 mol H_2S	1 mol $NaIO_3$ / 1 mol IO_3^-	1 L $NaIO_3$ / 0.500 mol $NaIO_3$

= $\boxed{.845 \text{ L } NaIO_3}$