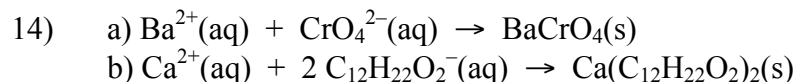
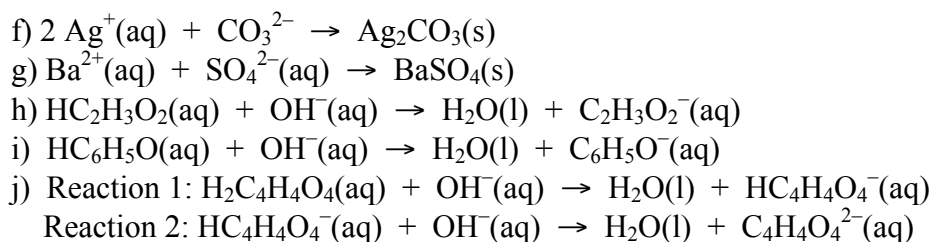
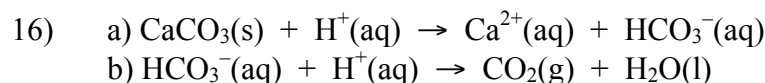
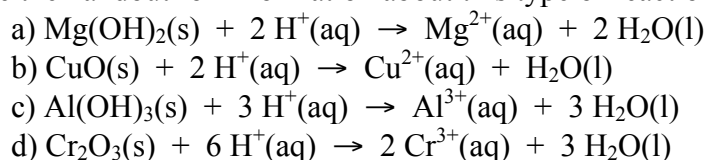


ANSWERS TO TOPIC B PROBLEMS

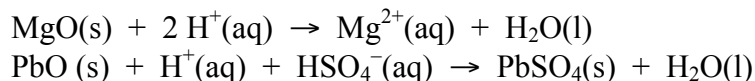
- 1) a) 0.188 mol/L (0.188 M)
b) 12.0 g CaCl_2
c) 0.671 L (671 mL)
- 2) a) **0.055 M**
b) **800 mL of water**
c) **0.300 L of the 2.00 M NaOH, 1.20 L of water.**
- 3) Strong electrolytes: **NaCl , $\text{Mg}(\text{NO}_3)_2$, MgCrO_4 , AgF , H_2SO_4 , and NH_4Br .**
Weak electrolytes: **HClO_2 , H_3PO_4 , and $\text{HC}_3\text{H}_5\text{O}_3$.**
Nonelectrolytes: **$\text{C}_2\text{H}_5\text{OH}$, CH_3CN , and $(\text{CH}_3)_2\text{CO}$.**
- 4) a) **0.1 M Na^+ and 0.1 M Br^-**
b) **0.04 M K^+ and 0.04 M NO_3^-**
c) **0.2 M Fe^{3+} and 0.6 M Cl^-**
d) **3.0 M NH_4^+ and 1.5 M SO_4^{2-}**
- 5) 0.0515 mol Fe^{3+}
0.0772 mol SO_4^{2-}
- 6) Only **choice c** is correct.
- 7) **267 mL of water.**
- 8) 4.918 g $\text{Al}(\text{NO}_3)_3$
- 9) 0.750 M
- 10) a) **0.0600 M**
b) 3.13 g SnCl_4
- 11) a) 0.2x mol Al^{3+}
b) 0.6x mol Br^-
c) you must add **9x liters of water.**
- 12) The only insoluble compounds in this list are **FeS and $\text{Ba}_3(\text{PO}_4)_2$.**
- 13)
- a) $3 \text{Mg}^{2+}(\text{aq}) + 2 \text{PO}_4^{3-}(\text{aq}) \rightarrow \text{Mg}_3(\text{PO}_4)_2(\text{s})$
b) $\text{H}^+(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow \text{H}_2\text{O}(\text{l})$
c) $\text{Fe}^{3+}(\text{aq}) + 3 \text{OH}^-(\text{aq}) \rightarrow \text{Fe}(\text{OH})_3(\text{s})$
d) None of the possible products is insoluble, so there is no reaction.
e) $\text{H}^+(\text{aq}) + \text{HCO}_3^-(\text{aq}) \rightarrow \text{H}_2\text{O}(\text{l}) + \text{CO}_2(\text{g})$



15) See the handout for information about this type of reaction. The net ionic equations are:



17) The reactions are:

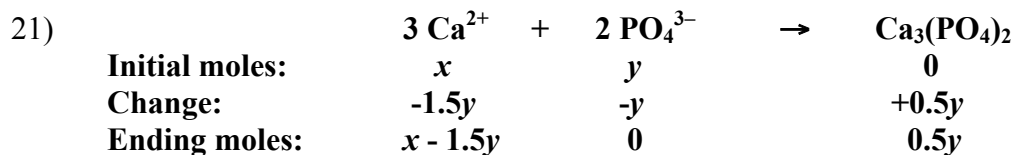
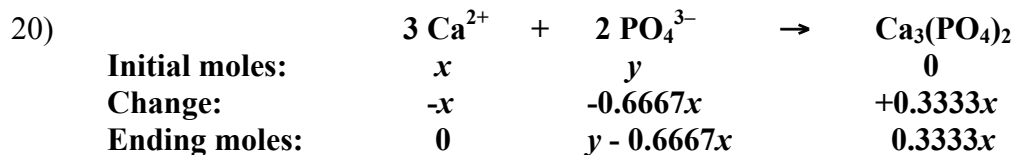
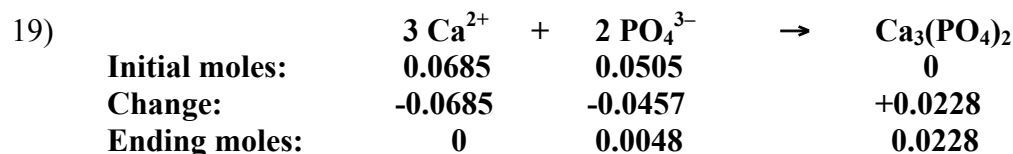


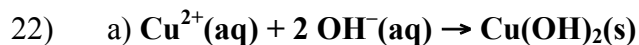
18) The answer is...

The solution definitely contains I^- .

The solution definitely does not contain PO_4^{3-} .

You cannot determine whether the solution contains NO_3^- .



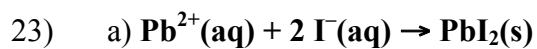


b) K^{+} and Cl^{-} .

c) The limiting reactant is OH^{-}

d)

	Cu^{2+}	+	2OH^{-}	\rightarrow	$\text{Cu}(\text{OH})_2$
Initial moles:	0.0200		0.0300		0
Change:	-0.0150		-0.0300		+0.0150
Ending moles:	0.0050		0		0.0150



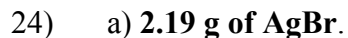
b)

	Pb^{2+}	+	2I^{-}	\rightarrow	PbI_2
Initial moles:	0.000800		0.00120		0
Change:	-0.000600		-0.00120		+0.000600
Ending moles:	0.000200		0		0.000600

c) 0.277 g of PbI_2 .

d) 0.0222 M

e) 0.178 M



b) 1.53 M.

25) 35.1 mL

26) 0.188 M

27) 0.159 M