

### Answers to non communist

1. D
2. C
3. A
4. B
5. C
6. A
7. E
8. A

9.

<i>moles</i>	<b>A</b> +	<b>B</b> =	<b>C</b>
I	0.0100	0.0200	0
C (R/F)	x	x	x
E	0.0100-x	0.0200-x	0+x = x

$$K = [C]/([A][B])$$

$$0.371 = [x/2]/([0.0100-x]/2 [0.0200-x]/2)$$

This leads to a quadratic equation:

$$0.0000742000000 - 0.011130000x + 0.3710000000x^2 = 0$$

$$x = 0.00003689493221 \text{ or } 5.420798685$$

$$\text{so } [C] = 0.0000369/2 = 0.000018 \text{ M}$$

$$[B] = 0.010 \text{ M}$$

$$[C] = 0.0050 \text{ M}$$

10. Let x = number of grams of SrF<sub>2</sub> that dissolve:

<i>Moles/L</i>	SrF <sub>2(s)</sub> =	Sr <sup>+2</sup> <sub>(aq)</sub>	+ 2 F <sup>-1</sup> <sub>(aq)</sub>
I	y	0	0
C (R/F)	x dissolve	x	2x
E	y-x	0 + x = x	0 + 2x = 2x

But we can't really have moles/L of a solid, so the K expression excludes solids:

$$K = [Sr^{+2}_{(aq)}][F^{-1}_{(aq)}]^2 = [x][2x]^2 = 7.8 \times 10^{-10}$$

$$4x^3 = 7.8 \times 10^{-10}$$

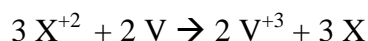
$$x = 0.0005798889998 \text{ moles/L}$$

$$0.0005798889998 \text{ moles/L} * 1.0\text{L} *(87.6 + 19*2) = 0.073 \text{ g will dissolve}$$

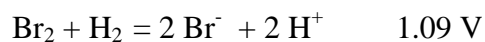
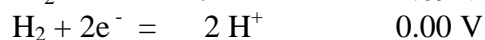
11.

Beaker	Reaction?	Inference
1	No	$Q^{+3} > V^{+3}$
2	Yes	$V^{+3} > M^{+?}$
3	Yes	$X^{+2} > V^{+3}$
4	no	$X^{+2} > Q^{+3}$

We see the strongest oxidizing agent at work in reaction 3 where it is stealing electrons from metal V:



12. Hydrogen's reduction/oxidation potential is 0.00V under standard conditions:



Notice that you have to choose something with a positive reduction potential to end up with the same *positive* value overall.

13. Since the standard reduction potentials are 1.0 M, the most likely source of error is choosing a concentration that is less than 1.0 M for the *oxidizing agent* at the cathode or choosing a concentration greater than 1.0 M for the reducing agent's companion cation. In both of these cases, by LeChatelier's principle, a lower voltage will result.

