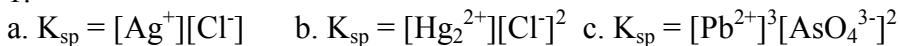


### Answer Key

Note: This is a “quick” answer key that is very short (read “none”) on details. I also calculated these very quickly to make them available to you and as such, expect possible errors (hopefully minimal). Please see me on Monday if you want details or you suspect an answer may be wrong. Thanks.

1.



2.  $K_{sp} = [Ca^{2+}][C_2O_4^{2-}] = (4.8 \times 10^{-5})(4.8 \times 10^{-5}) = 2.3 \times 10^{-9}$

3.  $K_{sp} = [Pb^{2+}][I^-]^2 = (1.2 \times 10^{-3})[(2)(1.2 \times 10^{-3})]^2 = 6.9 \times 10^{-9}$

4. 0.67g/L

5.  $1.5 \times 10^{-8} M$ . In pure water it is over 3,000 times more soluble

6.  $Q_c = [Ba^{2+}][SO_4^{2-}] = (5.0 \times 10^{-4})(5.0 \times 10^{-5}) = 2.5 \times 10^{-8}$

The ion product is greater than the solubility product ( $1.1 \times 10^{-10}$ ) so precipitation is expected.

7.  $HSO_4^-$  is a much stronger acid than  $HCO_3^-$  (check  $K_a$  values)

Calcium carbonate is much more soluble in acidic solution whereas the solubility of calcium sulfate is only slightly affected.

8.  $pH = 2.55$ ; ascorbate ion =  $K_{a2} = 1.6 \times 10^{-12}$

9.  $pH = 10.04$

10.  $pH = 8.92$

11.  $pH = 9.43$

12.  $pH = 9.21$

13.  $pH = 1.368$

14.    a. A precipitate should form  
      b. No precipitate should form