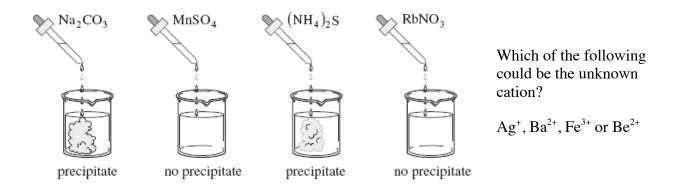
Name	Block:	Date:
Chemistry 12 <b>QUALITATIVE ANALYSIS</b>		
1) Identify a <i>cation</i> that could be separate the ions by precipitating		nixture containing $SO_4^{2-}$ and $S^{2-}$ to
2) Identify a <i>solution</i> that could precipitation.	d be used to separate the o	cations Al3+ and Ba2+ from each other b
3) Identify a <i>solution</i> that could by precipitation.	d be used to separate the a	anions $SO_4^{2-}$ and $CO_3^{2-}$ from each other
	der to precipitate only on	d 0.2 M PO <sub>4</sub> <sup>3-</sup> ions. An equal volume one of these anions. Identify a cation that
5) Devise a scheme to individu containing Mg <sup>2+</sup> , Sr <sup>2+</sup> and Pb <sup>2+</sup> . ionic equations and the method	As a part of your scheme	ove the cations from a solution e, provide the compounds added, the ne

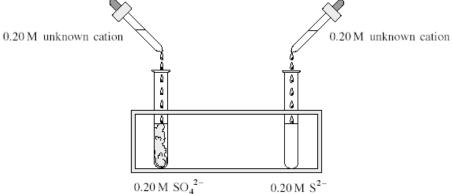
6) Devise a scheme to individually precipitate and remove the cations from a solution containing  $OH^-$ ,  $S^{2-}$  and  $Br^-$ . As a part of your scheme, provide the compounds added, the net ionic equations and the method of removal.

7) A solution contains the cations Pb<sup>2+</sup>, Ba<sup>2+</sup> and Fe<sup>2+</sup>. Devise a scheme to individually precipitate two of the cations and separate them from the solution. As part of your answer, provide the compounds added, the net ionic equations and the method of removal.

8) An experiment is conducted to identify an unknown cation that is present in each of four beakers.



- 9) A reagent that may be used to separate Cl<sup>-</sup> from S<sup>2-</sup> by precipitation is:
  - A. KNO<sub>3</sub>
- B.  $Pb(NO_3)_2$
- C. AgNO<sub>3</sub>
- D.  $Al(NO_3)_3$
- 10) A solution contains both  $Ag^+$  and  $Mg^{2+}$  ions. During selective precipitation, these ions are removed one at a time by adding:
  - A. OH followed by S<sup>2</sup>-
- C.  $SO_4^{2-}$  followed by  $Cl^{-}$
- B. I followed by OH
- D. NO<sub>3</sub> followed by PO<sub>4</sub><sup>3</sup>
- 11) A precipitate forms when a 0.20 M solution containing an unknown cation is added to  $SO_4^{2-}$ , but not when an equal volume is added to  $S^{2-}$ . What is the possible identity of the unknown cation?



12) A solution contains 0.2 M Zn<sup>2+</sup> and 0.2 M Sr<sup>2+</sup>. An equal volume of a second solution was added, forming a precipitate with Sr<sup>2+</sup> but not with Zn<sup>2+</sup>. What is present in the second solution?

13) A solution containing an unknown cation was added to three solutions and the following observations were recorded:

What is the identity of the unknown cation?)

SOLUTION	OBSERVATION	
NaI	no precipitate	
Na <sub>2</sub> SO <sub>4</sub>	precipitate	
NaOH	no precipitate	

14) Consider the following experiment:

What *anion* could the unknown solution contain?

