

Name: _____ SB#: _____

All work is to be done individually. You can use textbooks, notes, and resources on the internet.

- As stated in the lab handout, “hard” water contains high concentrations of Ca^{2+} and Mg^{2+} ions (water is called “soft” if those concentrations are low). Some anions commonly present in household drinking water are chloride, bromide, carbonate, phosphate, nitrate, and sulfate. Using solubility and/or K_{sp} values, determine which of those anions will form precipitates with Ca^{2+} or Mg^{2+} or both. Indicate the ions by writing the formula of each solid precipitate that would form in hard water.
- Using the solubility rules and the table of K_{sp} values in the lab handout, predict which combinations of solutions should form a precipitate in the seven-by-seven grid given below (half of which is redundant!). For those that will result in a precipitate, write the formula of the precipitate that will form. One is completed for you. Just fill in the part that’s not shaded.

	CaCl_2	KOH	NaDS	CoBr_2	MnSO_4	Na_3PO_4	NiBr_2
CaCl_2			$\text{Ca}(\text{DS})_2$				
KOH							
NaDS							
CoBr_2							
MnSO_4							
Na_3PO_4							
NiBr_2							

- Using the K_{sp} values available, do you expect to see a lot of precipitate, a moderate amount of precipitant, or very little precipitate for each of the precipitation reactions you predicted in the table above? You may do this below or within the grid above.
 NOTE: K_{sp} values are not available for all precipitates.