GRP#:												
PART 1: V	Vhat is a pı	ecipitate.	Each 2 st	udests tes	ts 1 samp	le once						
	CuSO ₄ 5mL			ppt↓								
			BaCl ₂	Yes/No	Filtra	ate obse	rved					
	(0.1M)	(0.1M)	Color	. 05/ . 10		property	,					
Date da ata	Color	Color	COIOI									
2students												
2students												
PART 2.A.	. Is Precipita	ition Predic	ctable? Gra	oup efforts	, test only	Group I or	Group II a	as assigned	1, 2 raw			
reactions/st	udent. Clear	= means n	o precipita	te, then re	cord soluti	on color.						
CATION	CATION	REF	Cl-	CrO ₄ ²⁻	I-	$C_2O_4^{2-}$	S ²⁻	SO42-	CDECTAT	OD IONG		
GROUP I	GROUP II	WATER	2drops	2drops	2drops	2drops	2drops	2drops	SPECTATOR IONS			
Cations no	o. drops→	2drops	2drops	2drops	2drops	2drops	2drops	2drops	GROUP I	GROUP II		
Na ⁺	K ⁺	clear /	-					Î				
		colorless										
Ba ²⁺	Mn ²⁺	clear / colorless										
Mg ²⁺	Ca ²⁺	clear / colorless										
Co ²⁺	Sr ²⁺	clear / colorless										
Ni ²⁺	Cr ³⁺	clear / colorless										
Cu ²⁺	Fe ³⁺	clear / colorless										
Al ³⁺	Zn ²⁺	clear / colorless										
Pb ²⁺	$\mathbf{A}\mathbf{g}^{+}$	clear /	White	Brown	Yellow	White	Black	White				
	ļ.	colorless	ppt↓	ppt↓	ppt↓	ppt↓	ppt↓	ppt↓				
PART 3. C	Conce. & Pr	ecip.: Each	h team use	esTable 3	& design (different re	eactions tl	han Table	,minimum	2 reaction	ns per stu	dent
TABLE 5: RE	ECORD YOU	R RAW DAT	A HERE sin	nilar to Tal	nle 4 Add	TABLE 3: DESI	GN REACTIONS	S FROM HERE				
					31C 41 Auu							
	only 2	2 drops of e			oic -i Add				TABLE 4	: SAMPLE I		S DESIGN
REACTION			ach reacta	nt		REACTIO	REACTA	REACTA		REACT AN	REACT AN	
REACTION #		2 drops of e	ach reacta					REACTA NT #2	TABLE 4			O BSERV.
	REACTANT	2 drops of e	ach reacta	nt		REACTIO N#	REACTA NT #1	NT #2	Reactant #	REACT AN T #1 &	REACT AN T #2 &	
	REACTANT	2 drops of e	ach reacta	nt		REACTIO	REACTA			REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂	REACT AN T #2 & Conc.	
	REACTANT	2 drops of e	ach reacta	nt		REACTIO N#	REACTA NT #1 Pb(NO ₃) ₂	NT #2	Reactant #	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M	REACT AN T #2 & Conc. 0.10M NaOH 1.0M	
	REACTANT	2 drops of e	ach reacta	nt		REACTIO N#	REACTA NT #1	NT #2	Reactant #	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH	
	REACTANT	2 drops of e	ach reacta	nt		REACTIO N#	REACTA NT #1 Pb(NO ₃) ₂	NT #2	Reactant #	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01M	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M	
	REACTANT	2 drops of e	ach reacta	nt		REACTIO N # I II	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃	NT #2 KI NaOH KI	Reactant # II-1 II-2 II-3	REACT AN T#1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01M Pb(NO ₃) ₂	REACT AN T#2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH	
	REACTANT	2 drops of e	ach reacta	nt		REACTIO N # I II	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂	NT #2 KI NaOH	Reactant # II-1 II-2	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01M	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M	
	REACTANT	2 drops of e	ach reacta	nt		REACTIO N # I II	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃	NT #2 KI NaOH KI	Reactant # II-1 II-2 II-3	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01M Pb(NO ₃) ₂ 0.10M ZnSO ₄	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M	
	REACTANT	2 drops of e	ach reacta	nt		REACTIO N# I II III IV V	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃ ZnSO ₄ CaCl ₂	NT #2 KI NaOH KI NaOH K ₂ C ₂ O ₄	Reactant # II-1 II-2 II-3 IV-1 IV-2	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂	REACT AN T #2 & Cone. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M NaOH	
	REACTANT	2 drops of e	ach reacta	nt		REACTIO N# I II III	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃ ZnSO ₄	NT #2 KI NaOH KI NaOH	Reactant # II-1 II-2 II-3 IV-1	REACT AN T #1 & Cone. 0.10M Pb(NO3)2 0.10M Pb(NO3)2 0.01M Pb(NO3)2 0.10M ZnSO4 0.10M ZnSO4	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M	
	REACTANT	2 drops of e	ach reacta	nt		REACTIO N# I II III IV V	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃ ZnSO ₄ CaCl ₂	NT #2 KI NaOH KI NaOH K ₂ C ₂ O ₄	Reactant # II-1 II-2 II-3 IV-1 IV-2 IV-3	REACT AN T #1 & Conc. 0.10M Pb(NO3)2 0.10M Pb(NO3)2 0.01M Pb(NO3)2 0.10M ZnSO4 0.10M ZnSO4	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M NaOH 1.0M NaOH	
	REACTANT	2 drops of e	ach reacta	nt		REACTIO N# I II III IV V	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃ ZnSO ₄ CaCl ₂	NT #2 KI NaOH KI NaOH K ₂ C ₂ O ₄	Reactant # II-1 II-2 II-3 IV-1 IV-2	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01M Pb(NO ₃) ₂ 0.10M ZnSO ₄ 0.10M ZnSO ₄	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M NaOH 1.0M NaOH	
	REACTANT	2 drops of e	ach reacta	nt		REACTIO N# I II III IV V	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃ ZnSO ₄ CaCl ₂	NT #2 KI NaOH KI NaOH K ₂ C ₂ O ₄	Reactant # II-1 II-2 II-3 IV-1 IV-2 IV-3	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01M Pb(NO ₃) ₂ 0.10M ZnSO ₄ 0.10M ZnSO ₄ 0.01M ZnSO ₄	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M NaOH 1.0M NaOH	
	REACTANT	2 drops of e	ach reacta	nt		REACTIO N# I II III IV V	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃ ZnSO ₄ CaCl ₂	NT #2 KI NaOH KI NaOH K ₂ C ₂ O ₄	Reactant # II-1 II-2 II-3 IV-1 IV-2 IV-3 V-1	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01 M Pb(NO ₃) ₂ 0.10M ZnSO ₄ 0.10M ZnSO ₄ 0.01M ZnSO ₄ 0.01M CaCl ₂	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.01M NaOH	
#	REACTANT #1 & CONC	REACTANT #2 & CONC	OB	SERVATIO	DNS	REACTION N# I II III IV V VI	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃ ZnSO ₄ CaCl ₂ CaCl ₂	NT #2 KI NaOH KI NaOH K ₂ C ₂ O ₄ NaOH	Reactant # II-1 II-2 II-3 IV-1 IV-2 IV-3 V-1 V-2	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01 M Pb(NO ₃) ₂ 0.10M ZnSO ₄ 0.10M ZnSO ₄ 0.01M ZnSO ₄ 0.01M CaCl ₂	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.01M NaOH	
# PART 4. S	REACTANT	REACTANT #2 & CONC	OB	esservation	ONS each 2 stud	REACTION N # I II III IV V VI dents study	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃ ZnSO ₄ CaCl ₂ CaCl ₂	NT #2 KI NaOH KI NaOH K ₂ C ₂ O ₄ NaOH	Reactant # II-1 II-2 II-3 IV-1 IV-2 IV-3 V-1 V-2	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01 M Pb(NO ₃) ₂ 0.10M ZnSO ₄ 0.10M ZnSO ₄ 0.01M ZnSO ₄ 0.01M CaCl ₂	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.01M NaOH	
# PART 4. S ΓABLE 6:	REACTANT #1 & CONC	REACTANT #2 & CONC ution & Prability in Po	OB O	nt SSERVATIO Defforts, e n-Polar S	ons pach 2 stu	REACTIO N# I II III V VI VI	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃ ZnSO ₄ CaCl ₂ CaCl ₂ v solubility ples to test	NT #2 KI NaOH KI NaOH K ₂ C ₂ O ₄ NaOH	Reactant # II-1 II-2 II-3 IV-1 IV-2 IV-3 V-1 V-2	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01 M Pb(NO ₃) ₂ 0.10M ZnSO ₄ 0.10M ZnSO ₄ 0.01M ZnSO ₄ 0.01M CaCl ₂	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.01M NaOH	
# PART 4. S ΓABLE 6: Solid (thoroughly	REACTANT #1 & CONC Folvent Pollic Solids Solu Type y dry inside	REACTANT #2 & CONC	OB	o efforts, en-Polar S Hexane	each 2 stud	REACTION N # I II III IV V VI dents study	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃ ZnSO ₄ CaCl ₂ CaCl ₂ v solubility ples to test	NT #2 KI NaOH KI NaOH K ₂ C ₂ O ₄ NaOH v of 1 solid y) rom CH 4,	Reactant # II-1 II-2 II-3 IV-1 IV-2 IV-3 V-1 V-2	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01 M Pb(NO ₃) ₂ 0.10M ZnSO ₄ 0.10M ZnSO ₄ 0.01M ZnSO ₄ 0.01M CaCl ₂	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.01M NaOH	
# PART 4. S ΓABLE 6: Solid	REACTANT #1 & CONC Folvent Pollic Solids Solu Type y dry inside	REACTANT #2 & CONC with the control of the control	OB O	nt SSERVATIO Defforts, e n-Polar S	each 2 stud	REACTION N# I II III IV V VI dents study otal 6 samper the solubing precipatate.	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃ ZnSO ₄ CaCl ₂ CaCl ₂ v solubility ples to test	NT #2 KI NaOH KI NaOH K ₂ C ₂ O ₄ NaOH v of 1 solid y) rom CH 4,	Reactant # II-1 II-2 II-3 IV-1 IV-2 IV-3 V-1 V-2	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01 M Pb(NO ₃) ₂ 0.10M ZnSO ₄ 0.10M ZnSO ₄ 0.01M ZnSO ₄ 0.01M CaCl ₂	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.01M NaOH	
PART 4. S FABLE 6: Solid (thoroughly	REACTANT #1 & CONC Folvent Pollic Solids Solu Type y dry inside	REACTANT #2 & CONC with the control of the control	OB O	o efforts, en-Polar S Hexane	each 2 stude of the colvents (to Note: Use predict if	REACTION N# I II III IV V VI dents study otal 6 samper the solubing precipatate.	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃ ZnSO ₄ CaCl ₂ CaCl ₂ v solubility ples to test	NT #2 KI NaOH KI NaOH K ₂ C ₂ O ₄ NaOH v of 1 solid y) rom CH 4,	Reactant # II-1 II-2 II-3 IV-1 IV-2 IV-3 V-1 V-2	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01 M Pb(NO ₃) ₂ 0.10M ZnSO ₄ 0.10M ZnSO ₄ 0.01M ZnSO ₄ 0.01M CaCl ₂	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.01M NaOH	
PART 4. S FABLE 6: Solid (thoroughly test t I. CaC	REACTANT #1 & CONC Folvent Polli Solids Solu Type y dry inside ubes)	REACTANT #2 & CONC with the control of the control	OB O	o efforts, en-Polar S Hexane	each 2 stude of the colvents (to Note: Use predict if	REACTION N# I II III IV V VI dents study otal 6 samper the solubing precipatate.	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃ ZnSO ₄ CaCl ₂ CaCl ₂ v solubility ples to test	NT #2 KI NaOH KI NaOH K ₂ C ₂ O ₄ NaOH v of 1 solid y) rom CH 4,	Reactant # II-1 II-2 II-3 IV-1 IV-2 IV-3 V-1 V-2	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01 M Pb(NO ₃) ₂ 0.10M ZnSO ₄ 0.10M ZnSO ₄ 0.01M ZnSO ₄ 0.01M CaCl ₂	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.01M NaOH	
PART 4. S FABLE 6: Solid (thoroughly test t I. CaCl	REACTANT #1 & CONC Folvent Polli Solids Solid Type y dry inside ubes) 12 < 0.2g	ation & Prability in Polyage Vater 2mL	OB O	o efforts, en-Polar S Hexane	each 2 stude of the colvents (to Note: Use predict if	REACTION N# I II III IV V VI dents study otal 6 samper the solubing precipatate.	REACTA NT #1 Pb(NO ₃) ₂ Pb(NO ₃) ₂ AgNO ₃ ZnSO ₄ CaCl ₂ CaCl ₂ v solubility ples to test	NT #2 KI NaOH KI NaOH K ₂ C ₂ O ₄ NaOH v of 1 solid y) rom CH 4,	Reactant # II-1 II-2 II-3 IV-1 IV-2 IV-3 V-1 V-2	REACT AN T #1 & Conc. 0.10M Pb(NO ₃) ₂ 0.10M Pb(NO ₃) ₂ 0.01 M Pb(NO ₃) ₂ 0.10M ZnSO ₄ 0.10M ZnSO ₄ 0.01M ZnSO ₄ 0.01M CaCl ₂	REACT AN T #2 & Conc. 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.10M NaOH 1.0M NaOH 0.01M NaOH 0.01M NaOH	

VC211 EXPERIMENT E5 DATASHEET: PRECIPITATION & WATER PURITY SECTION#:____

TA:

STDNT: