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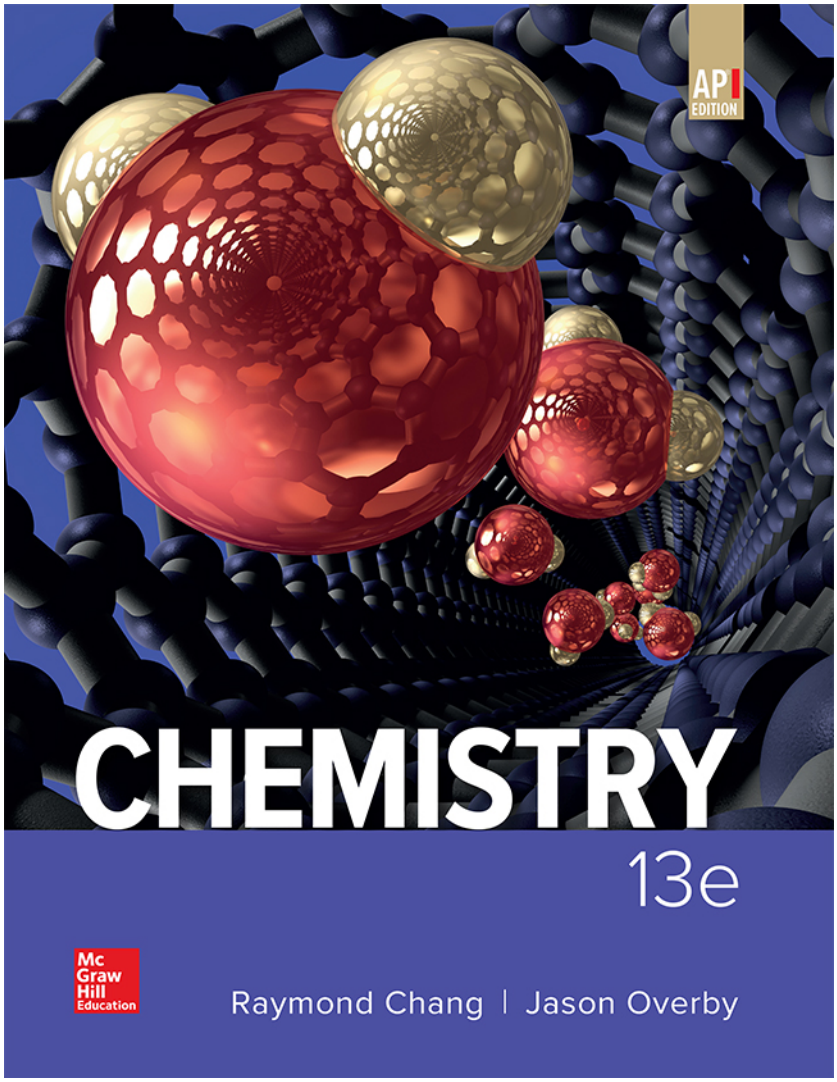
Advanced Placement®

REVERSE CORRELATION GUIDE

Chemistry



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Based on College Board Course Framework:
AP Chemistry, Effective Fall 2019

Advanced Placement Reverse Correlation (by chapter)
***Chemistry,* (13e)**
by Raymond Chang & Jason Overby

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16.2 The Common Ion Effect	7.12	SAP-9.C.2, TRA-7.E.1, TRA-8.A.2	5.F, 6.G
16.3 Buffer Solutions	8.4, 8.5, 8.8	SAP-10.B.1, SAP-10.C.1, SAP-10.D.1, SAP-10.D.2, TRA-7.E.1, TRA-8.A.2	6.D

16.4 Acid-Base Titrations	4.6, 8.4, 8.5	SAP-9.D.1, SAP-9.D.2, SAP-9.D.3, SAP-9.D.4, SAP-9.E.1, SAP-9.E.2, SAP-9.E.3, SAP-10.D.2, SPQ-1.A.1, SPQ-4.B.1, TRA-2.A.1, TRA-7.E.1	1.B, 3.A, 5.D, 5.F
16.5 Acid-Base Indicators	8.7	SAP-10.A.2	2.D
16.6 Solubility Equilibria	7.11, 7.12, 7.13	SPQ-3.A.1, SPQ-3.C.2, SPQ-4.B.1, SPQ-5.A.1, SPQ-5.A.2, SPQ-5.A.3, TRA-2.A.5, TRA-6.A.1, TRA-7.B.1, TRA-7.E.1	5.B, 6.D
16.7 Separation of Ions by Fractional Precipitation	4.7	TRA-6.A.1, TRA-7.F.1	3.C
16.8 The Common Ion Effect and Solubility	7.11, 7.12, 7.13	SPQ-3.C.2, SPQ-5.A.2, SPQ-5.B.1, TRA-8.A.2	2.F
16.9 pH and Solubility	7.13	SAP-9.A.1, SPQ-5.A.2, SPQ-5.B.1, SPQ-5.C.1, TRA-2.A.5, TRA-8.A.2	2.D, 2.F
16.10 Complex Ion Equilibria and Solubility	7.11	SPQ-3.C.2, SPQ-5.A.2	
16.11 Application of the Solubility Product Principle to Qualitative Analysis	4.7, 7.11	SAP-9.E.3, SAP-9.E.4, TRA-2.A.5	5.D
Chapter 17: Entropy, Free Energy, and Equilibrium	**Unit 6: Thermodynamics** **Unit 9: Applications of Thermodynamics**		
	Topics	**Essential Knowledge**	**Science Practices**
17.1 The Three Laws of Thermodynamics			
17.2 Spontaneous Processes	9.3	ENE-4.D.1, ENE-4.D.2, TRA-1.C.1,	3.B, 6.E
17.3 Entropy	9.1, 9.2	ENE-4.A.1, ENE-4.A.2, SPQ-5.D.1, TRA-1.C.1	3.B, 4.D, 6.C
17.4 The Second Law of Thermodynamics	6.1	ENE-4.B.1, TRA-1.C.1	3.B, 5.F
17.5 Gibbs Free Energy	9.3	ENE-4.C.1, ENE-4.C.2, ENE-4.C.3, ENE-4.C.4, ENE-4.C.5, ENE-4.C.6, ENE-4.D.1, SAP-7.A.3	6.E

17.6 Free Energy and Chemical Equilibrium	9.5	ENE-5.A.1, ENE-5.A.2, ENE-5.A.3, ENE-5.A.4, ENE-5.B.1, SPQ-5.D.1	4.D, 6.D
17.7 Thermodynamics in Living Systems	9.6	ENE-5.B.1, ENE-5.B.2	4.D
Chapter 18: Electrochemistry	**Unit 4: Chemical Reactions** **Unit 9: Applications of Thermodynamics**		
	Topics	**Essential Knowledge**	**Science Practices**
18.1 Redox Reactions	4.7, 4.9	ENE-6.B.1, TRA-1.B.1, TRA-1.B.2, TRA-1.B.3, TRA-2.A.2, TRA-2.A.3, TRA-2.A.4, TRA-2.C.1, TRA-6.A.1	5.E
18.2 Galvanic Cells	9.7	ENE-6.A.1, ENE-6.A.3, TRA-1.C.1, TRA-2.A.3, TRA-2.A.4	2.F, 3.B
18.3 Standard Reduction Potentials	9.8, 9.9	ENE-6.A.1, ENE-6.A.2, ENE-6.A.3, ENE-6.B.2, ENE-6.C.1, TRA-2.A.3, TRA-2.A.4	2.F, 5.F, 6.D
18.4 Thermodynamics of Redox Reactions	9.8	ENE-6.A.2, ENE-6.B.1, ENE-6.B.3, ENE-6.C.1, ENE-6.C.2, ENE-6.C.3, ENE-6.D.1	2.F, 5.F, 6.D
18.5 The Effect of Concentration of Cell Emf	9.9	ENE-6.C.1, ENE-6.C.2, ENE-6.C.3, ENE-6.C.4	6.D
18.6 Batteries and Fuel Cells	9.7, 9.8, 9.9, 9.10	ENE-6.A.2, ENE-6.A.3, TRA-1.C.1	2.F, 3.B
18.7 Corrosion			
18.8 Electrolysis	9.10	ENE-6.A.2, ENE-6.A.3, ENE-6.D.1, SPQ-4.A.2, TRA-2.C.1	2.F, 5.B
Chapter 19: Nuclear Chemistry	**Unit 4: Chemical Reactions** **Unit 5: Kinetics**		
	Topics	**Essential Knowledge**	**Science Practices**
19.1 The Nature of Nuclear Reactions	4.5	TRA-1.B.1	
19.2 Nuclear Stability	4.1	SAP-1.A.2	
19.3 Natural Radioactivity	5.3	TRA-3.C.5, TRA-3.C.6	
19.4 Nuclear Transmutation			
19.5 Nuclear Fission	4.3	TRA-1.C.1	3.B

19.6 Nuclear Fusion			
19.7 Uses of Isotopes			
19.8 Biological Effects of Radiation			
Chapter 20: Chemistry in the Atmosphere	**Unit 3: Intermolecular Forces and Properties**		
	Topics	**Essential Knowledge**	**Science Practices**
20.1 Earth's Atmosphere			
20.2 Phenomena in the Outer Layers of the Atmosphere			
20.3 Depletion of Ozone in the Stratosphere			
20.4 Volcanoes			
20.5 The Greenhouse Effect	3.11	SAP-8.A.1, TRA-1.C.1	3.B
20.6 Acid Rain			
20.7 Photochemical Smog			
20.8 Indoor Pollution			
Chapter 21: Metallurgy and the Chemistry of Metals	**Unit 1: Atomic Structure and Properties** **Unit 2: Molecular and Ionic Compound Structure and Properties** **Unit 3: Intermolecular Forces and Properties**		
	Topics	**Essential Knowledge**	**Science Practices**
21.1 Occurrence of Metals			
21.2 Metallurgical Processes	2.4, 3.2	SAP-3.D.2, SAP-3.D.3, SAP-5.B.6, SPQ-2.B.1	
21.3 Band Theory of Electrical Conductivity	2.4, 3.2	SAP-3.A.5, SAP-3.D.1, SAP-5.B.6	4.C
21.4 Periodic Trends in Metallic Properties	1.8	SAP-2.B.3	
21.5 The Alkali Metals	1.8	SAP-2.B.2	
21.6 The Alkaline Earth Metals	1.7, 1.8	SAP-2.B.2, SAP-2.B.3	
21.7 Aluminum	1.7, 1.8	SAP-2.B.3	
Chapter 22: Nonmetallic Elements and Their Compounds	**Unit 1: Atomic Structure and Properties**		
	Topics	**Essential Knowledge**	**Science Practices**
22.1 General Properties of Nonmetals			
22.2 Hydrogen			
22.3 Carbon			
22.4 Nitrogen and Phosphorus			
22.5 Oxygen and Sulfur			
22.6 The Halogens	1.7, 1.8	SAP-2.B.2, SAP-2.B.3	

Chapter 23: Transition Metals Chemistry and Coordination Compounds	**Unit 3: Intermolecular Forces and Properties**		
	Topics	**Essential Knowledge**	**Science Practices**
23.1 Properties of the Transition Metals			
23.2 Chemistry of Iron and Copper			
23.3 Coordination Compounds			
23.4 Structure of Coordination Compounds			
23.5 Bonding in Coordination Compounds: Crystal Field Theory	3.11, 3.12, 3.13	SAP-8.B.1, SAP-8.B.2, SAP-8.C.1, SAP-8.C.2, SPQ-2.B.1	2.E
23.6 Reactions of Coordination Compounds			
23.7 Applications of Coordination Compounds			
Chapter 24: Organic Chemistry	**Unit 2: Molecular and Ionic Compound Structure and Properties** **Unit 3: Intermolecular Forces and Properties** **Unit 4: Chemical Reactions** **Unit 8: Acids and Bases**		
	Topics	**Essential Knowledge**	**Science Practices**
24.1 Classes of Organic Compounds			
24.2 Aliphatic Hydrocarbons	3.2, 4.3	SAP-5.A.2, TRA-1.C.1, TRA-2.A.2	3.B
24.3 Aromatic Hydrocarbons	2.6	SAP-4.B.1	
24.4 Chemistry of the Functional Groups	3.2, 8.6, 3.9	SAP-5.B.7, SAP-9.F.1, SPQ-3.C.1	
Chapter 25: Synthetic and Natural Organic Polymers	**Unit 3: Intermolecular Forces and Properties** **Unit 4: Chemical Reactions**		
	Topics	**Essential Knowledge**	**Science Practices**
25.1 Properties of Polymers	3.2	SAP-5.B.5	
25.2 Synthetic Organic Polymers	3.2	SAP-5.B.5	
25.3 Proteins	3.1, 3.2, 4.3	SAP-5.A.1, SAP-5.A.5, SAP-5.B.2, SAP-5.B.7, TRA-1.C.1	3.B
25.4 Nucleic Acids	3.1	SAP-5.A.5, SAP-5.B.2, SAP-5.B.7	