

Correlation to Show Compatibility of *Chemistry: Matter and Change* with the Next Generation Science Standards Disciplinary Core Ideas

Chemistry: Matter and Change provides optimal flexibility for the initial implementation of the Next Generation Science Standards (NGSS) into your curriculum. This correlation to the Disciplinary Core Ideas (DCIs) will help guide and inform your curriculum decisions as you transition the NGSS into your science instruction.

Lesson Title	Disciplinary Core Ideas	Pages
Chapte	er 1 • Introduction to Chemistry	
1 A Story of Two Substances		4-8
2 Chemistry and Matter	This topic is a prerequisite for PS1.A.	9-11
3 Scientific Methods		12-16
4 Scientific Research		17-29
Chapter 2 Analyzing Data		
1 Units and Measurements		32-39
2 Scientific Notation and Dimensional Analysis		40-46
3 Uncertainty in Data		47-54
4 Representing Data		55-37
Chapter 3 • Matter-Properties and Changes		
1 Properties of Matter	This topic is a prerequisite for PS1.A.	70-75
2 Changes in Matter	PS1.B	76-79
3 Mixtures of Matter	This topic is a prerequisite for PS1.A.	80-83
4 Elements and Compounds	This topic is a prerequisite for PS1.A.	84-99
Chapter 4 • The Structure of the Atom		
1 Early Ideas About Matter	This topic is a prerequisite for PS1.A.	102-105
2 Defining the Atom	PS1.A	106-114
3 How Atoms Differ	PS1.A	115-121
4 Unstable Nuclei and Radioactive Decay	PS1.A, PS1.C	122-133



Lesson Title	Disciplinary Core Ideas	Pages
Chapter 5 • Electrons in Atoms		
1 Light and Quantized Energy	PS4.A, PS4.B	136-145
2 Quantum Theory and the Atom	PS1.A	146-155
3 Electron Configuration	PS1.A	156-171
Chapter 6 • The Periodic Table and Periodic Law		
1 Development of the Modern Periodic Table	PS1.A	174-181
2 Classification of the Elements	PS1.A	182-186
3 Periodic Trends	PS1.A	187-203
Chapter 7 • Ionic Compounds and Metals		
1 Ion Formation	PS1.A	206-209
2 Ionic Bonds and Ionic Compounds	PS1.A, PS1.B, PS2.B, PS3.A	210-217
3 Names and Formulas for Ionic Compounds	This topic supports PS1.A and PS1.B.	218-224
4 Metallic Bonds and the Properties of Metals	PS1.A, PS1.B, PS3.A	225-237
C	hapter 8 • Covalent Bonding	
1 The Covalent Bond	PS1.A, PS1.B, PS3.A, PS3.B	240-247
2 Naming Molecules	This topic supports PS1.A and PS1.B.	248-252
3 Molecular Structures	PS1.A	253-260
4 Molecular Shapes	PS1.A	261-264
5 Electronegativity and Polarity	PS1.A, PS2.B	265-279
Chapter 9		
1 Reactions and Equations	This topic is a prerequisite to PS1.B.	282-288
2 Classifying Chemical Reactions	PS1.A, PS1.B	289-298
3 Reactions in Aqueous Solutions	PS1.B	299-317



Lesson Title	Disciplinary Core Ideas	Pages
Chapter 10 • The Mole		
1 Measuring Matter	This topic is an extension of PS1.B.	320-324
2 Mass and the Mole	This topic is an extension of PS1.B.	325-332
3 Moles of Compounds	This topic is an extension of PS1.B.	333-340
4 Empirical and Molecular Formulas	This topic is an extension of PS1.B.	341-350
5 Formulas of Hydrates	This topic is an extension of PS1.B.	351-365
Chapter 11 • Stoichiometry		
1 Defining Stoichiometry	This topic is an extension of PS1.B.	368-372
2 Stoichiometric Calculations	This topic is an extension of PS1.B.	373-378
3 Limiting Reactants	This topic is an extension of PS1.B.	379-384
4 Percent Yield	This topic is an extension of PS1.B.	385-399
Chapter 12 • States of Matter		
1 Gases	PS1.B, PS3.A, PS3.B	402-410
2 Forces of Attraction	PS1.A, PS2.B	411-414
3 Liquids and Solids	PS1.A, PS2.B	415-424
4 Phase Changes	PS1.A, PS2.B, PS3.A	425-439
	Chapter 13 • Gases	
1 The Gas Laws	This topic is an extension of PS1.A.	442-451
2 The Ideal Gas Law	This topic is an extension of PS1.A.	452-459
3 Gas Stoichiometry	This topic is an extension of PS1.B.	460-473
Chapter 14 • Mixtures and Solutions		
1 Types of Mixtures	This topic is an extension of PS1.A.	476-479
2 Solution Concentration	This topic is an extension of PS1.A.	480-488
3 Factors Affecting Solvation	PS1.A	489-497
4 Colligative Properties of Solutions	This topic is an extension of PS1.A.	499-513



Lesson Title	Disciplinary Core Ideas	Pages
Chapter 15 • Energy and Chemical Change		
1 Energy	PS3.A, PS3.B, PS3.D	516-522
2 Heat	PS3.A, PS3.B, PS3.D	523-528
3 Thermochemical Equations	This topic is an extension of PS3.A, PS3.B, and PS3.D.	529-533
4 Calculating Enthalpy Change	This topic is an extension of PS3.A, PS3.B, and PS3.D.	534-541
5 Reaction Spontaneity	This topic is an extension of PS3.A, PS3.B, and PS3.D.	542-557
Chapter 16 Reaction Rates		
1 A Model for Reaction Rates	PS1.B, PS3.A, PS3.B	560-567
2 Factors Affecting Reaction Rates	PS1.B	568-573
3 Reaction Rate Laws	PS1.B	574-577
4 Instantaneous Reaction Rates and Reaction Mechanisms	PS1.B, PS3.B	578-591
Cha	pter 17 • Chemical Equilibrium	
1 A State of Dynamic Balance	PS1.B	594-605
2 Factors Affecting Chemical Equilibrium	PS1.B	606-611
3 Using Equilibrium Constants	PS1.B	612-631
Chapter 18 • Acids and Bases		
1 Introduction to Acids and Bases	This topic is an extension of PS1.A and PS1.B.	634-643
2 Strengths of Acids and Bases	This topic is an extension of PS1.A and PS1.B.	644-649
3 Hydrogen lons and pH	This topic is an extension of PS1.A and PS1.B	650-658
4 Neutralization	This topic is an extension of PS1.A and PS1.B.	659-677



Lesson Title	Disciplinary Core Ideas	Pages
Chapter 19 Redox Reactions		
1 Oxidation and Reduction	This topic is an extension of PS1.A and PS1.B.	680-688
2 Balancing Redox Equations	This topic is an extension of PS1.A and PS1.B.	689-705
С	hapter 20 • Electrochemistry	
1 Voltaic Cells	PS3.A, PS3.A, PS3.B	708-717
2 Batteries	PS3.A, PS3.A	718-727
3 Electrolysis	PS3.A, PS3.B	728-741
Chapter 21 • Hydrocarbons		
1 Introduction to Hydrocarbons	This topic is an extension of PS1.A and PS1.B.	744-749
2 Alkanes	This topic is an extension of PS1.A and PS1.B.	750-758
3 Alkenes and Alkynes	This topic is an extension of PS1.A and PS1.B.	759-764
4 Hydrocarbon Isomers	This topic is an extension of PS1.A and PS1.B.	765-769
5 Aromatic Hydrocarbons	This topic is an extension of PS1.A and PS1.B.	770-783
Chapter 22 • Su	bstituted Hydrocarbons and Their Reactions	
1 Alkyl Halides and Aryl Halides	This topic is an extension of PS1.A and PS1.B.	786-791
2 Alcohols, Ethers, and Amines	This topic is an extension of PS1.A and PS1.B.	792-795
3 Carbonyl Compounds	This topic is an extension of PS1.A and PS1.B.	796-801
4 Other Reactions of Organic Compounds	This topic is an extension of PS1.A and PS1.B.	802-808
5 Polymers	This topic is an extension of PS1.A and PS1.B.	809-823



Lesson Title	Disciplinary Core Ideas	Pages	
CI	Chapter 23 • The Chemistry of Life		
1 Proteins	PS1.A, PS1.B, LS1.C	826-831	
2 Carbohydrates	PS1.A, PS1.B, LS1.C	832-834	
3 Lipids	PS1.A, PS1.B, LS1.C	835-839	
4 Nucleic Acids	PS1.A, PS1.B, LS1.C	840-843	
5 Metabolism	PS1.A, PS1.B, LS1.C , LS2.B	844-857	
Chapter 24 Nuclear Chemistry			
1 Nuclear Radiation	PS4.C	860-864	
2 Radioactive Decay	PS1.A, PS1.C, PS2.B	865-874	
3 Nuclear Reactions	PS1.C	875-884	
4 Applications and Effects of Nuclear Reactions	PS4.B	885-899	

Elements Handbook PS1.	A 901-945
------------------------	-----------