



Glencoe

MAINE
Science and Technology
Middle Grades 5-8 and Secondary Grades
***Chemistry: Matter and Change* © 2002**

OBJECTIVES	PAGE REFERENCES
E. STRUCTURE OF MATTER Students will understand the structure of matter and the changes it can undergo. Students will be able to:	
MIDDLE GRADES 5-8	
1. Predict and test whether objects will float or sink based on a qualitative and quantitative understanding of the concepts of density and buoyancy.	SE: 399-400 <i>Discovery Lab 25</i>
2. Describe the evidence that all matter consists of particles called atoms that are made up of certain smaller particles.	SE: 9, 89-91, 92-97 TWE: EX 97 RS 111
3. Use the Periodic Table to group elements based on their characteristics.	SE: 154-158, 159-162, 179-185, 186-196, 197-201 <i>ChemLab 170-171</i> TWE: A 158, 185 CJ 161 CD 186
4. Describe how a substance can combine with different substances in different ways, depending on the conditions and the properties of each substance.	SE: 76-77, 211-217, 241-245, 698-701 <i>Chapter Assessment 237 #79</i> <i>Section Assessment 247 #12</i> TWE: A 245 D 248-249 CJ 76
5. Describe how the motion of the particles of matter determines the state of that matter (e.g., solid, liquid, gas, plasma) and vice versa.	SE: 58-59, 385-386, 396, 399 TWE: MIN 58 R 59
6. Explain how the relatively small number of naturally occurring elements can result in the large variety of substances found in the world.	SE: 76-77, 211, 698-701, 706, 717-721, 737-738, 856 TWE: CJ 76 MIN 717 BM 718
7. Investigate the similarities and differences between elements, compounds, and mixtures.	SE: 66-67, 70-74 <i>ChemLab 78-79</i> <i>Chapter Assessment 82-83 #46, #56, #57</i> TWE: R 77 A 66 QD 75
8. Demonstrate the law of conservation of matter.	SE: 63-65 <i>Chapter Assessment 82-83 #44, #61-65</i> TWE: A 360, 363 QD 279

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SECONDARY GRADES	
1. Trace the development of models of the atom to the present and describe how each model reflects the scientific understanding of their time.	SE: 87-91, 92-97, 127-134 <i>Section Assessment 97 #10</i> TWE: P 133 EX 97 R 97 CJ 94 RS 111
2. Analyze how matter is affected by changes in temperature, pressure, and volume.	SE: 58-59, 386-387, 396-400, 420-427 <i>Discovery Lab 419</i> TWE: A 58 MIN 396 D 420-421 BM 426 AC 399
3. Describe the characteristics and behavior of acids and bases.	SE: 595-601, 602-607, 617-618 <i>Discovery Lab 595</i> <i>How It Works 628</i> TWE: QD 596 CJ 618 MIN 602
4. Describe an application of the Law of Conservation of Matter.	SE: 280-283, 354-355 TWE: A 360 CJ 355
5. Describe how atoms are joined by chemical bonding.	SE: 211-214, 215-217, 241-246 <i>ChemLab 232-233</i> TWE: QD 211 CJ 217, 243 P 215 D 248-249
6. Compare the physical and chemical characteristics of elements.	SE: 163-169, 179-185, 186-196, 197-201 <i>ChemLab 170-171</i> TWE: QD 185, 194 A 183 CD 195 RS 205
7. Describe nuclear reactions, including fusion, fission, and decay, their occurrences in nature, and how they can be used by humans.	SE: 105-107, 810-814, 815-820, 821-826, 827-831 TWE: A 818, 829 CJ 105 R 813 QD 817

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J. INQUIRY AND PROBLEM SOLVING	
Students will apply inquiry and problem-solving approaches in science and technology. Students will be able to:	
SECONDARY GRADES	
1. Make accurate observations using appropriate tools and units of measure.	SE: 25-30 <i>ChemLab</i> 46-47, 444-445, 520-521, 626-627 <i>MiniLab</i> 329, 473 TWE: A 405, 437, 497 CJ 620
2. Verify, evaluate, and use results in a purposeful way. This includes analyzing and interpreting data, making predictions based on observed patterns, testing solutions against the original problem conditions, and formulating additional questions.	SE: <i>Problem-Solving Lab</i> 155, 267, 390 <i>ChemLab</i> 170-171, 444-445, 728-729 TWE: QD 194 A 218, 830 CJ 430
3. Demonstrate the ability to use scientific inquiry and technological method with short term and long term investigations, recognizing that there is more than one way to solve a problem. Demonstrate knowledge of when to try different strategies.	SE: <i>Problem-Solving Lab</i> 372, 478 <i>ChemLab</i> 18-19, 202-203, 520-521, 832-833 TWE: EX 11 MIN 396 P 364 A 542
4. Design and construct a device to perform a specific function, then redesign for improvement (e.g., performance, cost).	SE: <i>ChemLab</i> 203 #5, 411 #8, 521 #7, 833 #7 TWE: MIN 389, 396, 430, 842 A 409, 420

Codes Used for TWE Pages

A	Assessment
AC	Applying Chemistry
BM	Building a Model
CD	Concept Development
CJ	Chemistry Journal
D	Demonstration
EX	Extension
MIN	Meeting Individual Needs
P	Portfolio
QD	Quick Demo
R	Reteach
RS	Review Strategies