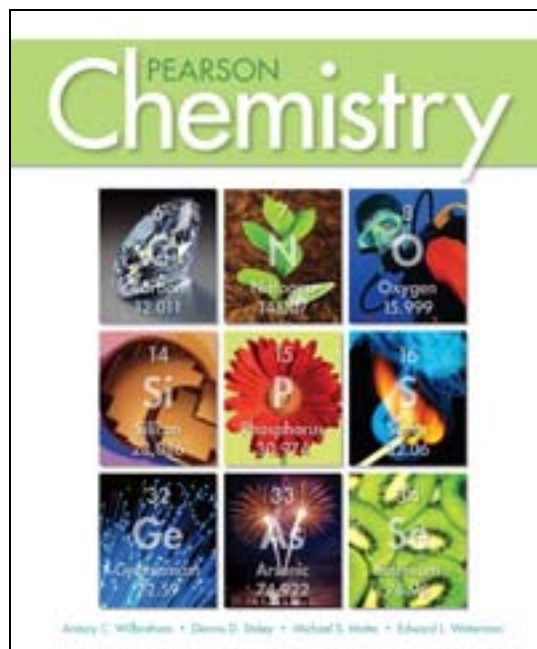


A Correlation of

# Pearson Chemistry

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To the

# Washington

## Science Learning Standards

### Essential Academic Learning Requirements and Big Ideas

Grades 9-12

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**INTRODUCTION**

This document demonstrates how **Pearson Chemistry ©2012** meets the Washington Science Learning Standards, grades 9-12. Correlation page references are to the Student and Teacher's Editions and cited at the page level.

**Pearson Chemistry** combines proven and tested content with cutting-edge digital support and hands-on learning opportunities. This program provides you with everything you need to engage and motivate your students, as well as the tools to support the varied types of learners in your classroom.

The program is designed to connect curriculum, instruction, and assessment to the "Big Ideas" of chemistry that develops deep understanding.

**Pearson Chemistry** provides all of the problem-solving and math support that students need to be successful in the course, with ample opportunity for practice both in the Student Edition and in the program's digital resources.

**Pearson Chemistry** helps you meet the unique learning styles of each student in your classroom with a variety of resources. A variety of assessment opportunities helps you monitor student progress ensure student success on high-stakes tests.

**Pearsonchem.com** provides cutting-edge digital content that engages students and teachers – anytime, anywhere, with numerous practice opportunities and visual support, including interactive art and animations. Online tutors step students through chemistry and math problems, expanding learning beyond the classroom.

**Washington Science Learning Standards – Mathematics Connections**

Many of the standards in the *Washington State K-12 Mathematics Standards* suggest concepts, procedures, or processes that complement and support standards in science. These Mathematics Connections are indicated by a\*, b\*, etc., in this correlation and are related statements from the WA Mathematics Standards. The mathematics ideas will be learned as part of mathematics instruction. Because the mathematics ideas will be learned at the same grade level or an earlier grade level as the science, students can use them as tools in science.

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Washington Science Learning Standards	Pearson Chemistry
<b>EALR 1: Systems</b>	
<b>Big Idea: Systems (SYS)</b>	
<b>Core Content: <i>Predictability and Feedback</i></b>	
<p>In prior grades students learned how to simplify and analyze complex situations by thinking about them as systems. In grades 9-12 students learn to construct more sophisticated system models, including the concept of feedback. Students are expected to determine whether or not systems analysis will be helpful in a given situation and if so, to describe the system, including subsystems, boundaries, flows, and feedbacks. The next step is to use the system as a dynamic model to predict changes. Students are also expected to recognize that even the most sophisticated models may not accurately predict how the real world functions. This deep understanding of systems and ability to use systems analysis is an essential tool both for scientific inquiry and for technological design.</p>	
<p>9-12 SYSA <i>Feedback</i> is a process in which the <i>output</i> of a <i>system</i> provides information used to regulate the operation of the <i>system</i>. Positive <i>feedback</i> increases the disturbance to a <i>system</i>. Negative <i>feedback</i> reduces the disturbance to a <i>system</i>.</p>	
<ul style="list-style-type: none"> <li>Give examples of a positive <i>feedback system</i> and <i>explain</i> its regulatory mechanism (e.g., global warming causes Earth's ice caps to melt, reflecting less <i>energy</i> to space, increasing <i>temperatures</i>).<sup>*a</sup></li> </ul>	<p><b>SE:</b> 346-355, 356-368, 369-373, 562-568, 569-577, 728-736, R27, Ozone, R27, Chemistry &amp; You, 346, 356, 364, 369, 374, 562, 563, 569, 572, 728, 730, 736, Key Questions, 346, 356, 369, 562, 569, 728, Vocabulary, 346, 356, 369, 562, 569, 728, Figure, 346, 347, 348, 358, 360, 362, 369, 370, 728, 730, 731, 733, 735, Sample Problem, 349, 359, 363, 365, 371, 567, 570, 573, Kinetic Art, 351, 731, Interpret Data, 729, Reading Support, 733, Lesson Check, 354, 367, 374, 568, 575, Online Problems, 354, 367, 374, 568, 575, 736, Quick Lab, 571</p> <p><b>TE:</b> Key Objective, 346, 356, 369, 562, 569, 728, Additional Resources, 346, 356, 369, 562, 569, 728, PearsonChem.com, 346, 356, 369, 562, 569, 728, Engage: Chemistry &amp; You, 346, 356, 369, 351, 355, 364, 374, 562, 563, 569, 572, 728, 736, Activate Prior Knowledge, 346, 356, 369, 562, 570, 728, Focus on ELL, 346, 353, 356, 369, 562, 569, 570, 728, Professional Development Note, 347, 359, 360, 366, 566, 732, 735, Explain: Making Connections, 347, 353, 566, 734, Summarize, 347, Use Visuals, 348, 357, 358, 362, 574, 729, 731, Apply Concepts, 348, 349, 352, 355, 370, 374, 565, 729, 731, Differentiated Instruction, 348, 350, 355, 356, 364, 365, 370, 565, 573, 729, 731, Foundations for Math, 349, 352, 361, 363, 371, 564, 567, 574, Foundations for Reading, 347, 357, 370, 570, 729, Sample Problem Practice, 349, 352, 359, 361, 363, 365, 371, 374, 564, 567, 573, Use Analogy, 361, Misconception Alert, 349, 352, 359, 564, 565, Teacher Demo, 350, 351, 360, 362, 365, 366, 566, 730, 732, 733, UbD: Check for Understanding, 351, 358,</p>

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<ul style="list-style-type: none"> <li>• Give examples of a negative <i>feedback system</i> and <i>explain</i> its regulatory mechanism (e.g., when a human body overheats, it produces sweat that cools the body by <i>evaporation</i>). *a</li> </ul>	<p><b>SE:</b> 426-430, 609-620, 862-866, Kinetic Art, 426, 609, 865, Figure, 426, 427, 428, 429, 611, 613, 614, 862, 863, 865, Chemistry &amp; You, 427, 609, 614, 620, 862, 863, Interpret Data, 427, Interpret Graphs, 610, Key Questions, 609, 862, Vocabulary, 609, 862, Sample Problem, 615, 617, 618, 619, Lesson Check, 430, 620, 866, Online Problems, 430, 620, 866, Virtual Lab, 866, Big Idea, 866</p> <p><b>TE:</b> Kinetic Art, 426, 609, Activate Prior Knowledge, 426, 609, 862, Foundations for Reading, 426, 610, 862, Foundations for Math, 617, 618, 619, Explain: Use Visuals, 426, 429, 613, 864, 865, Differentiated Instruction, 426, 427, 611, 615, 864, Explore: Teacher Demo, 427, 428, 612, 615, Chemistry &amp; You, 427, 609, 614, 620, 863, Misconception Alert, 428, UbD: Check for Understanding, 428, 429, 610, 614, 616, 863, 865, Class Activity, 429, Key Objectives, 609, 862, Additional Resources, 609, 862, PearsonChem.com, 609, 862, Critical Thinking, 610, 618, Apply Concepts, 611, 613, 617, 619, 863, 864, Connect to Physics, 611, Make a Connection, 612, 613, 614, 863, Professional Development Note, 612, 613, Sample Practice Problem, 614, 617, 618, 619, Start a Conversation, 616, Interpret a Diagram, 616, Focus on ELL, 862, Reading Strategy, 863, Evaluate: Informal Assessment, 430, 620, 866, Reteach, 430, 620, 866, Lesson Check Answers, 430, 620, 866</p>

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9-12 SYSB <i>Systems</i> thinking can be especially useful in <i>analyzing</i> complex situations. To be useful, a <i>system</i> needs to be specified as clearly as possible.	
<ul style="list-style-type: none"> <li>Determine if a <i>systems</i> approach will be helpful in answering a <i>question</i> or solving a problem.*b</li> </ul>	<p><b>SE:</b> 14-19, Chemistry &amp; You, 14, 17, Key Questions, 14, Vocabulary, 14, Figure, 14, 15, 16, Quick Lab, 17, Kinetic Art, 16, Lesson Check, 19, Big Idea, 19</p> <p><b>TE:</b> Key Objective, 14, Additional Resources, 14, PearsonChem.com, 14, Engage: Chemistry &amp; You, 14, 17, Activate Prior Knowledge, 14, Focus on ELL, 14, 17, Professional Development Note, 15, Foundations for Reading, 15, Make a Connection, 15, Explore: Class Activity, 15, Use Visuals, 16, Misconception Alert, 16, Extend: Connect to Astronomy, 16, Differentiated Instruction, 16, Quick Lab, 17, Critical Thinking, 18, UbD: Check for Understanding, 18, Evaluate: Informal Assessment, 19, Reteach, 19, Lesson Check Answer, 19</p>
<ul style="list-style-type: none"> <li>Represent the <i>system</i> with a diagram specifying components, boundaries, flows, and <i>feedbacks</i>.*a</li> </ul>	<p><b>SE:</b> 426-430, 838-840, 854-862, 864-865, Figure, 426, 428, 429, 430, 838, 839, 840, 854, 855, 858, 859, 864, 865, Kinetic Art, 426, Chemistry &amp; You, 427, 838, 854, 857, Key Questions, 838, 854, Vocabulary, 838, 854, Interpret Graphs, 429, Lesson Check, 430, 840, 861, Online Problems, 430, 840, 861, Quick Lab, 856</p> <p><b>TE:</b> Use Visuals, 426, Differentiated Instruction, 427, Explore: Teacher Demo, 427, 428, Class Activity, 429, Chemistry &amp; You, 427, 838, 854, Explain: Apply Concepts, 428, 859, 864, Use Visuals, 429, 839, 854, 857, 864, 865, Misconception Alert, 428, UbD: Check for Understanding, 428, 429, 854, 865, Evaluate: Informal Assessment, 430, 840, 861, Reteach, 430, 840, 861, Lesson Check Answers, 430, 840, 861, Key Objectives, 838, 854, Additional Resources, 838, 854, PearsonChem.com, 838, 854, Engage: Activate Prior Knowledge, 838, Build Background, 854, Foundations for Reading, 838, 854, Focus on ELL, 838, 854, 856, Professional Development Note, 839, 858, 860, Reading Strategy, 839, Explore: Class Activity, 839, 858, Connect to Engineering, 840, Connect to Biology, 858, Connect to Literature, 861, Quick Lab, 856, Differentiated Instruction, 857, 859, 864, Use an Analogy, 857, 860, Make a Connection, 857, Start a Conversation, 859, Make a Connection, 860</p>

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<b>Washington Science Learning Standards</b>	<b>Pearson Chemistry</b>
<ul style="list-style-type: none"> <li>Describe relevant <i>subsystems</i> and the larger <i>system</i> that contains the <i>system</i> being analyzed. *a</li> </ul>	<p><b>SE:</b> 840, 865-866, Chemistry &amp; You, 840, Kinetic Art, 865, Figure, 840, 865, Lesson Check, 866, Big Idea, 866</p> <p><b>TE:</b> Use Visual, 865, UbD: Check for Understanding, 865, Evaluate: Informal Assessment, 866, Reteach, 866</p>
Determine how the <i>system functions</i> with respect to other <i>systems</i> .	<p><b>SE:</b> 557, 858-861, Concepts in Action, 557, Figure, 557, 858, 859, 860, 861, Lesson Check, 861, Online Problems, 861</p> <p><b>TE:</b> Differentiated Instruction, 557, Explain: Use Visuals, 557, Make a Connection, 557, Explore: Teacher Demo, 557, Class Activity, 858, Extend: Connect to Biology, 858, Professional Development Note, 858, 860, Differentiated Instruction, 859, Apply Concepts, 859, Start a Conversation, 859, Use an Analogy, 860, Make a Connection, 860, Connect to Literature, 861, Informal Assessment, 861, Reteach, 861</p>
9-12 SYSC In complex <i>systems</i> , entirely new and unpredictable <i>properties</i> may emerge. Consequently, modeling a complex <i>system</i> in sufficient detail to make <i>reliable predictions</i> may not be possible.	
<ul style="list-style-type: none"> <li>Create a simplified <i>model</i> of a complex <i>system</i>. Trace the possible consequences of a change in one part of the <i>system</i> and <i>explain how</i> the simplified <i>model</i> may not be adequate to reliably <i>predict</i> consequences.</li> </ul>	<p><b>SE:</b> 856-857, Quick Lab, 856-857, Chemistry &amp; You, 857</p> <p><b>TE:</b> Quick Lab, 856, Focus on ELL, 856, Explain: Chemistry &amp; You, 857, Use an Analogy, 857, Use Visuals, 857, Make a Connection, 857, Differentiated Instruction, 857</p>

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9-12 SYSD <i>Systems can be changing or in equilibrium.</i>	
<ul style="list-style-type: none"> <li>Analyze whether or not a <i>system</i> (e.g., population) is changing or in <i>equilibrium</i>. *c</li> </ul>	<p><b>SE:</b> 609-620, Chemistry &amp; You, 609, 614, 620, Key Questions, 609, Build Vocabulary, 609, Vocabulary Flashcards, 609, Sample Problem, 615, 617, 618, 619, Kinetic Art, 609, Lesson Check, 620</p> <p><b>TE:</b> Key Objectives, 609, Lesson Resources, 609, PearsonChem.com, 609, Engage: Chemistry &amp; You, 609, Activate Prior Knowledge, 609, Preview the Pages, 609, Explain: Use Visuals, 610, 613, Critical Thinking, 610, 617, 618, UbD: Check for Understanding, 610, 614, 616, Make a Connection, 612, 613, 619, Apply Concepts, 611, 613, 617, 619, Start a Conversation, 616, Interpret a Diagram, 616, Teacher Demo, 612, 615, Professional Development Note, 612, 613, Foundations for Reading, 610, Foundations for Math 617, 618, 619, Connect to Physics, 611, Differentiated Instruction, 611, 615, Practice Problems, 614, 617, 618, 619, Evaluate: Informal Assessment, 620, Reteach, 620, Lesson Check Answers, 620</p>
Determine whether a <i>state of equilibrium</i> is static or dynamic (e.g., inflows equal outflows). *c	<p><b>SE:</b> 609-615, 621-626, Chemistry &amp; You, 609, 614, 621, 624, Key Questions, 609, 621, Vocabulary, 609, 621, Figure, 609, 611, 613, 624, Kinetic Art, 609, Interpret Graphs, 610, Reading Support, 612, Sample Problem, 615, 623, Lesson Check, 626</p> <p><b>TE:</b> Key Objective, 609, 621, Additional Resources, 609, 621, PearsonChem.com, 609, Engage: Chemistry &amp; You, 609, 614, 621, 624, Assess Prior Knowledge, 609, 621, Focus on ELL, 609, Foundations for Reading, 610, 622, Foundations for Math, 623, 625, Explain: Use Visuals, 610, 613, 622, Critical Thinking, 610, Make a Connection, 612, 613, 614, UbD: Check for Understanding, 610, 614, 622, Differentiated Instruction, 611, 615, 624, Apply Concepts, 611, 613, 624, Extend: Connect to Physics, 611, Explore: Teacher Demo, 612, 615, Professional Development Note, 612, 613, Sample Practice Problem, 614, Start a Conversation, 622, Use Models, 622, Misconception Alert, 622, Class Activity, 623, 625, Sample Practice Problems, 623, 625, Draw Conclusions, 624, Evaluate: Informal Assessment, 626, Reteach, 626, Lesson Check Answers, 626</p>



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<b>EALR 2: Inquiry</b>	
<b>Big Idea: Inquiry (INQ)</b>	
<b>Core Content: <i>Conducting Analyses and Thinking Logically</i></b>	
<p>In prior grades students learned to revise questions so they can be answered scientifically. In grades 9-12 students extend and refine their understanding of the nature of inquiry and their ability to formulate questions, propose hypotheses, and design, conduct, and report on investigations. Refinement includes an increased understanding of the kinds of questions that scientists ask and how the results reflect the research methods and the criteria that scientific arguments are judged by. Increased abilities include competence in using mathematics, a closer connection between student-planned investigations and existing knowledge, improvements in communication and collaboration, and participation in a community of learners.</p>	
<p>9-12 INQA <b>Question</b> Scientists <i>generate</i> and <i>evaluate</i> questions to investigate the natural world.</p>	
<ul style="list-style-type: none"> <li>Generate and evaluate a question that can be answered through a scientific investigation. Critique questions generated by others and explain whether or not the questions are scientific.*a</li> </ul>	<p><b>SE:</b> 17-19, Quick Lab, 17, Chemistry &amp; You, 17, Think Critically, 19</p> <p><b>TE:</b> For Enrichment, 17, Chemistry &amp; You, 17, Critical Thinking, 18, Evaluate: Informal Assessment, 19, Reteach, 19</p>
<p>9-12 INQB <b>Investigate</b> Scientific progress requires the use of various methods appropriate for answering different kinds of research questions, a thoughtful plan for gathering data needed to answer the question, and care in collecting, analyzing, and displaying the data.</p>	
<ul style="list-style-type: none"> <li>Plan and conduct a scientific investigation, choosing a method appropriate to the question being asked.</li> </ul>	<p><b>SE:</b> 20-21, 51, 81, 92, 108, 120, 142, 149, 165, 184, 200, 253, 254, 276, 295, 324, 372, 374, 399, 435, 438, 468, 475, 508, 542, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887, Small-Scale Lab, 20-21, 51, 92, 120, 149, 184, 200, 254, 295, 324, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887, Virtual Lab, 51, 81, 108, 142, 165, 200, 253, 276, 324, 372, 399, 438, 468, 508, 542</p> <p><b>TE:</b> Explore: Small-Scale Lab, 20, 51, 92, 120, 149, 184, 200, 254, 295, 324, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887, Focus on ELL, 20, 120, 149, 184, 200, 254, 435, 475, 508, 583, 635, 717, 787, Professional Development Note, 21, Background, 21, Advance Preparation, 51, 92, 120, 149, 184, 200, 254, 295, 374, 399, 435, 475, 508, 583, 670, 717, 752, 828, 849, Teaching Tips, 51, 92, 120, 149, 184, 200, 254, 399, 475, 508, 545, 583, 717, 828, 849, 887, Expected Outcome, 51, 92, 120, 149, 184, 200, 254, 295, 324, 399, 435, 475, 508, 545, 583, 752, 828, 849, 887, For Enrichment, 51, 92, 120, 149, 184, 200, 254, 324, 399, 475, 545, 635, 717, 752, 828, 887, Analyze and Conclude, 51, 92, 120, 149, 184, 200, 254, 295, 324, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887, You're the Chemist, 92, 120, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887</p>

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<ul style="list-style-type: none"> <li>Collect, <i>analyze</i>, and display data using calculators, computers, or other technical devices when available.*b</li> </ul>	<p><b>SE:</b> 11, 20-21, 51, 81, 92, 108, 120, 142, 149, 165, 184, 200, 253, 254, 276, 295, 324, 372, 374, 399, 435, 438, 468, 475, 508, 542, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887, Small-Scale Lab, 20-21, 51, 92, 120, 149, 184, 200, 254, 295, 324, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887, Virtual Lab, 51, 81, 108, 142, 165, 200, 253, 276, 324, 372, 399, 438, 468, 508, 542</p> <p><b>TE:</b> Explore: Class Activity, 11, Small-Scale Lab, 20, 51, 92, 120, 149, 184, 200, 254, 295, 324, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887, Focus on ELL, 20, 120, 149, 184, 200, 254, 435, 475, 508, 583, 635, 717, 787, Professional Development Note, 21, Background, 21, Advance Preparation, 51, 92, 120, 149, 184, 200, 254, 295, 374, 399, 435, 475, 508, 583, 670, 717, 752, 828, 849, Teaching Tips, 51, 92, 120, 149, 184, 200, 254, 399, 475, 508, 545, 583, 717, 828, 849, 887, Expected Outcome, 51, 92, 120, 149, 184, 200, 254, 295, 324, 399, 435, 475, 508, 545, 583, 752, 828, 849, 887, For Enrichment, 51, 92, 120, 149, 184, 200, 254, 324, 399, 475, 545, 635, 717, 752, 828, 887, Analyze and Conclude, 51, 92, 120, 149, 184, 200, 254, 295, 324, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887, You're the Chemist, 92, 120, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887</p>

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9-12 INQC <b>Explain</b> <i>Conclusions</i> must be logical, based on <i>evidence</i> , and consistent with prior <i>established</i> knowledge.	
<ul style="list-style-type: none"> <li>Draw <i>conclusions</i> supported by <i>evidence</i> from the <i>investigation</i> and consistent with <i>established</i> scientific knowledge.*c</li> </ul>	<p><b>SE:</b> 20-21, 51, 92, 120, 149, 184, 200, 254, 295, 324, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887, Small-Scale Lab, 20-21, 51, 92, 120, 149, 184, 200, 254, 295, 324, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887</p> <p><b>TE:</b> Explore: Small-Scale Lab, 20, 51, 92, 120, 149, 184, 200, 254, 295, 324, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887, Focus on ELL, 20, 120, 149, 184, 200, 254, 435, 475, 508, 583, 635, 717, 787, Professional Development Note, 21, Background, 21, Advance Preparation, 51, 92, 120, 149, 184, 200, 254, 295, 374, 399, 435, 475, 508, 583, 670, 717, 752, 828, 849, Teaching Tips, 51, 92, 120, 149, 184, 200, 254, 399, 475, 508, 545, 583, 717, 828, 849, 887, Expected Outcome, 51, 92, 120, 149, 184, 200, 254, 295, 324, 399, 435, 475, 508, 545, 583, 752, 828, 849, 887, For Enrichment, 51, 92, 120, 149, 184, 200, 254, 324, 399, 475, 545, 635, 717, 752, 828, 887, Analyze and Conclude, 51, 92, 120, 149, 184, 200, 254, 295, 324, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887, You're the Chemist, 92, 120, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887</p>

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<ul style="list-style-type: none"> <li>Analyze alternative explanations and decide which best fits the data and <i>evidence</i>.*d</li> </ul>	<p><b>SE:</b> 20-21, 51, 92, 120, 149, 184, 200, 254, 295, 324, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887, Small-Scale Lab, 20-21, 51, 92, 120, 149, 184, 200, 254, 295, 324, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887</p> <p><b>TE:</b> Explore: Small-Scale Lab, 20, 51, 92, 120, 149, 184, 200, 254, 295, 324, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887, Focus on ELL, 20, 120, 149, 184, 200, 254, 435, 475, 508, 583, 635, 717, 787, Professional Development Note, 21, Background, 21, Advance Preparation, 51, 92, 120, 149, 184, 200, 254, 295, 374, 399, 435, 475, 508, 583, 670, 717, 752, 828, 849, Teaching Tips, 51, 92, 120, 149, 184, 200, 254, 399, 475, 508, 545, 583, 717, 828, 849, 887, Expected Outcome, 51, 92, 120, 149, 184, 200, 254, 295, 324, 399, 435, 475, 508, 545, 583, 752, 828, 849, 887, For Enrichment, 51, 92, 120, 149, 184, 200, 254, 324, 399, 475, 545, 635, 717, 752, 828, 887, Analyze and Conclude, 51, 92, 120, 149, 184, 200, 254, 295, 324, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887, You're the Chemist, 92, 120, 374, 399, 435, 475, 508, 545, 583, 635, 670, 717, 752, 787, 828, 849, 887</p>
<p>9-12 INQD <b>Communicate Clearly</b> The methods and procedures that scientists use to obtain <i>evidence</i> must be clearly reported to enhance opportunities for further <i>investigation</i>.</p>	
<ul style="list-style-type: none"> <li>Write a detailed laboratory report that includes: the <i>question</i> that motivated the study, a justification for the kind of <i>investigation</i> chosen, <i>hypotheses</i> (if any), a description of what was done, a summary of data in tables and graphs, and a <i>conclusion</i>, based on the <i>evidence</i>, that responds to the <i>question</i>.</li> </ul>	<p>Because the <b>Pearson Chemistry</b> focus is enriched chemistry instruction and active learning, this standard falls outside of the program scope.</p>

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Washington Science Learning Standards	Pearson Chemistry
9-12 INQE <b>Model</b> The essence of scientific <i>investigation</i> involves the development of a <i>theory</i> or conceptual <i>model</i> that can <i>generate</i> testable predictions.	
<ul style="list-style-type: none"> <li>Formulate one or more <i>hypotheses</i> based on a <i>model</i> or <i>theory</i> of a causal <i>relationship</i>. Demonstrate creativity and critical thinking to formulate and <i>evaluate</i> the <i>hypotheses</i>.</li> </ul>	<p><b>SE:</b> 14-19, Chemistry &amp; You, 14, 17, Key Questions, 14, Vocabulary, 14, Figure, 14, 15, 16, Kinetic Art, 16, Quick Lab, 17, Lesson Check, 19, Online Problems, 19</p> <p><b>TE:</b> Key Questions, 14, Engage: Chemistry &amp; You, 14, Activate Prior Knowledge, 14, Focus on ELL, 14, 17, Professional Development Note, 15, Foundations for Reading, 15, Explain: Make a Connection, 15, Critical thinking, 18, Explore: Class Activity, 15, 509, Use Visuals, 16, Misconception Alert, 16, Extend: Connect to Astronomy, 16, Differentiated Instruction, 16, Quick Lab, 17, UbD: Check for Understanding, 18, Evaluation: Informal Assessment, 19, Reteach, 19</p>
9-12 INQF <b>Communicate</b> <i>Science</i> is a human endeavor that involves logical reasoning and creativity and entails the testing, revision, and occasional discarding of theories as new <i>evidence</i> comes to light.	
<ul style="list-style-type: none"> <li><i>Evaluate</i> an <i>investigation</i> to determine if it was a <i>valid</i> means of answering the <i>question</i>, and whether or not the results were <i>reliable</i>. *e</li> </ul>	<p><b>SE:</b> 17, 39, 72, 109, 142, 180, 207, 238, 279, 328, 354, 404, 437, 467, 491, 519, 571, 600, 662, 699, 750, 778, 818, 856, 896, Quick Labs, 17, 39, 72, 109, 142, 180, 207, 238, 279, 328, 354, 404, 437, 467, 491, 519, 571, 600, 662, 699, 750, 778, 818, 856, 896</p> <p><b>TE:</b> 17, 39, 72, 109, 142, 180, 207, 238, 279, 328, 354, 404, 437, 467, 491, 519, 571, 600, 662, 699, 750, 778, 818, 856, 896</p>
<ul style="list-style-type: none"> <li><i>Describe</i> the development of a scientific <i>theory</i> that illustrates logical reasoning, creativity, testing, revision, and replacement of prior <i>ideas</i> in light of new <i>evidence</i>.</li> </ul>	<p><b>SE:</b> 14-17, Key Question, 14, Chemistry &amp; You, 14, 17, Figure, 14, 15, 16, Kinetic Art, 16, Quick Lab, 17</p> <p><b>TE:</b> Key Question, 14, Engage: Chemistry &amp; You, 14, 17, Activate Prior Knowledge, 14, Focus on ELL, 14, 17, Professional Development Note, 15, Foundations for Reading, 15, Explain: Make a Connection, 15, Explore: Class Activity, 15, Use Visuals, 16, Misconception Alert, 16, Extend: Connect to Astronomy, 16, Differentiated Instruction, 16, Explore: Quick Lab, 17</p>
9-12 INQG <b>Intellectual Honesty</b> Public <i>communication</i> among scientists is an essential aspect of research. Scientists <i>evaluate</i> the <i>validity</i> of one another's <i>investigations</i> , check the <i>reliability</i> of results, and <i>explain</i> inconsistencies in findings.	
<ul style="list-style-type: none"> <li>Participate in a scientific discussion about one's own <i>investigations</i> and those performed by others.</li> </ul>	<p><b>SE:</b> 15, 17, Quick Lab, 17</p> <p><b>TE:</b> Explain: Make a Connection, 15, Quick Lab, 17</p>

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<b>Washington Science Learning Standards</b>	<b>Pearson Chemistry</b>
<ul style="list-style-type: none"> <li>Respond to <i>questions</i> and criticisms, and if appropriate, revise explanations based on these discussions.</li> </ul>	<b>SE:</b> 15, 17, Quick Lab, 17 <b>TE:</b> Explain: Make a Connection, 15, Quick Lab, 17
9-12 INQH <b>Intellectual Honesty</b> Scientists carefully <i>evaluate</i> sources of information for <i>reliability</i> before using that information. When referring to the <i>ideas</i> or findings of others, they cite their sources of information.	
<ul style="list-style-type: none"> <li>Provide appropriate citations for all <i>ideas</i>, findings, and information used in any and all written reports.</li> </ul>	Because the Pearson Chemistry focus is enriched chemistry instruction and active learning, this standard falls outside of the program scope.
<ul style="list-style-type: none"> <li><i>Explain</i> the consequences for failure to provide appropriate citations.</li> </ul>	Because the <b>Pearson Chemistry</b> focus is enriched chemistry instruction and active learning, this standard falls outside of the program scope.

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Washington Science Learning Standards	Pearson Chemistry
<b>EALR 3: Application</b>	
<b>Big Idea: Application (APP)</b>	
<b>Core Content: <i>Science, Technology, and Society</i></b>	
<p>In prior grades students learn to work with other members of a team to apply the full process of technological design and relevant science concepts to solve problems. In grades 9-12 students apply what they have learned to address societal issues and cultural differences. Students learn that science and technology are interdependent, that science and technology influence society, and that society influences science and technology. Students continue to increase their abilities to work with other students and to use mathematics and information technologies (when available) to solve problems. They transfer insights from those increased abilities when considering local, regional, and global issues. These insights and capabilities will help prepare students to solve societal and personal problems in future years.</p>	
<p>9-12 APPA <i>Science</i> affects society and <i>cultures</i> by influencing the way many people think about themselves, others, and the <i>environment</i>. Society also affects <i>science</i> by its prevailing views about what is important to study and by deciding what research will be funded.</p>	
<ul style="list-style-type: none"> <li>• <i>Describe</i> ways that scientific <i>ideas</i> have influenced society or the development of differing <i>cultures</i>.</li> </ul>	<p><b>SE:</b> 1, 12, 33, 52, 61, 83, 101, 110, 127, 133, 146, 159, 163, 183, 193, 208, 221, 239, 263, 270, 284, 305, 334-335, 345, 355, 368, 383, 397, 407, 419, 440-441, 449, 455, 476-477, 487, 502-503, 517, 532-533, 555, 576-577, 593, 602-603, 620, 645, 663, 671, 681, 691, 700, 716, 727, 736, 761, 744, 784, 797, 803, 821, 837, 853, 867, 875, 892-893, Chemistry &amp; You: Technology, 12-13, 110-111, 146, 239, 334, 397, 476-477, 502-503, 602-603, 700, 784, 867, 892-893, Chemistry &amp; You: Green Chemistry, 52, 83, 270, 440-441, 576-577, 681, 803, Chemistry &amp; You: History, 133, 368, 736, Chemistry &amp; You: Everyday Matter, 163, 183, 208, 355, 407, 532-533, 671, 716, 744, 821, Chemistry &amp; You: Careers, 284, 455, 620, 663, 853</p> <p><b>TE:</b> Untamed Science, 1, 33, 61, 101, 127, 159, 193, 221, 263, 305, 345, 383, 419, 449, 487, 517, 555, 593, 645, 691, 727, 761, 797, 837, 875, Chemistry &amp; You, 3, 12, 52, 83, 133, 146, 163, 183, 208, 239, 270, 284, 334-335, 355, 368, 397, 407, 440, 455, 476, 502, 532, 576, 602, 620, 663, 671, 681, 700, 716, 736, 744, 784, 803, 821, 853, 867, 892, 21<sup>st</sup> Century Learning, 12, 52, 83, 110, 146, 163, 239, 284, 334, 368, 397, 440, 476, 502, 532, 576, 602, 663, 700, 744, 784, 803, 867, Differentiated Instruction, 13, 52, 111, 133, 183, 270, 335, 355, 407, 441, 455, 476, 503, 533, 577, 603, 671, 681, 716, 821, 853, Explain: Start a Conversation, 14, 52, 183, 239, 368, 440, 476, 533, 576, 663, 744, 892, Use Visuals, 83, 335, 441, 603, 744, 892, Apply Concepts, 208, 355, 700, 853, Summarize, 270, Make a Connection, 284, 503, Critical Thinking, 577, Use an Analogy, 867, Explain: Critical Thinking, 663,</p>

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<p>•Describe ways that scientific <i>ideas</i> have influenced society or the development of differing <i>cultures</i>.</p>	<p><b>(Continued)</b> 671, Draw a Diagram, 681, Extend: Connect to Language Arts, 13, 133, 397, Connect to Biology, 52, 663, 681, 867, Connect to Economics, 83, 146, 335, 441, Connect to Technology, 111, Connect to Astronomy, 163, Connect to Physiology, 183, Connect to Geology, 208, Connect to Nutrition, 284, Connect to Physics, 368, Connect to Civics, 455, Connect to Math, 476, Connect to Environmental Science, 503, 603, Connect to Food Service, 533, Connect to Earth Science, 577, Connect to Environmental Engineering, 784, Connect to Government, 803, Connect to Psychology, 821, Connect to Space Science, 853, Connect to History, 893, Professional Development Note, 892</p>
<p>•List <i>questions</i> that scientists <i>investigate</i> that are stimulated by the needs of society (e.g., medical research, <i>global climate</i> change).</p>	<p><b>SE:</b> Chemistry &amp; You, 2, 3, 6, 11, 14, 17, 22, 25, 34, 35, 38, 40, 42, 43, 48, 49, 62, 74, 79, 84, 88, 102, 103, 105, 108, 112, 114, 128, 132, 134, 136, 138, 145, 160, 166, 167, 170, 174, 182, 194, 201, 204, 209, 210, 222, 224, 226, 237, 240, 241, 247, 251, 264, 266, 271, 274, 280, 286, 289, 306, 308, 317, 320, 325, 328, 346, 351, 356, 364, 369, 384, 386, 390, 394, 400, 420, 422, 427, 431, 434, 436, 439, 450, 454, 456, 459, 464, 468, 469, 473, 488, 493, 494, 497, 504, 506, 518, 522, 525, 530, 534, 537, 538, 556, 560, 562, 563, 569, 572, 578, 594, 600, 604, 607, 609, 614, 621, 627, 629, 646, 648, 653, 656, 664, 669, 672, 674, 676, 679, 692, 697, 701, 704, 707, 708, 728, 730, 737, 739, 745, 751, 762, 766, 772, 775, 777, 779, 780, 782, 785, 798, 802, 804, 810, 812, 819, 822, 825, 838, 841, 843, 844, 846, 850, 852, 854, 857, 862, 863, 876, 879, 880, 882, 888, 891, 894</p> <p><b>TE:</b> Engage: Chemistry &amp; You, 2, 3, 6, 11, 14, 17, 22, 25, 34, 35, 38, 40, 42, 43, 48, 49, 62, 74, 79, 84, 88, 102, 103, 105, 108, 112, 114, 128, 132, 134, 136, 138, 145, 160, 166, 167, 170, 174, 182, 194, 201, 204, 209, 210, 222, 224, 226, 237, 240, 241, 247, 251, 264, 266, 271, 274, 280, 286, 289, 306, 308, 317, 320, 325, 328, 346, 351, 356, 364, 369, 384, 386, 390, 394, 400, 420, 422, 427, 431, 434, 436, 439, 450, 454, 456, 459, 464, 468, 469, 473, 488, 493, 494, 497, 504, 506, 518, 522, 525, 530, 534, 537, 538, 556, 560, 562, 563, 569, 572, 578, 594, 600, 604, 607, 609, 614, 621,</p>



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<ul style="list-style-type: none"> <li>List <i>questions</i> that scientists <i>investigate</i> that are stimulated by the needs of society (e.g., medical research, <i>global climate</i> change).</li> </ul>	<p><b>(Continued)</b></p> <p>627, 629, 646, 648, 653, 656, 664, 669, 672, 674, 676, 679, 692, 697, 701, 704, 707, 708, 728, 730, 737, 739, 745, 751, 762, 766, 772, 775, 777, 779, 780, 782, 785, 798, 802, 804, 810, 812, 819, 822, 825, 838, 841, 843, 844, 846, 850, 852, 854, 857, 862, 863, 876, 879, 880, 882, 888, 891, 894</p>
<p>9-12 APPB The <i>technological design process</i> begins by defining a problem in terms of <i>criteria</i> and <i>constraints</i>, conducting research, and generating several different <i>solutions</i>.</p>	
<ul style="list-style-type: none"> <li>Work collaboratively with other students to <i>generate ideas</i> for solving a problem. Identify <i>criteria</i> and <i>constraints</i>, research the problem, and <i>generate</i> several possible <i>solutions</i>.</li> </ul>	<p><b>SE:</b> 12, 17, 18-19, 20, 147, 148, 159, 231, 238, 263, 265, 266, 279, 293, 295, 305, 328, 330, 404, 435, 437, 455, 467, 472, 475, 519, 528, 529, 543, 569, 576, 583, 600, 635, 717, 734, 749, 750, 777, 787, 818, 826, 847, 856, 885, 896, Figure, 18, 472, Apply Concepts, 18, 19, Quick Lab, 238, 279, 328, 404, 437, 467, 519, 570, 600, 750, 778, 818, 856, 896, Small-Scale Lab, 295, 435, 475, 545, 583, 635, 717, 752, 787, 828, 849, 887</p> <p><b>TE:</b> 21<sup>st</sup> Century Learning, 12, Focus on ELL, 17, 20, 278, 293, 329, 404, 435, 437, 467, 569, 570, 583, 600, 635, 717, 749, 750, Explain: Critical Thinking, 18, Extend, 18, UbD: Checking for Understanding, 18, 423, Evaluate: Informal Assessment, 19, 237, Reteach, 19, Explore: Class Activity, 147, Evaluate: Informal Assessment, 148, Introduce the Chapter, 159, 263, 305, Differentiated Instruction, 231, 330, 472, Focus on ELL 237, Class Activity, 265, 528, Extend, 266, Quick Lab, 237, 278, 328, 404, 437, 467, 519, 570, 778, 818, 856, 896, Small-Scale Lab, 295, 435, 475, 545, 635, 717, 752, 787, 828, 849, 887, Connect to Civics, 455 Use Models, 529, 21<sup>st</sup> Century Learning, 576, Connect to Technology, 734</p>

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9-12 APPC Choosing the best <i>solution</i> involves comparing alternatives with respect to <i>criteria</i> and <i>constraints</i> , then building and testing a <i>model</i> or other representation of the final design.	
<ul style="list-style-type: none"> <li>Choose the best <i>solution</i> for a problem, create a <i>model</i> or drawing of the final design, and devise a way to test it. Redesign the <i>solution</i>, if necessary, then present it to peers. *b</li> </ul>	<p><b>SE:</b> 108, 161, 162, 163, 184, 230, 233, 236, 237, 240, 242, 243, 265, 268, 272, 275, 306, 312, 313, 314, 316, 395, 401, 423, 452, 529, 763, 765, 768, 769, 773, 851, 885, Small-Scale Lab, 184, Figure, 313</p> <p><b>TE:</b> Focus on ELL, 108, 240, 306, Explore: Teacher Demo, 161, Explain: Use Visuals, 161, 162, Apply Concepts, 161, Differentiated Instruction, 162, 242, 452, 851, 21<sup>st</sup> Century Learning, 163, Small-Scale Lab, 184, Make a Connection, 768, Use a Model, 230, 272, 275, 312, 529, 769, 773, Apply Concepts, 233, Extend, 236, Informal Assessment, 237, Class Activity, 242, 268, UbD: Check for Understanding, 243, Foundation for Reading, 265, Teacher Demo, 313, 401, 763, 765, Class Activity, 314, 423, 885, 21<sup>st</sup> Century Skills, 316, Drawing a Diagram, 395</p>
9-12 APPD The ability to solve problems is greatly enhanced by use of mathematics and information technologies.	
<ul style="list-style-type: none"> <li>Use proportional reasoning, functions, graphing, and estimation to solve problems. *a*b*c</li> </ul>	<p><b>SE:</b> 8, 24, 57, 58, 59, 65, 79, 82, 86, 87, 88, 89, 90, 91, 119, 141, 144, 175, 178, 273, 307, 309, 311, 315, 318, 319, 321, 322, 326, 327, 329, 331, 333, 385, 388, 391, 393, 395, 396, 398, 402, 403, 406, 408, 422, 423, 429, 438, 456, 457, 458, 459, 461, 462, 465, 466, 468, 471, 474, 500, 521, 524, 526, 527, 529, 530, 531, 541, 542, 543, 544, 561, 564, 567, 570, 572, 573, 575, 581, 601, 605, 606, 607, 610, 617, 618, 619, 623, 625, 655, 657, 658, 659, 660, 665, 667, 673, 675, 677, 680, 741, 743, 765, 773, 881, 882, 884, Interpret Graphs, 8, 57, 58, 59, 175, 178, 423, 429, 438, 456, 458, 468, 521, 542, 572, 597, 601, 605, 607, 610, 660, 665, 677, 765, 773, 881, 882, Interpret Data, 35, 81, 116, 177, 312, 332, 427, 469, 559, 729, 814, Sample Problem, 24, 65, 79, 82, 86, 87, 88, 89, 90, 91, 119, 141, 144, 273, 307, 309, 311, 315, 318, 319, 321, 322, 326, 327, 329, 331, 333, 385, 388, 391, 393, 395, 396, 398, 402, 403, 406, 408, 422, 457, 459, 461, 462, 465, 466, 471, 474, 500, 524, 526, 527, 529, 530, 531, 541, 543, 544, 561, 564, 567, 570, 573, 575, 581, 606, 617, 618, 619, 623, 625, 655, 657, 658, 659, 667, 673, 675, 680, 741, 743, 884</p>

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<p>•Use proportional reasoning, functions, graphing, and estimation to solve problems. *a*b*c</p>	<p><b>(Continued)</b>  <b>TE:</b> Explain: Use Visual, 8, 35, 116, 178, 429, 438, 458, 542, 559, 597, 601, 605, 610, 660, 665, 677, 729, 814, Make A Connection, 116, 458, Use Models, 312, Critical Thinking, 311, 332, 406, 542, 572, 610, 882, Apply Concepts, 458, Interpret Graphs, 468, 882, Interpret Diagrams, 521, 605, 607, Professional Development Note, 81, Misconception Alert, 177, 542, Explore: Class Activity, 423, Differentiated Instruction, 427, 396, 402, 403, Extend, 521, Evaluate: Informal Assessment, 530, 544, 561, 575, 597, Address Misconceptions, 87, Differentiated Instruction, 89, 530, 573, Focus on ELL, 90, 322, 329, 543, 570, Sample Practice Problem, 24, 65, 79, 82, 86, 87, 88, 89, 90, 91, 119, 141, 144, 273, 307, 309, 315, 318, 319, 321, 322, 326, 327, 329, 331, 333, 385, 388, 391, 393, 396, 402, 422, 457, 459, 461, 462, 465, 466, 471, 474, 500, 524, 526, 527, 529, 530, 531, 539, 541, 543, 561, 564, 567, 570, 573, 575, 581, 606, 617, 618, 619, 623, 625, 655, 657, 658, 659, 667, 673, 675, 680, 741, 743, 884, Foundations for Math, 24, 65, 86, 88, 141, 144, 273, 307, 309, 311, 318, 319, 321, 326, 327, 331, 385, 388, 391, 393, 395, 403, 406, 422, 457, 459, 461, 462, 465, 466, 471, 500, 526, 527, 529, 539, 541, 564, 567, 581, 606, 617, 618, 619, 623, 625, 655, 657, 658, 659, 667, 673, 741, 884</p>
<p>•Use computers, probes, and software when available to collect, display, and analyze data.</p>	<p><b>SE:</b> 27, 51, 81, 108, 121, 142, 165, 185, 200, 253, 255, 276, 296, 324, 336, 372, 375, 399, 438, 468, 478, 508, 509, 542, 546, 583, 635, 636, 677, 682, 715, 743, 788, 829, 868, 898, Virtual Lab, 27, 51, 81, 108, 121, 142, 165, 185, 200, 213, 253, 255, 276, 324, 372, 399, 438, 468, 508, 542, 583, 635, 677, 715, 743  <b>TE:</b> UbD: Performance Task, 185, Evaluate: Virtual Lab, 27, 121, 185, 213, 255, 296, 336, 375, 478, 509, 546, 584, 636, 682, 788, 829, 868, 898</p>

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9-12 APPE Perfect <i>solutions</i> do not exist. All technological <i>solutions</i> involve trade-offs in which decisions to include more of one quality means less of another. All <i>solutions</i> involve consequences, some intended, others not.	
<ul style="list-style-type: none"> <li>• <i>Analyze</i> a societal issue that may be addressed through <i>science</i> and/or <i>technology</i>. <i>Compare</i> alternative <i>solutions</i> by <i>considering trade-offs</i> and unintended consequences (e.g., removing dams to increase salmon spawning).</li> </ul>	<p><b>SE:</b> 8-13, 110-111, 146, 239, 334, 351, 397, 476-477, 502-503, 602-603, 700, 784, 867, 892-893, Interpret Graphs, 8, Figure, 9, 10, 11, Chemistry&amp; You, 11, Lesson Check, 11, Online Problems, 11, Chemistry&amp; You: Technology, 12-13, 110-111, 146, 239, 334, 397, 476-477, 502-503, 602-603, 700, 784, 867, 892-893</p> <p><b>TE:</b> Explain: Critical Thinking, 8, Start a Conversation, 10, 13, Use Visuals, 10, Professional Development Note, 8, 10, UbD: Check for Understanding, 9, Make a Connection, 9, Critical Thinking, 9, Extend: Connect to Medicine, 10, Connect to Literature, 11, Connect to Language Arts, 13, Explore: Class Activity, 11, Chemistry &amp; You, 11, 12, Evaluate: Informal Assessment, 11, Reteach, 11, 21<sup>st</sup> Century Learning, 12, Differentiated Instruction, 13, Chemistry &amp; You, 12, 146, 239, 270, 284, 334, 397, 476, 502, 602, 700, 716, 784, 867, 892, 21<sup>st</sup> Century Learning, 12, 146, 239, 270, 284, 334, 397, 476, 502, 602, 700, 716, 784, 867, 892, Differentiated Instruction, 13, 111, 335, 355, 476, 503, 603, Explain: Start a Conversation, 239, 476, 892, Use Visuals, 335, 603, 892, Apply Concepts, 355, 700, Make a Connection, 503, Use an Analogy, 867, Extend: Connect to Language Arts, 13, Connect to Biology, 867, Connect to Economics, 146, 335, Connect to Technology, 111, 351, Connect to Math, 476, Connect to Environmental Science, 503, 603, Connect to Environmental Engineering, 784, Connect to History, 893, Professional Development Note, 892</p>

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Washington Science Learning Standards	Pearson Chemistry
9-12 APPF It is important for all citizens to <i>apply science</i> and <i>technology</i> to critical issues that influence society.	
<ul style="list-style-type: none"> <li>•Critically <i>analyze</i> scientific information in current events to make personal choices or to understand public-policy decisions.*d</li> </ul>	<p><b>SE:</b> 7-9, 52-53, 83, 245, 270, 281, 440, 576-577, 681, 762, 767, 772-774, 782-787, 803 Chemistry &amp; You: Green Chemistry, 52-53, 83, 270, 440, 576-577, 681, 762, 772, 803 Figure, 768, 773, 783, 785, 786, Key Questions, 772, 782, Vocabulary, 772, 782, Interpret Graphs, 8, 773, Lesson Check, 773, Virtual Lab, 773, Online Problems, 773, Chemistry &amp; You: Careers, 774, 782, 785, Chemistry &amp; You: Technology, 334, 397, 784, Kinetic Art, 783, Small-Scale Lab, 787</p> <p><b>TE:</b> Chemistry &amp; You, 52, 83, 270, 334, 397, 440, 576, 681, 767, 772, 773, 774, 782, 785, 803, 21<sup>st</sup> Century Learning, 52, 83, 440, 576, 803, Differentiated Instruction, 7, 53, 270, 281, 335, 577, 681, 785, Explain: Start a Conversation, 53, Summarize, 270, Critical Thinking, 9, 270, 577, Start a Conversation, 7, 440, 576, 783, Draw a Diagram, 681, Make a Connection, 9, 768, Use Models, 8, Extend: Teacher Demo, 7, Connect to Biology, 53, 681, Connect to Economics, 83, Connect to Language Arts, 397, Connect to Earth Science, 577, Connect to Government, 803, Professional Development Note, 8, 768, Activate Prior Knowledge, 772, Foundations for Reading, 772, 782, Use Models, 335, 773, Informal Assessment, 773, 787, Reteach, 773, 787, Connect to Journalism, 7, Connect to Technology, 774, Build Background, 782, Focus on ELL, 782, 787, UbD: Check for Understanding, 9, 783, Use Visuals, 783, Use an Analogy, 784, Connect to Environmental Engineering, 784, 21<sup>st</sup> Century Learning, 334, 397, 784, Use a Diagram, 785, Small-Scale Lab, 787, Connect to Horticulture, 245, Connect to Economics, 335</p>

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Washington Science Learning Standards	Pearson Chemistry
<b>EALR 4: Physical Science</b>	
<b>Big Idea: Force and Motion (PS1)</b>	
<b>Core Content: <i>Newton's Laws</i></b>	
In prior grades students learned to measure, record, and calculate the average speed of objects, and to tabulate and graph the results. In grades 9-11 students learn to apply Newton's Laws of Motion and Gravity both conceptually and quantitatively. Students are able to calculate average speed, velocity, and acceleration. Students also develop an understanding of forces due to gravitational and electrical attraction. These fundamental concepts enable students to understand the forces that govern the observable world and provide a foundation for a full course in physics.	
9-11 PS1A <i>Average velocity</i> is defined as a change in position with respect to time. <i>Velocity</i> includes both <i>speed</i> and direction.	
<ul style="list-style-type: none"> <li>•Calculate the <i>average velocity</i> of a moving object, given the object's change in position and time. (<math>v = \frac{x_2 - x_1}{t_2 - t_1}</math>) *a</li> </ul>	<p><b>SE:</b> 594-596, Chemistry &amp; You, 594, Key Question, 594, Vocabulary, 594, Figure, 594, 595, Kinetic Art, 596</p> <p><b>TE:</b> Key Objective, 594, Additional Resources, 594, PearsonChem.com, 594, Engage: Chemistry &amp; You, 594, Build Background, 594, Focus on ELL, 595, UbD: Check for Understanding, 595, Foundations for Reading, 595, Start a Conversation, 595, Use Visuals, 595, 596, Differentiated Instruction, 596, Misconception Alert, 596, Use an Analogy, 596</p>
<ul style="list-style-type: none"> <li>•<i>Explain how</i> two objects moving at the same <i>speed</i> can have different velocities.</li> </ul>	Because the <b><i>Pearson Chemistry</i></b> focus is enriched chemistry instruction and active learning, this standard falls outside of the program scope.
9-11 PS1B <i>Average acceleration</i> is defined as a change in <i>velocity</i> with respect to time. <i>Acceleration</i> indicates a change in <i>speed</i> and/or a change in direction.	
<ul style="list-style-type: none"> <li>•Calculate the <i>average acceleration</i> of an object, given the object's change in <i>velocity</i> with respect to time. (<math>a = \frac{v_2 - v_1}{t_2 - t_1}</math>) *a</li> </ul>	<p><b>SE:</b> 594-595, Key Questions, 594, Vocabulary, 594, Figure, 594, 595</p> <p><b>TE:</b> Key Objectives, 594, PearsonChem.com, 594, Engage: Chemistry &amp; You, 594, Build Background, 594, Focus on ELL, 594, UbD: Check for Understanding, 595, Foundations for Reading, 595, Explain: Start a Conversation, 595, Use Visuals, 595</p>
<ul style="list-style-type: none"> <li>•<i>Explain how</i> an object moving at constant <i>speed</i> can be <i>accelerating</i>. *b</li> </ul>	<p><b>SE:</b> 596-597, Figure, 596, 597, 598, 599, Kinetic Art, 596, Quick Lab, 600, Interpret Graphs, 601, Lesson Check, 601, Online Problems, 601</p> <p><b>TE:</b> Explain: Use Visuals, 596, 597, 601, Misconception Alert, 596, Differentiated Instruction 596, UbD: Check for Understanding, 597, Critical Thinking, 597, 598, Extend: Connect to Food Chemistry, 598, Professional Development Note, 598, 599, Explore: Teacher Demo, 599, Quick Lab, 600, Focus on ELL, 600, Evaluate: Informal Assessment 601, Reteach, 601</p>

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Washington Science Learning Standards	Pearson Chemistry
9-11 PS1C An object at rest will remain at rest unless acted on by an unbalanced <i>force</i> . An object in <i>motion</i> at constant <i>velocity</i> will continue at the same <i>velocity</i> unless acted on by an unbalanced <i>force</i> . (Newton's First Law of Motion, the Law of Inertia)	
<ul style="list-style-type: none"> <li>Given specific scenarios, <i>compare</i> the <i>motion</i> of an object acted on by balanced <i>forces</i> with the <i>motion</i> of an object acted on by unbalanced <i>forces</i>.</li> </ul>	Because the <b>Pearson Chemistry</b> focus is enriched chemistry instruction and active learning, this standard falls outside of the program scope.
9-11 PS1D A net <i>force</i> will cause an object to <i>accelerate</i> or change direction. A less massive object will <i>speed up</i> more quickly than a more massive object subjected to the same <i>force</i> . (Newton's Second Law of Motion, $F=ma$ )	
<ul style="list-style-type: none"> <li><i>Predict</i> how objects of different <i>masses</i> will <i>accelerate</i> when subjected to the same <i>force</i>.</li> </ul>	Because the <b>Pearson Chemistry</b> focus is enriched chemistry instruction and active learning, this standard falls outside of the program scope.
<ul style="list-style-type: none"> <li>Calculate the <i>acceleration</i> of an object, given the object's <i>mass</i> and the net <i>force</i> on the object, using Newton's Second Law of Motion (<math>F=ma</math>). *c</li> </ul>	<b>SE:</b> 450-454, Chemistry & You, 450, 454, Key Questions, 450, Vocabulary, 450, Figure, 451, Concepts in Action, 451 <b>TE:</b> Key Objectives, 450, Additional Resources, 450, PearsonChem.com, 450, Engage: Chemistry & You, 450, 454, Activate Prior Knowledge, 450, Focus on ELL, 450, Professional Development Note, 451, Foundations for Reading, 451, Explain: Use Visuals, 451, 452, Apply Concepts, 451, Make a Connection, 451, Explore: Teacher Demo, 452, Differentiated Instruction, 452, UbD: Check for Understanding, 452, Start a Conversation, 453, Connect to Physics, 454, Evaluation: Informal Assessment, 454, Reteach, 454, Lesson Check Answers, 454
9-11 PS1E Whenever one object exerts a <i>force</i> on another object, a <i>force</i> of equal magnitude is exerted on the first object in the opposite direction. (Newton's Third Law of Motion)	
<ul style="list-style-type: none"> <li>Illustrate with everyday examples that for every action there is an equal and opposite reaction (e.g., a person exerts the same <i>force</i> on the Earth as the Earth exerts on the person).</li> </ul>	Because the Pearson Chemistry focus is enriched chemistry instruction and active learning, this standard falls outside of the program scope.
9-11 PS1F <i>Gravitation</i> is a universal attractive <i>force</i> by which objects with <i>mass</i> attract one another. The gravitational <i>force</i> between two objects is proportional to their <i>masses</i> and inversely proportional to the square of the distance between the objects. (Newton's <i>Law</i> of Universal Gravitation)	
<ul style="list-style-type: none"> <li><i>Predict</i> how the gravitational <i>force</i> between two bodies would differ for bodies of different <i>masses</i> or different distances apart. *d</li> </ul>	Because the Pearson Chemistry focus is enriched chemistry instruction and active learning, this standard falls outside of the program scope.

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Washington Science Learning Standards	Pearson Chemistry
<ul style="list-style-type: none"> <li>•<i>Explain how the weight of an object can change while its mass remains constant.</i></li> </ul>	<p><b>SE:</b> 307, 308, 309, Sample Problem, 307, 309, Figure, 308, Chemistry &amp; You, 308</p> <p><b>TE:</b> Foundation for Math, 307, 309, Foundation for Reading, 307, Explain: Use Models, 307, Start a Conversation, 307, Sample Practice Problem, 307, 309, Apply Concepts, 309, Differentiated Instruction, 308, Use Visuals, 308, Making Connection, 308, Apply Concepts, 309</p>
<p>9-11 PS1G Electrical <i>force</i> is a <i>force</i> of nature independent of <i>gravity</i> that exists between charged objects. Opposite charges attract while like charges repel.</p>	
<ul style="list-style-type: none"> <li>•<i>Predict whether two charged objects will attract or repel each other, and explain why.</i></li> </ul>	<p>Because the <b>Pearson Chemistry</b> focus is enriched chemistry instruction and active learning, this standard falls outside of the program scope.</p>
<p>9-11 PS1H Electricity and magnetism are two aspects of a single <i>electromagnetic force</i>. Moving electric charges produce magnetic <i>forces</i>, and moving magnets produce electric <i>forces</i>.</p>	
<ul style="list-style-type: none"> <li>•<i>Demonstrate and explain that an electric current flowing in a wire will create a magnetic field around the wire (electromagnetic effect).</i></li> </ul>	<p>Because the <b>Pearson Chemistry</b> focus is enriched chemistry instruction and active learning, this standard falls outside of the program scope.</p>
<ul style="list-style-type: none"> <li>•<i>Demonstrate and explain that moving a magnet near a wire will cause an electric current to flow in the wire (the generator effect).</i></li> </ul>	<p>Because the <b>Pearson Chemistry</b> focus is enriched chemistry instruction and active learning, this standard falls outside of the program scope.</p>



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Washington Science Learning Standards	Pearson Chemistry
<b>EALR 4: Physical Science</b>	
<b>Big Idea: Matter: Properties and Change (PS2)</b>	
<b>Core Content: <i>Chemical Reactions</i></b>	
<p>In prior years, students learned the basic concepts behind the atomic nature of matter. In grades 9-11 students learn about chemical reactions, starting with the structure of an atom. They learn that the Periodic Table groups elements with similar physical and chemical properties. With grounding in atomic structure, students learn about the formation of molecules and ions, compounds and solutions, and the details of a few common chemical reactions. They also learn about nuclear reactions and the distinction between fusion and fission. These concepts about the fundamental properties of matter will help students understand chemical and nuclear reactions that are important in modern society and lay the groundwork for both chemistry and life science.</p>	
<p>9-11 PS2A <i>Atoms</i> are composed of <i>protons</i>, <i>neutrons</i>, and <i>electrons</i>. The <i>nucleus</i> of an <i>atom</i> takes up very little of the <i>atom's</i> volume but makes up almost all of the <i>mass</i>. The <i>nucleus</i> contains <i>protons</i> and <i>neutrons</i>, which are much more massive than the <i>electrons</i> surrounding the <i>nucleus</i>. <i>Protons</i> have a positive charge, <i>electrons</i> are negative in charge, and <i>neutrons</i> have no net charge.</p>	
<ul style="list-style-type: none"> <li>Describe the relative charges, masses, and locations of the <i>protons</i>, <i>neutrons</i>, and <i>electrons</i> in an <i>atom</i> of an <i>element</i>.</li> </ul>	<p><b>SE:</b> 100-104, 105-109, 112-119, 120, 121-125, 128-133, 134-137, PearsonChem.com 100, Big Idea, 101, 127, Chemystery, 101, 124, 127, Key Questions, 102, 105, 112, 128, 134, Vocabulary, 102, 105, 112, 128, 134, Reading Support, 102, 129, Figure, 103, 104, 105, 106, 107, 113, 115, 117, 128, 129, 130, 131, 135, Chemistry &amp; You, 103, 105, 108, 114, 112, 128, 132, 134, Chemistry &amp; You: History, 133, Concepts in Action, 104, Lesson Check, 104, 118, 312, 317, Online Problems, 104, 118, 132, 137, Kinetic Art, 106, 131, Virtual Lab, 108, Quick Lab, 109, Sample Problem, 113, 114, 115, 118, 119, 136, Interpret Data, 116, Small-Scale Lab, 120, Study Guide, 121, Assessment, 122-124, Standardized Test Prep, 125</p> <p><b>TE:</b> Planning Guide, 100A-B, 126A-B, What's Online, 100, 126, Focus on ELL, 100, 102, 105, 108, 112, 120, 126, 128, 134, Introduce the Chapter, 101, UbD Understanding By Design, 101, 103, 107, 114, 116, 121, 131, 136, Big Idea, 101, 127, Chemystery, 101, 124, 127, Untamed Science Video, 101, 127, Key Questions, 102, 105, 112, 134, Vocabulary, 102, 112, 134, Foundations for Reading, 103, 106, 113, Foundations for Math, 118, Chemistry &amp; You, 103, 112, 114, 132, 133, 134, Build Background, 102, 105, Explain: Start a Conversation, 103, 115, 129, 135, Use Visuals, 103, 104, 106, 113, 116, 117, 129, 132, Teacher Demo, 106, 107, 129, 130, 131,</p>

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<ul style="list-style-type: none"> <li>Describe the relative charges, masses, and locations of the <i>protons</i>, <i>neutrons</i>, and <i>electrons</i> in an <i>atom</i> of an <i>element</i>.</li> </ul>	<p><b>(Continued)</b> Class Activity, 135, Differentiated Instruction, 106, 113, 130, 135, Use Analogy, 108, Quick Lab, 109, Activate Prior Knowledge, 112, 134, Sample Practice Problems, 113, 114, 115, 118, 119, 136, Professional Development Note, 115, 117, 129, Misconception Alert, 115, Make a Connection, 116, 118, 130, 136, Small-Scale Lab, 120, Interpret Diagram, 131, Connect to Language Arts, 133, Connect to Physics, 137, Summarize, 137, Evaluate: Review and Assessment Resources, 121, Informal Assessment, 104, 108, 119, 132, 137, Reteach, 104, 108, 119, 132, 137</p>
<p>9-11 PS2B <i>Atoms</i> of the same <i>element</i> have the same number of <i>protons</i>. The number and arrangement of <i>electrons</i> determines how the <i>atom</i> interacts with other <i>atoms</i> to form <i>molecules</i> and <i>ionic crystals</i>.</p>	
<ul style="list-style-type: none"> <li>Given the number and arrangement of <i>electrons</i> in the outermost shell of an <i>atom</i>, predict the <i>chemical properties</i> of the <i>element</i>.</li> </ul>	<p><b>SE:</b> 134-137, Chemistry &amp; You, 134, 136, Figure, 134, 135, Sample Problem, 136, Chemistry Tutor, 136, Lesson Check, 137, Online Problems, 137</p> <p><b>TE:</b> Key Objectives, 134, Engage: Chemistry &amp; You, 134, 136, Build Background, 134, Foundations for Reading, 134, Focus on ELL, 134, Differentiated Instruction, 135, Explain: Interpret Diagrams, 135, Start a Conversation, 135, Make a Connection, 136, Sample Practice Problem, 136, Summarize, 137, Explore: Class Activity, 135, UbD: Check for Understanding, 136, Extend: Connect to Physics, 137, Evaluate: Informal Assessment, 137, Reteach, 137</p>

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<p>9-11 PS2C When <i>elements</i> are listed in order according to the number of <i>protons</i>, repeating <i>patterns</i> of physical and <i>chemical properties</i> identify families of <i>elements</i> with similar <i>properties</i>. This Periodic Table is a consequence of the repeating <i>pattern</i> of outermost <i>electrons</i>.</p>	
<ul style="list-style-type: none"> <li>Given the number of <i>protons</i>, identify the <i>element</i> using a Periodic Table.</li> </ul>	<p><b>SE:</b> 158-159, 160-166, PearsonChem.com, 158, Big Idea, 159, Chemystery, 159, Chemistry &amp; You, 160, 166, Key Questions, 160, Figure, 160, 161, 163, 166, Concepts in Action, 161, Reading Support, 162, Chemistry &amp; You: Everyday Matter, 163, Lesson Check, 166, Online Problems, 166</p> <p><b>TE:</b> Planning Guide, 158A-158B, What's Online, 158, Focus on ELL, 158, 160, Introduce the Chapter, 159, UbD: Performance Goals, 159, Essential Questions, 159, Untamed Science, 159, Big Idea, 159, Chemystery, 159, Key Questions, 160, Additional Resources, 160, Engage: Chemistry &amp; You, 160, 163, 166, Access Prior Knowledge, 160, Professional Development Note, 161, Foundations for Reading, 161, Explore: Teacher Demo, 161, Class Activity, 165, Explain: Use Visuals, 161, 162, 164, Apply Concepts, 161, Interpret Diagrams, 162, Differentiated Instruction, 162, 165, Use an Analogy, 164, 21<sup>st</sup> Century Learning, 163, Extend: Connect to Astronomy, 163, Connect to Metallurgy, 165, UbD: Check for Understanding, 164, Informal Assessment, 166, Reteach, 166</p>

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<ul style="list-style-type: none"> <li>• <i>Explain</i> the arrangement of the <i>elements</i> on the Periodic Table, including the significant <i>relationships</i> among <i>elements</i> in a given column or row.</li> </ul>	<p><b>SE:</b> 167-173, 174-182, 183, 184, 185-191, Chemistry &amp; You, 167, 170, 174, 182, Key Questions, 167, 174, Figure, 167, 168-169, 170, 171, 172, 174, 176, 178, 179, 180, Kinetic Art, 168, 175, Sample Problem, 173, Lesson Check, 173, 182, Online Problems, 173, 182, Interpret Graphs, 175, 178, Interpret Data, 177, Quick Lab, 180, Chemistry &amp; You: Everyday Matter, 183, Small-Scale Lab, 184, Chemystery, 189, Study Guide, 185, Assessment, 186-190, Standardized Test Prep, 191</p> <p><b>TE:</b> Planning Guide, 158A-B, Key Questions, 167, 174, Engage: Chemistry &amp; You, 167, 170, 174, 183, Access Prior Knowledge, 167, 174, Foundations for Reading, 168, 175, Explain: Use Visuals, 168, 171, 172, 175, 178, 182, Summarize, 168, Apply Concepts, 170, Critical Thinking 175, 178, Use an Analogy, 175, Make a Connection, 177, 179, Start a Conversation, 183, Professional Development Note, 168, 172, 175, Differentiated Instruction, 169, 171, 177, 179, 183, Extend: Connect to Physiology, 169, 183, Connect to Physics, 172, UbD: Check for Understanding, 170, 176, 178, Explore: Teacher Demo, 171, 177, 178, 179, Sample Practice Problem, 173, Class Activity, 176, Misconception Alert, 176, 177, 181, Evaluate: Informal Assessment, 173, 182, Reteach, 173, 182, Focus on ELL, 174, 180, 181, Quick Lab, 180, Small-Scale Lab, 184, UbD: performance Tasks, 185, Evaluate: Review and Assessment, 185, Study Tips, 185, Chemystery: Summarize, 189</p>

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<p>9-11 PS2D <i>Ions</i> are produced when <i>atoms</i> or <i>molecules</i> lose or gain <i>electrons</i>, thereby gaining a positive or negative electrical charge. <i>Ions</i> of opposite charge are attracted to each other, forming <i>ionic bonds</i>. Chemical formulas for <i>ionic compounds</i> represent the proportion of <i>ion</i> of each <i>element</i> in the <i>ionic crystal</i>.</p>	
<ul style="list-style-type: none"> <li>• Explain how <i>ions</i> and <i>ionic bonds</i> are formed (e.g., sodium <i>atoms</i> lose an <i>electron</i> and chlorine <i>atoms</i> gain an <i>electron</i>, then the charged <i>ions</i> are attracted to each other and <i>form</i> bonds).</li> </ul>	<p><b>SE:</b> 192-193, 194-199, 200, PesonChem.com, 192, Big Idea, 193, Chemystery, 193, Chemistry &amp; You, 194, Key Questions, 194, Figure, 194, 196, 197, 198, Reading Support, 195, Lesson Check, 199, Online Problems, 198, Small-Scale Lab, 200</p> <p><b>TE:</b> Planning Guide, 192A-B, Key Questions, 194, Engage: Chemistry &amp; You, 194, 198, Access Prior knowledge, 194, Focus on ELL, 192, 200, What's Online, 192, Introduce the Chapter, 193, UbD: Performance Goals, 193, 196, Essential Questions, 193, Big Idea, 193, Chemystery, 193, Untamed Science, 193, Foundations for Reading, 195, Explain: Use Visuals, 195, 196, Critical Thinking, 196, Misconception Alert, 196, Apply Concepts, 195, Interpret Diagrams, 198, Start a Conversation, 198, Explore: Teacher Demo, 195, Class Activity, 197, UbD: Check for Understanding, 196, Differentiated Instruction, 197, Evaluate: Informal Assessment, 199, Reteach, 199, Small-Scale Lab, 200</p>
<ul style="list-style-type: none"> <li>• Explain the meaning of a chemical formula for an <i>ionic crystal</i> (e.g., NaCl).</li> </ul>	<p><b>SE:</b> 201-207, 208, 209-212, 213-219, 224, Chemistry &amp; You, 201, 204, 209, Key Questions, 201, 209, Vocabulary, 201, 209, Figure, 202, 204, 206, 209, 211, 212, 224, Quick Lab, 207, Lesson Check, 207, 212, Online Problems, 207, 212, Sample Problem, 203, Concepts in Action, 204, Kinetic Art, 205, 209, Chemistry &amp; You: Everyday Matter, 208, Study Guide, 213</p> <p><b>TE:</b> Key Questions, 201, 209, Engage: Chemistry &amp; You, 201, 208, 209, Assess Prior Knowledge, 201, 209, Focus on ELL, 201, 206, Foundation for Reading, 202, 210, Explain: Apply Concept, 202, 208, Critical Thinking, 202, 205, UbD: Check for Understanding, 202, 205, 210, Professional Development Note, 203, Sample Practice Problem, 203, Explore: Class Activity, 203, 204, 205, Teacher Demo, 210, 211, Extend: Use Visuals, 204, Differentiated Instruction, 204, 211, Quick Lab, 206, Connect to Technology, 207, Connect to Engineering, 212, Evaluate: Informal Assessment, 207, 212, Reteach, 207, 212, Connect to Geology, 208, Start a Conversation, 210, UbD: Performance Tasks, 213, Evaluate: Review and Assessment Materials, 213, Study Tip, 213, Assessment, 214-218, Standardized Test Prep, 219</p>

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<p>9-11 PS2E <i>Molecular compounds</i> are composed of two or more <i>elements</i> bonded together in a fixed proportion by sharing <i>electrons</i> between <i>atoms</i>, forming <i>covalent bonds</i>. Such <i>compounds</i> consist of well-defined <i>molecules</i>. Formulas of <i>covalent compounds</i> represent the types and number of <i>atoms</i> of each <i>element</i> in each <i>molecule</i>.</p>	
<ul style="list-style-type: none"> <li>Give examples to illustrate that <i>molecules</i> are groups of two or more <i>atoms</i> bonded together (e.g., a <i>molecule</i> of water is formed when one oxygen <i>atom</i> shares <i>electrons</i> with two hydrogen <i>atoms</i>).</li> </ul>	<p><b>SE:</b> 222-225, 488-493, Key Questions, 222, 488, Vocabulary, 222, 488, Figure, 222, 223, 224, 225, 488, 490, Chemistry &amp; You, 222, 224, 488, Kinetic Art, 489, Reading Support, 491, Quick Lab, 491, Lesson Check, 225, Online Problems, 225</p> <p><b>TE:</b> Key Questions, 222, 488, Engage: Chemistry &amp; You, 222, 224, 488, Activate Prior Knowledge, 222, 488, Focus on ELL, 222, 488, 491, Differentiated Instruction, 223, 490, Foundation for Reading, 223, 489, Explain: Start a Conversation, 223, 489, Use Context Clues, 223, Use an Analogy, 224, 490, Use Visuals, 223, 224, 489, 490, Misconception Alert, 224, 491, Teacher Demo, 224, UbD: Check for Understanding, 224, Informal Assessment, 225, Reteach, 225, Professional Development Note, 489, Apply Concept, 489, Kinetic Art, 489, Quick Lab, 491</p>
<ul style="list-style-type: none"> <li><i>Explain</i> the meaning of a chemical formula for a <i>molecule</i> (e.g., CH<sub>4</sub> or H<sub>2</sub>O). *a</li> </ul>	<p><b>SE:</b> 226-238, 488-493, 653, Key Questions, 226, 488, 653, Vocabulary, 226, 488, Kinetic Art, 227, Figure, 230, 232, 235, 236, 488, 489, 490, 492, Chemistry &amp; You, 226, 493, 653, Sample Problem, 229, 233, Concepts in Action, 237, Lesson Check, 238, 493, Online Problems, 238, 493, Quick Lab, 238, Kinetic Art, 489, Quick Lab, 491, Reading Support, 491</p> <p><b>TE:</b> Key Questions, 226, 488, 653, Engage: Chemistry &amp; You, 226, 488, 493, 653, Activate Prior Knowledge, 226, 488, Focus on ELL, 226, 237, 488, 491, 653, Differentiated Instruction, 227, 231, 490, Foundation for Reading, 227, 489, Explain: Apply Concepts, 227, 232, 233, 489, Interpret Diagrams, 228, Make a Connection, 228, 231, Critical Thinking, 228, 232, 492, Use Visuals, 490, 492, Use an Analogy, 490, Professional Development Note, 228, 230, 234, 235, 489, Explore: Class Activity, 227, UbD: Check for Understanding, 229, 232, 236, 42, Foundation for Math, 233, Class Activity, 229, Start a Conversation, 230, 489, Use Models, 230, 489, Misconception Alert, 234, 491, 492, Teacher Demo, 234, 235, Summarize, 236, Connect to Physics, 236, Informal Assessment, 237, 493, Reteach, 237, 493, Quick Lab, 238, Quick Lab, 491, Connect to Social Studies, 493</p>

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Washington Science Learning Standards	Pearson Chemistry
9-11 PS2F All forms of life are composed of large <i>molecules</i> that contain carbon. Carbon <i>atoms</i> bond to one another and other <i>elements</i> by sharing electrons, forming <i>covalent bonds</i> . Stable <i>molecules</i> of carbon have four <i>covalent bonds</i> per carbon <i>atom</i> .	
<ul style="list-style-type: none"> <li>Demonstrate how carbon <i>atoms form</i> four <i>covalent bonds</i> to make large <i>molecules</i>. Identify the <i>functions</i> of these <i>molecules</i> (e.g., plant and animal tissue, polymers, sources of food and nutrition, <i>fossil fuels</i>).</li> </ul>	<p><b>SE:</b> 760-761, 762-771, 772-774, 775-778, 779-781, 782-787, 788-795, PearsonChem.com, 760, Big Idea, 761, Chemystery, 761, 793, Chemistry &amp; You, 762, 766, 772, 775, 779, 781, 782, 784, Key Questions, 762, 772, 775, 779, 782, Vocabulary, 762, 772, 775, 779, 782, Reading Support, 763, Figure, 764, 768, 773, 776, 783, 786, Interpret Graphs, 765, Concepts in Action, 764, Sample Problems, 770, 771, 777, Kinetic Art, 776, Quick Lab, 778, Small-Scale Lab, 787, Lesson Check, 771, 778, 782, 786, Study Guide, 788, Skills Tune-Up, 789, Assessment, 790-794, Standardized Test Prep, 795</p> <p><b>TE:</b> Planning Guide, 760A-B, What's Online, 760, Focus on ELL, 760, 777, 782, 787, Introduce the Chapter, 761, Big Idea, 761, Chemystery, 761, Untamed Science, 761, Key Objectives, 762, 772, 775, 779, 782, Additional Resources, 762, 772, 775, 779, 782, Engage: Chemistry &amp; You, 762, 766, 772, 773, 775, 776, 779, 781, 782, 784, Activate Prior Knowledge, 762, 772, 775, Build Background, 775, 779, 782, Foundations for Reading, 762, 772, , 779, 782, UbD: Check for Understanding, 763, 767, 782, 788, Reading Strategy, 763, Use Visuals, 763, 764, 776, 779, 783, Explore: Teacher Demo, 763, 765, 777, Class Activity, 764, 768, 776, Connect to Geology, 763, Connect to Physiology, 764, Connect to Physical Constants, 767, Connect to Technology, 774, Connect to Environmental Engineering, 784, 21<sup>st</sup> Century Learning, 784, Differentiated Instruction, 764, 768, 774, 776, 781, 784, Professional Development Note, 765, 766, 768, Make Connection, 768, 771, 777, Misconception Alert, 768, 770, Use Models, 769, 773, Foundations for Math, 770, Start a Conversation, 776, 781, 783, Sample Practice Problem, 777, Quick Lab, 778, Critical Thinking, 785, Small-Scale Lab, 787, Evaluate: Informal Assessment, 771, 773, 778, 782, 786, Reteach, 771, 773, 778, 782, 786, Lesson Check Answers, 771, 773, 778, 782, 786</p>

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Washington Science Learning Standards	Pearson Chemistry
<p>9-11 PS2G <i>Chemical reactions</i> change the arrangement of <i>atoms</i> in the <i>molecules</i> of substances. <i>Chemical reactions</i> release or acquire <i>energy</i> from their surroundings and result in the formation of new substances.</p>	
<ul style="list-style-type: none"> <li>• <i>Describe</i> at least three <i>chemical reactions</i> of particular importance to humans (e.g., burning of <i>fossil fuels</i>, <i>photosynthesis</i>, rusting of metals).</li> </ul>	<p><b>SE:</b> 344-345, 346-354, 355, 356-367, 629, 838-839, Chemistry &amp; You, 346, 351, 356, 364, 629, 838, Key Questions, 346, 356, Vocabulary, 346, 356, 838, Figure, 346, 347, 348, 357, 358, 364, 839, PearsonChem.com, 344, Big Idea, 345, Chemystery, 345, Sample Problem, 349, 352, 353, 359, 361, 365, Kinetic Art, 351, Quick Lab, 354, Lesson Check, 354, 367, Online Problems, 354, 367, Chemistry &amp; You: Everyday Matter, 355</p> <p><b>TE:</b> Planning Guide, 344A-B, What's Online, 344, Key Questions, 346, 356, 838, Engage: Chemistry &amp; You, 346, 351, 356, 364, 838, Assess Prior Knowledge, 346, 356, 838, Focus on ELL, 344, 346, 353, 356, 838, Introduce the Chapter, 345, Big Idea, 345, Chemystery, 345, Untamed Science, 345, Differentiated Instruction, 348, 350, 355, 357, 364, 365, Foundation for Reading, 347, 357, 838, Foundation for Math, 349, 352, 361, 363, Explain: Making Connections, 347, Summarize, 347, Use Visuals, 348, 357, 358, 362, Apply Concept, 348, 349, 355, Use an Analogy, 361, Misconception Alert, 349, 351, 359, 629, Critical Thinking, 629, UbD: Check for Understanding, 345, 351, 358, 362, 629, Professional Development Note, 346, 359, 360, 366, 839, Sample Practice Problem, 349, 359, 361, 363, Explore: Teacher Demo, 350, 352, 360, 362, 365, 366, Class Activity, 839, Connect to Technology, 351, Connect to Careers, 354, Sample Practice Problem, 352, Make Connections, 353, 363, Start a Conversation, 363, Quick Lab, 354, Informal Assessment, 353, 367, Reteach, 353, 367, Chemistry &amp; You, 355, Use Visuals, 839</p>



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Washington Science Learning Standards	Pearson Chemistry
<ul style="list-style-type: none"> <li>Use a chemical equation to illustrate how the <i>atoms</i> in <i>molecules</i> are arranged before and after a reaction.</li> </ul>	<p><b>SE:</b> 344-345, 346-354, 355, 356-367, 369-373, Chemistry &amp; You, 346, 351, 356, 364, 369, Key Questions, 346, 356, 369, Vocabulary, 346, 356, 369, Figure, 346, 347, 348, 357, 358, 364, 369, PearsonChem.com, 344, Big Idea, 345, Chemystery, 345, Sample Problem, 349, 352, 353, 359, 361, 365, 371, 373, Kinetic Art, 351, Quick Lab, 354, Lesson Check, 354, 367, 373, Online Problems, 354, 367, 373, Chemistry &amp; You: Everyday Matter, 355, Small-Scale Lab, 374, Study Guide, 375, Assessment, 376-380, Chemystery, 379, Standardized Test Prep, 38</p> <p><b>TE:</b> Planning Guide, 344A-B, What's Online, 344, Key Questions, 346, 356, 369, Engage: Chemistry &amp; You, 346, 351, 355, 356, 364, 369, Assess Prior Knowledge, 346, 356, 369, Focus on ELL, 344, 346, 353, 356, 369, 372, Introduce the Chapter, 345, Big Idea, 345, Chemystery, 345, Untamed Science, 345, Differentiated Instruction, 348, 350, 355, 357, 364, 365, 370, Foundation for Reading, 347, 357, 370, Foundation for Math, 349, 352, 361, 363, 371, Explain: Making Connections, 347, Summarize, 347, Use Visuals, 348, 357, 358, 362, 372, Apply Concept, 348, 349, 355, 370, 372, Use an Analogy, 361, Misconception Alert, 349, 351, 359, UbD: Check for Understanding, 345, 351, 358, 362, Professional Development Note, 346, 359, 360, 366, Sample Practice Problem, 349, 359, 361, 363, 371, 373, Explore: Teacher Demo, 350, 352, 360, 362, 365, 366, Class Activity, Connect to Technology, 351, Connect to Careers, 354, Sample Practice Problem, 352, Make Connections, 353, 363, Start a Conversation, 363, Quick Lab, 354, Informal Assessment, 353, 367, 373, Reteach, 353, 367, 373, Small-Scale Lab, 374, Evaluate: Review and Assessment Materials, 375, Study Tip, 375, Chemystery, 379, Standardized Test Prep, 381</p>

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Washington Science Learning Standards	Pearson Chemistry
<ul style="list-style-type: none"> <li>Give examples of <i>chemical reactions</i> that either release or acquire <i>energy</i> and result in the formation of new substances (e.g., burning of <i>fossil fuels</i> releases large amounts of <i>energy</i> in the form of <i>heat</i>).</li> </ul>	<p><b>SE:</b> 562-568, 627-635, Chemistry &amp; You, 562, 563, 627, 629, Key Question, 562, 627, Vocabulary, 562, 627, Figure, 562, 563, 565, 568, 628, 629, 630, 631, 633, Kinetic Art, 563, Sample Problem, 564, Reading Support, 565, Concepts in Action, 630, Small-Scale Lab, 635, Lesson Check, 565, 634, Online Problems, 568, 634</p> <p><b>TE:</b> Key Objective, 562, 627, Additional Resources, 562, 627, PearsonChem.com, 562, 627, Engage: Chemistry &amp; You, 562, 563, 627, Build Background, 562, Focus on ELL, 562, 627, Access Prior Knowledge, 627, UbD: Check for Understanding, 563, 629, 633, Explore: Class Activity, 563, Make Connections, 564, 566, 628, Teacher Demo, 566, 631, 633, Misconception Alert, 564, 565, 628, 629, Sample Practice Problem, 564, 567, 567, Extend: Connect to Environmental Science, 564, Foundation for Math, 564, 567, Differentiated Instruction, 565, 628, 631, Apply Concepts, 565, 632, Use Visuals, 565, Professional Development Note, 566, Critical Thinking, 567, 629, Connect to Technology, 568, Evaluate: Informal Assessment, 568, 634, Reteach, 568, 634, Lesson Check Answer, 568, 634, Build Vocabulary, 628, Start a Conversation, 630, Interpret Diagrams, 630, Use an Analogy, 630, Professional Development Note, 630, 632, Connect to Meteorology, 631, Connect to Chemical Engineering, 632, Small-Scale Lab, 635</p>

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Washington Science Learning Standards	Pearson Chemistry
<p>9-11 PS2H <i>Solutions are mixtures</i> in which particles of one substance are evenly distributed through another substance. <i>Liquids</i> are limited in the amount of dissolved <i>solid</i> or <i>gas</i> that they can contain. <i>Aqueous solutions</i> can be <i>described</i> by relative quantities of the dissolved substances and acidity or alkalinity (pH).</p>	
<ul style="list-style-type: none"> <li>• Give examples of <i>common solutions</i>. <i>Explain</i> the differences among the processes of dissolving, melting, and reacting.</li> </ul>	<p><b>SE:</b> 518-524, 525-531, 534-537, 538-544, 545, 546-553, 621-626, Chemistry &amp; You, 518, 522, 525, 534, 537, 538, 543, Key Questions, 518, 525, 534, 538, Vocabulary, 518, 525, 534, 538, Figure, 518, 523, 525, 528, 534, Quick Lab, 519, 537, Interpret Graphs, 521, 542, Kinetic Art, 534, Reading Support, 535, Concepts in Action, 536, Sample Problem, 524, 526, 527, 530, 531, 539, 541, 543, 544, Lesson Check, 524, 537, 544, Online Problems, 524, 537, 544, Small-Scale Lab, 545, Study Guide, 546, Assessment, 548-552, Chemystery, 551, Standardized Test Prep, 553</p> <p><b>TE:</b> Key Questions, 518, 525, 534, 538, Engage: Chemistry &amp; You, 518, 522, 525, 534, 537, 538, 543, Assess Prior Knowledge, 518, 525, 534, 538, Focus on ELL, 518, 519, 525, 534, 538, 543, 547, Differentiated Instruction, 521, 530, 540, Foundation for Reading, 519, 526, 535, 539, Foundation for Math, 523, 526, 527, 529, 539, 541, Explain: Use Visuals, 520, 526, 528, 535, 542, Use Models, 529, Apply Concept, 528, 539, Critical Thinking, 537, 542, Make a Connection, 519, 540, Quick Lab, 519, Use an Analogy, 520, 523, Making Connections, 529, 530, 535, Start a Conversation, Misconception Alert, 542, UbD: Check for Understanding, 520, 528, 536, 542, 546, Interpret Diagrams, 521, Professional Development Note, 522, 535, Sample Practice Problem, 525, 526, 527, 529, 530, 531, 539, 541, 543, 544, Connect to Geology, 524, Connect to Medicine, 526, Explore: Teacher Demo, 522, 530, Class Activity, 527, 528, 536, 540, Informal Assessment, 524, 531, 537, 544, Reteach, 524, 531, 537, 544, Small-Scale Lab, 545, Evaluate: Review and Assessment Materials, 546, Math Tutor, 547, Chemystery, 551</p>

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<ul style="list-style-type: none"> <li>• <i>Predict</i> the result of adding increased amounts of a substance to an <i>aqueous solution</i>, in concentration and pH. *b</li> </ul>	<p><b>SE:</b> 494-501, 653-662, 664-669, 670, 672-675, 676-681, 682-689, Chemistry &amp; You, 494, 497, 653, 656, 664, 669, 672, 674, 676, 679, Key Questions, 494, 653, 664, 672, 676, Vocabulary, 494, 653, 664, 672, 676, Figure, 495, 496, 497, 498, 499, 500, 661, 666, 668, 674, 676, 678, Kinetic Art, 495, Sample Problem, 500, 655, 657, 658, 659, 667, 673, 680, Interpret Graphs, 660, 665, Quick Lab, 662, Lesson Check, 500, 662, 669, 675, 680, Online Problems, 662, 669, 675, 680, Small-Scale Lab, 670, Concepts in Action, 672, Chemistry &amp; You: Green Chemistry, 681, Study Guide, 682, Math Tutor, 683, Assessment, 684-688, Chemystery, 687, Standardized Test Prep, 689</p> <p><b>TE:</b> Key Questions, 494, 653, 664, 672, 676, Engage: Chemistry &amp; You, 494, 497, 653, 656, 664, 669, 672, 675, 676, 681, Assess Prior Knowledge, 494, 653, 664, 672, 676, Focus on ELL, 494, 653, 661, 664, 668, 672, 676, 683, Differentiated Instruction, 495, 654, 660, 665, 678, 681, Foundation for Reading, 495, 654, 672, 677, Foundation for Math, 500, 655, 657, 658, 659, 666, 673, Reading Strategy, 673, Explain: Use Visuals, 495, 498, 660, 665, 677, 678, Use Models, 654, Apply Concept, 656, 667, 673, 679, Critical Thinking, 665, 666, Making Connections, 654, 657, 673, 678, Start a Conversation, 656, Misconception Alert, 666, UbD: Check for Understanding, 496, 498, 666, 674, 677, 682, Professional Development Note, 497, 499, 656, 679, Sample Practice Problem, 655, 658, 659, Extend: Use Context Clues, 655, Sample Practice Problem, 667, 675, 680, Explore: Teacher Demo, 498, 658, 660, 674, 677, 678, Class Activity, 497, 659, Informal Assessment, 501, 661, 669, 675, 680, Reteach, 501, 661, 669, 675, 680, Connect to Geology, 657, Quick Lab, 662, Connect to Environmental Science, 668, Small-Scale Lab, 670, Connect to Biochemistry, 679, Connect to Biology, 681, Draw a Diagram, 681, Evaluate: Review and Assessment Materials, 682, Study Tip, Chemystery, 687, Start a Conversation, 495, 496, 499, Connect to Physiology, 495</p>

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Washington Science Learning Standards	Pearson Chemistry
9-11 PS2I The rate of a physical or <i>chemical change</i> may be affected by <i>factors</i> such as <i>temperature</i> , surface area, and pressure.	
<ul style="list-style-type: none"> <li>• <i>Predict</i> the <i>effect</i> of a change in <i>temperature</i>, surface area, or pressure on the rate of a given physical or <i>chemical change</i>.*b</li> </ul>	<p><b>SE:</b> 36, 37, 42, 43, 48-50, 423-424, 425-430, 431-434, 436-439, 456-463, Reading Support, 423, Interpret Graphs, 423, 429, Kinetic Art, 426, Figure, 36, 37, 42, 43, 48, 48, 50, 426, 429, 432, 433, 434, 436, 458, 460, Interpret Data, 427, Interpret Graphs, 456, 458, Chemistry &amp; You, 42, 43, 48, 49, 425, 427, 431, 434, 436, 459, Key Question, 48, 425, 431, 436, 456, Vocabulary, 48, 431, 436, 456, Reading Support, 48, Lesson Check, 50, 430, 434, 439, 463, Online Problems, 50, 430, 434, 439, 463, Concepts in Action, 433, Small-Scale Lab, 51, 435, Quick Lab, 437, Sample Problem, 457, 461, 462</p> <p><b>TE:</b> Student Activity, 36, Teacher Demo, 36, 43, Key Objectives, 425, 431, 436, 456, Vocabulary, 431, Activate Prior Knowledge, 42, 426, 431, 436, 456, Differentiated Instruction, 43, 426, 427, 432, 458, 460, Foundation for Reading, 43, 49, 426, 432, 437, 457, Foundation for Math, 457, 459, 461, 462, Chemistry &amp; You, 42, 43, 48, 49, 425, 427, 436, 439, 456, 459, Focus on ELL, 48, 49, 425, 431, 435, 436, 437, 456, Explain: Making Connections, 433, 458, 460, 461, Apply Concept, 457, Critical Thinking, 423, 434, Use Visuals, 37, 50, 426, 429, 433, 438, 458, 462, UbD: Check for Understanding, 423, 428, 429, Professional Development Note, 36, 433, 438, Misconception Alert, 428, Sample Practice Problem, 457, 459, 461, 462, Explore: Teacher Demo, 49, 427, 428, 433, 458, Student Activity, 460, Class Activity, 423, 429, Informal Assessment, 37, 50, 430, 434, 439, 463, Reteach, 37, 50, 430, 434, 439, 463, Lesson Check Answers, 50, Connect to Technology, 434, Connect to Biology, 462, Small-Scale Lab, 51, 435, Quick Lab, 437</p>

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Washington Science Learning Standards	Pearson Chemistry
<p>9-11 PS2J The number of <i>neutrons</i> in the <i>nucleus</i> of an <i>atom</i> determines the <i>isotope</i> of the <i>element</i>. Radioactive <i>isotopes</i> are unstable and emit particles and/or <i>radiation</i>. Though the timing of a single nuclear decay is unpredictable, a large group of nuclei decay at a predictable rate, making it possible to estimate the age of materials that contain radioactive <i>isotopes</i>.</p>	
<ul style="list-style-type: none"> <li>Given the <i>atomic number</i> and <i>atomic mass number</i> of an <i>isotope</i>, students draw and label a <i>model</i> of the <i>isotope's</i> atomic structure (number of <i>protons</i>, <i>neutrons</i>, and <i>electrons</i>).</li> </ul>	<p><b>SE:</b> 112-120, Chemistry &amp; You, 112, 114, Key Questions, 112, Vocabulary, 112, Figure, 113, 115, 117, Sample Problem, 113, 114, 115, Interpret Data, 116, Lesson check, 119, Online Problems, 119, Small-Scale Lab, 120</p> <p><b>TE:</b> Key Questions, 112, Engage: Chemistry &amp; You, 112, 114, Assess Prior Knowledge, 112, Focus on ELL, 112, 120, Differentiated Instruction, 113, Foundation for Reading, 113, Foundation for Math, 118, Explain: Use Visuals, 113, 116, 117, Making Connections, 116, Make a Connection, 118, Summarize, Apply Concept, 113, Start a Conversation, 115, UbD: Check for Understanding, 116, Professional Development Note, 115, 117, Misconception Alert, 114, 115, Sample Practice Problem, 114, 115, 118, 119, Explore: Student Activity, 114, Informal Assessment, 119, Reteach, 119</p>
<ul style="list-style-type: none"> <li>Given data from a sample, use a decay curve for a radioactive <i>isotope</i> to find the age of the sample. <i>Explain how</i> the decay curve is derived. *c</li> </ul>	<p><b>SE:</b> 880-887, Chemistry &amp; You, 880, 882, Key Questions, 880, Vocabulary, 880, Figure, 883, 885, Interpret Graphs, 881, Concepts in Action, 883, Sample Problem 884, Lesson Check, 886, Online Problems, 886, Small-Scale Lab, 887</p> <p><b>TE:</b> Key Questions, 880, Engage: Chemistry &amp; You, 880, Build Background, 880, Focus on ELL, 880, 885, Differentiated Instruction, 882, Foundation for Reading, 881, Foundation for Math, 884, Explain: Apply Concept, Critical Thinking, 881, 882, Making Connections, 881, 883, 885, UbD: Check for Understanding, 881, Interpret Graphs, 882, Professional Development Note, 883, Sample Practice Problem, 884, Extend: Connect to Mathematics, 884, Connect to Astronomy, 886, Explore: Class Activity, 885, Informal Assessment, 886, Reteach, 886, Small-Scale Lab, 887</p>

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Washington Science Learning Standards	Pearson Chemistry
<p>9-11 PS2K Nuclear reactions convert <i>matter</i> into <i>energy</i>, releasing large amounts of <i>energy</i> compared with <i>chemical reactions</i>. <i>Fission</i> is the splitting of a large <i>nucleus</i> into smaller pieces. <i>Fusion</i> is the joining of nuclei and is the process that <i>generates energy</i> in the Sun and other stars.</p>	
<ul style="list-style-type: none"> <li>Distinguish between nuclear <i>fusion</i> and nuclear <i>fission</i> by describing how each process <i>transforms elements</i> present before the reaction into <i>elements</i> present after the reaction.</li> </ul>	<p><b>SE:</b> 888-891, 892-893, Chemistry &amp; You, 888, 891, Key Questions, 888, Vocabulary, 888, Figure, 888, 889, 890, 891, Reading Support, 890, Lesson Check, 890, Online Problems, 890, Chemistry &amp; You: Technology, 892-893</p> <p><b>TE:</b> Key Questions, 888, Engage: Chemistry &amp; You, 888, 890, 892, Build Background, 888, Focus on ELL, 888, Differentiated Instruction, 889, Foundation for Reading, 889, Foundation for Math, Explain: Use Visuals, 889, 892, Start a Conversation, 892, Use Models, 889, Make a Connection, 890, Making Connections, UbD: Professional Development Note, 890, 892, Extend: Connect to History, 893</p>

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Washington Science Learning Standards	Pearson Chemistry
<b>EALR 4: Physical Science</b>	
<b>Big Idea: Energy: Transfer, Transformation, and Conservation (PS3)</b>	
<b>Core Content: <i>Transformation and Conservation of Energy</i></b>	
<p>In prior grades students learned to apply the concept of “energy” in various settings. In grades 9-11 students learn fundamental concepts of energy, including the Law of Conservation of Energy—that the total amount of energy in a closed system is constant. Other key concepts include gravitational potential and kinetic energy, how waves transfer energy, the nature of sound, and the electromagnetic spectrum. Energy concepts are essential for understanding all of the domains of science (EALR 4), from the ways that organisms get energy from their environment, to the energy that drives weather systems and volcanoes.</p>	
<p>9-11 PS3A Although <i>energy</i> can be <i>transferred</i> from one object to another and can be <i>transformed</i> from one form of <i>energy</i> to another <i>form</i>, the total <i>energy</i> in a <i>closed system</i> remains the same. The <i>concept of conservation of energy</i>, applies to all physical and chemical changes.</p>	
<ul style="list-style-type: none"> <li>Describe a situation in which <i>energy</i> is <i>transferred</i> from one place to another and <i>explain how energy</i> is conserved.*a</li> </ul>	<p><b>SE:</b> 556-561 574, 575, Chemistry &amp; You, 556, 560, Key Questions, 556, Vocabulary, 556, Figure, 556, 557, 559, 560, Concepts in Action, 557, Sample Problem, 558, 561, 575, Interpret Data, 559, Lesson Check, 561, Online Problems, 561</p> <p><b>TE:</b> Key Questions, 556, Engage: Chemistry &amp; You, 556, Assess Prior Knowledge, 556, Focus on ELL, 556, Differentiated Instruction, 557, Foundation for Math, 560, Explain: Use Visuals, 557, 559, Critical Thinking, 560, Making Connections, 557, 558, UbD: Check for Understanding, 559, Professional Development Note, 558, Sample Practice Problem, 558, 561, 575, Misconception Alert, 558, Explore: Teacher Demo, 557, Class Activity, 559, 574, Evaluate: Informal Assessment, 561, Reteach, 561</p>
<ul style="list-style-type: none"> <li>Describe a situation in which <i>energy</i> is <i>transformed</i> from one <i>form</i> to another and <i>explain how energy</i> is conserved.*a</li> </ul>	<p><b>SE:</b> 562-568, Chemistry &amp; You, 562, 563, Key Questions, 562, Vocabulary, 562, Figure, 562, 563, 565, 566, 568, Kinetic Art, 563, Sample Problem, 564, 567, Reading Support, 565, Lesson Check, 568, Online Problems, 568</p> <p><b>TE:</b> Key Questions, 562, Engage: Chemistry &amp; You, 563, Build Background, 562, Focus on ELL, 562, Differentiated Instruction, 565, Foundation for Math, 564, 567, Explain: Apply Concept, 565, Critical Thinking, 567, Make a Connection, 564, 566, UbD: Check for Understanding, 563, Professional Development Note, 566, Explore: Teacher Demo, 566, Class Activity, 563, Misconception Alert, 564, 565, Sample Practice Problem, 564, 567, Extend: Connect to Environmental Science, 564, Connect to Technology, 568, Evaluate: Informal Assessment, 568, Reteach, 568</p>



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Washington Science Learning Standards	Pearson Chemistry
9-11 PS3B <i>Kinetic energy</i> is the <i>energy of motion</i> . The equation: $E_k = \frac{1}{2} mv^2$	The kinetic <i>energy</i> of an object is defined by the
<ul style="list-style-type: none"> <li>Calculate the <i>kinetic energy</i> of an object, given the object's <i>mass</i> and <i>velocity</i>. *b</li> </ul>	<p><b>SE:</b> 420-424, Chemistry &amp; You, 420, 422, Key Questions, 420, Vocabulary, 420, Figure, 421, Sample Problems, 422, Reading Support, 423, Interpret Graphs, 423 Lesson Check, 424, Online Problems, 424</p> <p><b>TE:</b> Key Questions, 420, Engage: Chemistry &amp; You, 420, 422, Focus on ELL, 420, Differentiated Instruction, 421, Foundation for Math, 422, Explain: Use Visuals, 421, Critical Thinking, 423, UbD: Check for Understanding, 423, Sample Practice Problem, 422, Explore: Teacher Demo, 421, 422, Class Activity, 423, Extend: Connect to Astronomy, 424, Evaluate: Informal Assessment, 424, Reteach, 424</p>
9-11 PS3C <i>Gravitational potential energy</i> is due to the separation of mutually attracting <i>masses</i> . <i>Transformations</i> can occur between <i>gravitational potential energy</i> and <i>kinetic energy</i> , but the total amount of <i>energy</i> remains constant.	
<ul style="list-style-type: none"> <li>Give an example in which <i>gravitational potential energy</i> and <i>kinetic energy</i> are changed from one to the other (e.g., a child on a swing illustrates the alternating <i>transformation of kinetic</i> and <i>gravitational potential energy</i>).</li> </ul>	Because the <b>Pearson Chemistry</b> focus is enriched chemistry instruction and active learning, this standard falls outside of the program scope.
9-11 PS3D <i>Waves</i> (including sound, seismic, light, and water <i>waves</i> ) <i>transfer energy</i> when they interact with <i>matter</i> . <i>Waves</i> can have different <i>wavelengths</i> , <i>frequencies</i> , and <i>amplitudes</i> , and travel at different <i>speeds</i> .	
<ul style="list-style-type: none"> <li>Demonstrate how <i>energy</i> can be transmitted by sending <i>waves</i> along a spring or rope. Characterize physical <i>waves</i> by <i>frequency</i>, <i>wavelength</i>, <i>amplitude</i>, and <i>speed</i>.</li> </ul>	<p><b>SE:</b> 138, 139, Key Question, 138, Vocabulary, 138, Figure, 138</p> <p><b>TE:</b> Engage: Chemistry &amp; You, 138, Activate Prior Knowledge, 138 Focus on ELL, 138</p>
<ul style="list-style-type: none"> <li><i>Apply</i> these <i>properties</i> to the pitch and volume of sound <i>waves</i> and to the <i>wavelength</i> and magnitude of water <i>waves</i>. *b</li> </ul>	Because the <b>Pearson Chemistry</b> focus is enriched chemistry instruction and active learning, this standard falls outside of the program scope.

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to the  
Washington Science Learning Standards, June 2009**

Washington Science Learning Standards	Pearson Chemistry
<p>9-11 PS3E <i>Electromagnetic waves</i> differ from physical <i>waves</i> because they do not require a medium and they all travel at the same <i>speed</i> in a vacuum. This is the maximum <i>speed</i> that any object or <i>wave</i> can travel. Forms of <i>electromagnetic waves</i> include X-rays, ultraviolet, visible light, infrared, and radio.</p>	
<ul style="list-style-type: none"> <li>Illustrate the <i>electromagnetic spectrum</i> with a labeled diagram, showing how regions of the spectrum differ regarding <i>wavelength</i>, <i>frequency</i>, and <i>energy</i>, and how they are used (e.g., infrared in <i>heat</i> lamps, microwaves for heating foods, X-rays for medical imaging).</li> </ul>	<p><b>SE:</b> 138-139, 894-897, Chemistry &amp; You, 138, 894, Key Questions, 138, 894, Vocabulary, 138, Figure, 138, 139, 894, 895, 897, Quick Lab, 896, Lesson Check, 897</p> <p><b>TE:</b> Key Questions, 138, 894, Engage: Chemistry &amp; You, 138, 894, 895, Assess Prior Knowledge, 138, Build Background, 894, Focus on ELL, 138, 894, 896, Differentiated Instruction, Foundation for Reading, 139, 895, Explain: Use Visuals, 139, Interpret Diagram, 139, Apply Concepts, 895, Explore: Student Activity, 139, Professional Development Note, 139, 895, Teacher Demo, 895, Quick Lab, 896, Connect to Medicine, 897, Evaluate: Informal Assessment, 897, Reteach, 897, Lesson Check Answer, 897</p>