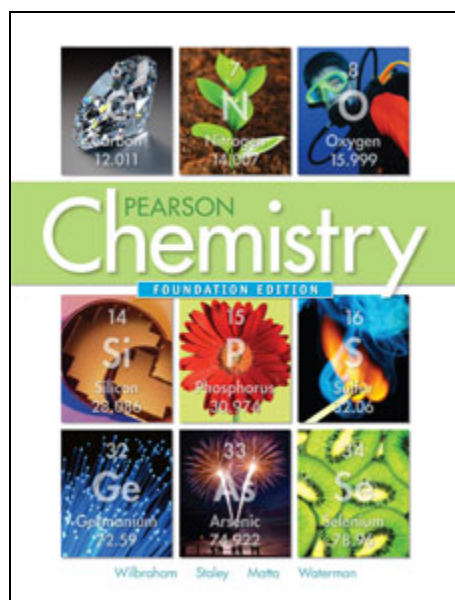


A Correlation of

# Pearson Chemistry Foundation Edition

© 2012



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: Foundation Edition*** ©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.

**Build a solid foundation.** The Foundation Edition of Pearson Chemistry is a new element of the program array that targets struggling students in your chemistry classroom. The Foundation Edition makes chemistry accessible to all your students by offering enhanced math support and proven reading strategies. The Foundation Edition offers the same content base as the on-level book, but with an extra emphasis on math and reading support to meet the needs of all the students.

***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 Foundation Edition
<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>). *a</li> </ul>	<p><b>SE:</b> 314-315, 316-325, 326-339, 340-351, 533-540, 690-697, 707, 708, 709, 710, 773, 831, 836, Foundations for Learning, 414, PearsonChem.com, 414, Big Idea, 415, Chemystery, 315, Chemistry &amp; You, 316, 326, 340, 533, 540, 690, Key Questions, 316, 316, 326, 340, 533, 541, 550, 564, 690, Build Connections, 317, Build Vocabulary, 318, 320, 316, 326, 330, 332, 334, 336, 340, 534, 538, 691, 692, 694, 696, Vocabulary Flashcards, 318, 320, 316, 326, 330, 332, 334, 336, 340, 534, 538, 691, 692, 694, 696, Sample Problem, 319, 323, 324, 328, 333, 335, 337, 535, 539, Kinetic Art, 321, 693, 831, Build Math Skills, 324, 329, 536, Quick Lab, 325, 836, Concepts in Action, 336, 694, Build Understanding, 537, 695, Practice Problems, 540, Chemistry &amp; You: History, 697, Lesson Check, 325, 339, 540, 697, Quick Lab, 846</p> <p><b>TE:</b> Chapter Planner, 314A-B, Foundations for Learning, 314, Understand by Design, 314, Focus on ELL, 314, 317, 322, 327, 338, 534, Chemystery, 317, Speed Bump, 317, 318, 321, 327, 336, 338, 534, 538, Build Vocabulary, 318, 320, 316, 326, 332, 334, 336, 340, 534, 537, 538, 691, 692, 694, Use Visuals, 318, 327, 334, 336, 537, 691, 693, 696, 707, 709, Build Chemistry Concepts, 318, 321, 330, 693, 694, Differentiated Instruction, 318, 321, 330, 336, 537, 692, 694, 696, 708, Teach Problem, 319, 323, 324, 328, 331, 333, 335, 337, 535, 539, 540, Skills and Math Workbook, 319, 323, 329, 331, 333, 335, 337, 540, 691, Extend: Additional Problems, 319, 323, 324, 333, 335,</p>

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Washington Science Learning Standards	Pearson Chemistry Foundation Edition
<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>(Continued)</b></p> <p>337, Practice Problems Answer, 319, 323, 324, 333, 335, 337, 536, 539, Explore: Teacher Demo, 320, 322, 332, 334, 338, 538, 692, 695, 708, Reading Support, 320, 332, 334, 693, 695, Visual Learning, 321, 327, Kinetic Art, 321, 693, 831, Check Understanding, 322, 693, Chemistry Tutorial, 323, 324, 535, Build Math Skills, 324, 329, 536, Quick Lab, 325, 836, Key Objective, 316, 326, 340, 533, 541, 550, 564, 690, Lesson Resources, 316, 326, 340, 533, 541, 550, 564, 690, PearsonChem.com, 316, 326, 340, 533, 541, 550, 564, 690, Engage: Chemistry &amp; You, 316, 326, 340, 533, 541, 550, 564, 690, 697, Activate Prior Knowledge, 316, 326, 340, 533, 541, 550, 564, 690, Preview the Pages, 316, 326, 340, 533, 541, 550, 564, 690, Foundations for Math, 328, 535, Extend: Additional Problem, 329, 331, 536, Active Learning, 332, 338, Concepts in Action, 336, 694, Build Understanding, 537, 695, Connect to Engineering, 696, Evaluate: Informal Assessment, 325, 339, 325, 339, 540, 697, Reteach, 325, 339, 325, 339, 540, 697, Lesson Check Answers, 325, 339, 325, 339, 540, 697</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> 401-406, 575-587, 806-810, Chemistry &amp; You, 401, 575, 587, 806, 810, Key Questions, 401, 575, 806, Build Vocabulary, 402, 404, 406, 575, 577, 578, 806, 807, 809, Vocabulary Flashcards, 402, 404, 406, 575, 577, 578, 806, 807, 809, Kinetic Art, 403, 576, 809, Build Connections, 578, Sample Problem, 581, 583, 585, Build Math Skills, 585, 586, Lesson Check, 406, 587, 810, Big Idea, 406, 587, 810</p> <p><b>TE:</b> Build Vocabulary, 402, 405, 576, 578, 807, 809, Key Objectives, 401, 575, 806, Lesson Resources, 401, 575, 806, PearsonChem.com, 401, 575, 806, Engage: Chemistry &amp; You, 401, 575, 587, 806, Activate Prior Knowledge, 401, 575, 806, Preview the Pages, 401, 575, 806, Visual Learning, 402, 576, Check Understanding, 402, Speed Bump, 402, 577, 582, Focus on ELL, 402, 576, 807, Differentiated Instruction, 403, 405, 577, 580, 808, Kinetic Art, 403, 576, 809, Explain: Use Visuals, 403, 404, 405, 808, Explore: Teacher Demo, 403, 404, 579, Reading Support, 404, 578, 579, 809, Class Activity, 405, Active Learning, 576, Build Connections, 578, Teacher Demo, 578, Use Visuals, 579, 580, 809, Apply Concepts, 580, 807, 808, Teach Problem, 581, 583, Chemistry Tutorial, 583, Foundations for Math, 583, 585, Additional Problem, 581, 584, 586, Skill and Math Workbook, 403, 576, 581, 586, Practice Problems Answer, 581, 584, Build Chemistry Concepts, 582, Build Math Skills, 585, 586, Evaluate: Informal Assessment, 406, 587, 810, Reteach, 406, 587, 810, Lesson Check Answers, 406, 587, 810</p>
<p>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.</p>	
<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> 11-16 Chemistry &amp; You, 11, Key Question, 11, Build Understanding, 11, Build Vocabulary, 12, 13, 14, Vocabulary Flashcards, 12, 13, 14, Kinetic Art, 13, Quick Lab, 15, Lesson Check, 16</p> <p><b>TE:</b> Key Objective, 11, Lesson Resources, 11, PearsonChem.com, 11, Engage: Chemistry &amp; You, 11, Activate Prior Knowledge, 11, Preview the Page, 11, Build Understanding, 12, Build Vocabulary, 12, 13, Build Science Skills, 12, 15, Explore: Class Activity, 12, Focus on ELL, 12, 15, Reading Support, 13, Kinetic Art, 13, Build Study Skills, 13, Use Visuals, 14, 16, Extend: Connect to Medicine, 14, Speed Bump, 14, Differentiated Instruction, 14, Quick Lab, 15, Evaluate: Informal Assessment, 16, Reteach, 16, Lesson Check Answers, 16</p>

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<p>Represent the system with a diagram specifying components, boundaries, flows and feedbacks. *a</p>	<p><b>SE:</b> 743-745, 784-786, 798-802, 808-809, 831, Chemistry &amp; You, 784, 786, 798, Build Vocabulary, 743, 784, 785, 798, 800, 809, Vocabulary Flashcards, 743, 785, 798, 800, 809, Kinetic Art, 743, 809, 831, Build Connections, 745, 801, Lesson Check, 745, 786, Quick Lab, 800</p> <p><b>TE:</b> Build Vocabulary, 743, 785, 799, Kinetic Art, 743, 809, 831, Lead a Discussion, 743, 831, Use Visuals, 743, 744, 785, 786, 808, 809, 831, Speed Bump, 743, 744, 785, 799, 831, Build Science Skills, 785, Concepts in Action, 785, Differentiated Instruction, 744, 801, 808, Build Connections, 745, Evaluate: Informal Assessment, 745, Reteach, 745, Key Objectives, 784, 798, Lesson Resources, 784, 798, PersonChem.com, 784, 798, Engage: Chemistry &amp; You, 784, 798, Activate Prior Knowledge, 784, Build Background, 798, Preview the Pages, 784, 798, Focus on ELL, 785, 799, 800, 831, Evaluate: Informal Assessment, 786, Reteach, 786, Lesson Check Answers, 786, Visual Learning, 799, Check Understanding, 799, 809, Quick Lab, 800, Real-World Connection, 801, Apply Concepts, 801, 808, Visual Learning, 801, Reading Support, 809</p>
<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> 786, 809-810, Build Vocabulary, 809, Vocabulary Flashcards, 809, Kinetic Art, 809</p> <p><b>TE:</b> Build Vocabulary, 809, Kinetic Art, 809, Use Visuals, 786, 809, Check Understanding, 809, Evaluate: Informal Assessment, 810, Reteach, 810</p>
<ul style="list-style-type: none"> <li>Determine how the <i>system functions</i> with respect to other <i>systems</i>.</li> </ul>	<p><b>SE:</b> 526-528, 802-804, Key Question, 526, Build Vocabulary, 526, 527, Vocabulary Flashcards, 526, 527, Build Connection, 802</p> <p><b>TE:</b> Key Objectives, 526, Lesson Resource, 526, PearsonChem.com, 526, Engage: Chemistry &amp; You, 526, Build Background, 526, Explain: Build Vocabulary, 526, 527, Teacher Demo, 527, Check Understanding, 527, Focus on ELL, 527, Build Connections, 802, Active Learning, 802, Lead a Discussion, 802, 803, Speed Bump, 802, Reading Support, 802, Differentiated Instruction, 803, Real-World Connection, 803</p>

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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> 800-802, Quick Lab, 800, Build Vocabulary, 800, Vocabulary Flashcards, 800, Build Connection, 801</p> <p><b>TE:</b> Quick Lab, 800, Build Vocabulary, 800, Focus on ELL, 800, Build Connection, 801, Real-World Connection, 801, Apply Concepts, 801, Visual Learning, 801</p>
9-12 SYSD <i>Systems</i> can be changing or in <i>equilibrium</i> .	
<ul style="list-style-type: none"> <li><i>Analyze</i> whether or not a <i>system</i> (e.g., population) is changing or in <i>equilibrium</i>. *c</li> </ul>	<p><b>SE:</b> 575-586, Chemistry &amp; You, 575, 587, Key Questions, 575, Build Vocabulary, 575, 577, 578, 582, Vocabulary Flashcards, 575, 577, 578, 582, Build Connections, 578, Kinetic Art, 576, Sample Problem 581, 583, 585, Build Math Skills, 584, 586, Lesson Check, 587</p> <p><b>TE:</b> Key Objectives, 575, Lesson Resources, 575, PearsonChem.com, 575, Engage: Chemistry &amp; You, 575, Activate Prior Knowledge, 575, Preview the Pages, 575, Explain: Use Visuals, 579, 580, Build Vocabulary, 576, 577, 582, Apply Concepts, 577, 580, Visual Learning, 576, Explore: Teacher Activity, 578, Focus on ELL, 576, Skills and Math Workbook, 576, 581, Active Learning, 576, Speed Bump, 577, 582, Reading Support, 578, 579, 582, Kinetic Art, 576, Build Math Skills, 584, Build Chemistry Concepts, 582, Differentiated Instruction, 577, 580, Build Connections, 578, Teacher Demo, 579, Teach Problem, 581, 583, 584, 585, 586, Practice Problems, 581, 584, 586, Foundations for Math, 583, 584, Chemistry Tutor, 583, Extend: Additional Problems, 581, 584, 586, Evaluate: Informal Assessment, 587, Reteach, 587, Lesson Check Answers, 587</p>



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<ul style="list-style-type: none"> <li>• Determine whether a <i>state of equilibrium</i> is static or dynamic (e.g., inflows equal outflows). *c</li> </ul>	<p><b>SE:</b> 575-581, 588-595, Chemistry &amp; You, 575, 585, Key Questions, 575, 585, Build Vocabulary, 575, 577, 578, 585, Vocabulary Flashcards, 575, 577, 578, 585, Build Connections, 578, Kinetic Art, 576, Sample Problem 581, 590, Build Math Skills, 591, 594, Lesson Check, 595</p> <p><b>TE:</b> Key Objectives, 575, 585, Lesson Resources, 575, 585, PearsonChem.com, 575, 585, Engage: Chemistry &amp; You, 575, 585, Activate Prior Knowledge, 575, 585, Preview the Pages, 575, 585, Explain: Use Visuals, 579, 580, 589, 592, Build Vocabulary, 576, 577, 582, 589, Build Chemistry Concepts, 589, 595, Apply Concepts, 577, 580, Visual Learning, 576, Explore: Teacher Activity, 578, Focus on ELL, 576, 589, Skills and Math Workbook, 576, 581, Active Learning, 576, Speed Bump, 577, 589, Reading Support, 578, 579, Kinetic Art, 576, Differentiated Instruction, 577, 580, 592, Build Connections, 578, Teacher Demo, 579, 592, Teach Problem, 581, 590, 593, Chemistry Tutorial, 590, 593, Practice Problems, 581, Foundations for Math, 590, 593, Extend: Additional Problems, 581, 591, 594, Build Math Skills, 591, 594, Evaluate: Informal Assessment, 595, Reteach, 595, Lesson Check Answers, 595</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>	
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.	
9-12 INQA <b>Question</b> Scientists <i>generate</i> and <i>evaluate</i> questions to <i>investigate</i> the <i>natural world</i> .	
<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>	<b>SE: 16</b> <b>TE: Evaluate: Informal Assessment, 16</b>
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.	
<ul style="list-style-type: none"> <li>Plan and conduct a scientific investigation, choosing a method appropriate to the question being asked.</li> </ul>	<b>SE: 15, 33, 67, 99, 134, 169, 192, 219, 254, 302, 325, 378, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836, Quick Lab, 15, 33, 67, 99, 134, 169, 192, 219, 254, 302, 325, 378, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836</b> <b>TE: Quick Lab, 15, 33, 67, 99, 134, 169, 192, 219, 254, 302, 325, 378, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836</b> <b>Virtual Lab, 3, 27, 53, 91, 117, 147, 179, 203, 237, 277, 315, 353, 395, 421, 461, 487, 525, 563, 609, 657, 689, 719, 753, 783, 817</b>
<ul style="list-style-type: none"> <li>Collect, analyze, and display data using calculators, computers, or other technical devices when available.*b</li> </ul>	<b>SE/TE: Virtual Lab, 3, 27, 53, 91, 117, 147, 179, 203, 237, 277, 315, 353, 395, 421, 461, 487, 525, 563, 609, 657, 689, 719, 753, 783, 817</b>
9-12 INQC <b>Explain</b> Conclusions must be logical, based on evidence, and consistent with prior established knowledge.	
<ul style="list-style-type: none"> <li>Draw conclusions supported by evidence from the investigation and consistent with established scientific knowledge.*c</li> </ul>	<b>SE: 15, 33, 67, 99, 134, 169, 192, 219, 254, 302, 325, 378, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836, Quick Lab, 15, 33, 67, 99, 134, 169, 192, 219, 254, 302, 325, 378, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836</b> <b>TE: Quick Lab, 15, 33, 67, 99, 134, 169, 192, 219, 254, 302, 325, 378, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836</b>

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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> 15, 33, 67, 99, 134, 169, 192, 219, 254, 302, 325, 378, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836, Quick Lab, 15, 33, 67, 99, 134, 169, 192, 219, 254, 302, 325, 378, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836</p> <p><b>TE:</b> Quick Lab, 15, 33, 67, 99, 134, 169, 192, 219, 254, 302, 325, 378, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836</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>
<p>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.</p>	
<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> 2, 11-16, 26, 52, 90, 116, 146, 178, 202, 236, 276, 314, 352, 394, 420, 460, 486, 524, 562, 608, 656, 688, 718, 752, 782, 816, Chemistry &amp; You, 11, Key Questions, 11, Build Understanding, 11, Build Vocabulary, 12, 13, 14, Kinetic Art, 13, Quick Lab, 15, Lesson Check, 16, Foundations for Learning, 2, 26, 52, 90, 116, 146, 178, 202, 236, 276, 314, 352, 394, 420, 460, 486, 524, 562, 608, 656, 688, 718, 752, 782, 816</p> <p><b>TE:</b> Key Objectives, 11, Lesson Resources, 11, Engage: Chemistry &amp; You, 11, Activate Prior Knowledge, 11, Preview the Pages, 11, Explain: Build Understanding, 12, 13, 14, Build Vocabulary, 12, Build Science Skills, 12, Explore: Class Activity, 12, Focus on ELL, 12, 15, Reading Support, 13, Build Study Skills, 13, Kinetic Art, 13, Check Understanding, 13, Connect to Medicine, 14, Speed Bump, 14, Differentiated Instruction, 14, Quick Lab, 15, Lead a Discussion, 15, Use Visuals, 14, Build Science Skills, 15, Evaluate: Informal Assessment, 16, Reteach, 16, Lesson Check Answers, 16, Foundations for Learning, 2, 26, 52, 90, 116, 146, 178, 202, 236, 276, 314, 352, 394, 420, 460, 486, 524, 562, 608, 656, 688, 718, 752, 782, 816</p>

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<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.</p>	
<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> 15, 17-20, 33, 67, 99, 134, 169, 192, 219, 254, 302, 325, 378, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836, Chemistry &amp; You, 17, Key Questions, 17, Build Connections, 18, Math Tutor, 18, Sample Problem, 19, Lesson Check, 20, Quick Lab, 15, 33, 67, 99, 134, 169, 192, 219, 254, 302, 325, 378, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836</p> <p><b>TE:</b> Key Objectives, 17, Lesson Resources, 17, Engage: Chemistry &amp; You, 17, 20, Activate Prior Knowledge, 17, Preview the Pages, 17, Explain: Build Connections, 18, Visual Learning, 18, 20, , Focus on ELL, 18, Build Study Skills, 18, Apply Concepts, 18, Math Tutor, 18, Speed Bump, 18, Check Understanding, 20, Teach Problem, 19, Chemistry Tutorial, 19, Extend: Additional Problems, 19, Teacher Demo, 20, Evaluate: Informal Assessment, 20, Reteach, 20, Lesson Check Answers, 20, Quick Lab, 15, 33, 67, 99, 134, 169, 192, 219, 254, 302, 325, 378, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836</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> 11-16, Chemistry &amp; You, 11, Key Questions, 11, Build Understanding, 11, Build Vocabulary, 13, Vocabulary Flashcards, 13, Kinetic Art, 13, Quick Lab, 15, Lesson Check, 16</p> <p><b>TE:</b> Key Objectives, 11, Lesson Resources, 11, PearsonChem.com, 11, Engage: Chemistry &amp; You, 11, Activate Prior Knowledge, 11, Preview the Pages, 11, Explain: Use Visuals, 14, 16, Build Understanding, 12, Build Vocabulary, 12, 13, 14, Build Science Skills, 12, 15, Extend: Connect to Medicine, 14, Explore: Class Activity, 12, Focus on ELL, 12, 15, Speed Bump, 14, Reading Support, 13, Build Study Skills, 13, Kinetic Art, 13, Check Understanding, 13, Differentiated Instruction, 14, Quick Lab, 15, Evaluate: Informal Assessment, 16, Reteach, 16, Lesson Check Answers, 16</p>
<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.</p>	
<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/TE:</b> 16</p>

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Washington Science Learning Standards	Pearson Chemistry Foundation Edition
<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>	SE/TE: 16
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 <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><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 Foundation Edition
<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> 3, 27, 53, 91, 116, 117, 121, 147, 179, 203, 237, 277, 315, 353, 395, 421, 461, 487, 525, 563, 609, 657, 689, 697, 719, 753, 783, 817, Chemistry &amp; You: History, 121, 697, Take it Further, 121, 697</p> <p><b>TE:</b> Chemistry &amp; You: History, 121, 697, Extend: Connect to Language, 121, Take it Further Answers, 121, 697, Untamed Science Video, 2B, 3, 26B, 27, 52B, 53, 90B, 91, 116B, 117, 146B, 147, 178B, 179, 202B, 203, 236B, 237, 276B, 277, 314B, 315, 352B, 353, 394B, 395, 420B, 421, 460B, 461, 486B, 487, 524B, 525, 562B, 563, 608B, 609, 656B, 657, 688B, 689, 718B, 719, 752B, 753, 782B, 783, 816B, 817</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 change</i>).</li> </ul>	<p><b>SE:</b> 3, 7, 8-10, 11, 17, 27, 28, 32, 36, 43, 53, 68, 78, 91, 92, 95, 100, 117, 118, 124, 129, 147, 148, 154, 162, 179, 180, 186, 193, 203, 204, 208, 220, 224, 237, 238, 244, 256, 260, 264, 277, 278, 287, 296, 315, 316, 326, 340, 353, 354, 360, 374, 395, 398, 401, 407, 411, 421, 422, 427, 441, 448, 461, 462, 468, 477, 487, 488, 495, 505, 509, 526, 533, 541, 545, 550, 563, 564, 572, 575, 588, 596, 609, 610, 618, 631, 645, 657, 658, 668, 675, 689, 690, 698, 706, 719, 720, 731, 739, 742, 753, 754, 758, 764, 771, 783, 784, 787, 790, 795, 798, 806, 817, 818, 822, 830, 834, Chemystery, 3, 27, 53, 91, 117, 147, 179, 203, 237, 277, 315, 353, 395, 421, 461, 487, 545, 563, 609, 657, 689, 719, 753, 783, 817, Big Idea, 3, 3, 27, 53, 91, 117, 147, 179, 203, 237, 277, 315, 353, 395, 421, 461, 487, 545, 563, 609, 657, 689, 719, 753, 783, 817, Chemistry &amp; You, 4, 11, 17, 28, 32, 36, 43, 54, 68, 78, 92, 95, 100, 118, 124, 129, 148, 154, 162, 180, 186, 193, 204, 208, 220, 224, 238, 244, 256, 260, 264, 278, 287, 296, 316, 326, 340, 354, 360, 374, 398, 401, 407, 411, 422, 427, 441, 448, 462, 468, 477, 488, 495, 505, 509, 526, 533, 541, 550, 564, 572, 575, 588, 596, 610, 618, 631, 645, 658, 668, 675, 690, 698, 706, 720, 731, 739, 742, 754, 758, 764, 771, 784, 787, 790, 795, 798, 806, 818, 822, 830, 834, Key Questions, 8, Build Vocabulary, 9, Lesson Check Answers, 10</p> <p><b>TE:</b> Chemystery, 3, 27, 53, 91, 117, 147, 179, 203, 237, 277, 315, 353, 395, 421, 461, 487, 545, 563, 609, 657, 689, 719, 753, 783, 817, Big Idea, 3, 27, 53, 91, 117, 147, 179, 203, 237, 277, 315, 353, 395, 421, 461, 487, 545, 563, 609, 657, 689, 719, 753, 783, 817, Chemistry &amp; You, 4, 11, 17, 28, 32, 36, 43, 54, 68, 78, 92, 95, 100, 118, 124, 129, 148, 154, 162, 180, 186, 193, 204, 208, 220, 224, 238, 244, 256, 260, 264, 278, 287, 296, 316, 326, 340, 354, 360, 374, 398, 401, 407, 411, 422, 427, 441, 448, 462, 468, 477, 488, 495, 505, 509, 526, 533, 541, 550, 564, 572, 575, 588, 596, 610, 618, 631, 645, 658, 668, 675, 690, 698, 706, 720, 731, 739, 742, 754, 758, 764, 771, 784, 787, 790, 795, 798, 806, 818, 822, 830, 834, Key Objectives, 8, Lesson Resources, 8, Engage: Chemistry &amp; You, 8, Activate Prior knowledge, 8, Preview the Pages, 8, Focus on ELL, 9, Build Vocabulary, 9, Lead a Discussion, 9, Apply Concepts, 9, Check Understanding, 9, Explore: Class Activity, 10, Evaluate: Informal Assessment, 10, Reteach, 10, Lesson Check Answers, 10</p>

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Washington Science Learning Standards	Pearson Chemistry Foundation Edition
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> .	
<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> 15, 33, 63, 99, 134, 169, 192, 219, 254, 302, 325, 356, 378, 401, 407, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836, Quick Lab, 15, 33, 63, 99, 134, 169, 192, 219, 254, 302, 325, 356, 378, 401, 407, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836</p> <p><b>TE:</b> 15, 33, 63, 70, 98, 99, 123, 125, 134, 158, 169, 185, 191, 192, 218, 219, 223, 239, 248, 250, 252, 254, 265, 267, 268, 278, 282, 283, 302, 303, 307, 321, 325, 327, 356, 369, 378, 389, 397, 401, 405, 407, 412, 431, 446, 462, 465, 478, 489, 490, 512, 527, 544, 567, 578, 570, 629, 630, 631, 632, 637, 639, 646, 663, 664, 665, 666, 669, 711, 712, 720, 735, 768, 791, 800, 836, Reading Support, 250, 267, 283, 369, 512, 567, 578, 664, Active Learning, 252, Apply Concepts, 9, Reteach, 20, 223, 637, Quick Lab, 15, 33, 63, 99, 134, 169, 192, 219, 254, 302, 325, 378, 412, 446, 465, 489, 544, 570, 630, 666, 712, 735, 768, 800, 836, Preview the Pages, 278, 401, 407, 411, 462, 631, 639, 645, 720, Differentiated Instruction, 63, 97, 104, 158, 268, 282, 303, 307, 321, 356, 405, 431, 663, Class Activity, 70, 239, 248, 669, Inquiry Support, 325, Focus on ELL, 15, 33, 98, 125, 134, 169, 191, 218, 252, 265, 302, 327, 378, 389, 397, 412, 446, 465, 478, 489, 490, 527, 544, 570, 629, 632, 646, 665, 711, 735, 768, 791, 800, 836, Evaluate: Informal Assessment, 123, 185, 601</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>	<b>SE/TE:</b> 72, 83, 92, 96, 97, 111, 112, 119, 122, 125, 130, 136, 149, 164, 167, 181, 182, 194, 207, 209, 211, 213, 216, 219, 222, 228, 229, 231, 250, 279, 292, 293, 321, 343, 355, 356, 359, 373, 387, 403, 424, 467, 476, 500, 510, 531, 568, 583, 614, 647, 724, 732, 733, 739, 756, 763, 765, 772, 773, 800, 828, Focus on ELL, 93, 112, 119, 130, 178, 209, 221, 279, 355, 510, 732, 765, 772, 800, Extend: Addition Problem, 211, Visual Learning, 209, Evaluate: Informal Assessment, 219, 467, 763, Kinetic Art, 225, Teacher Demo, 96, 119, 122, 167, 181, 194, 207, 216, 228, 250, 292, 403, 568, Class Activity, 222, UbD: Performance Task, 111, 231, Reteach, 83, 373, 387, 476, Kinetic Art, 321, 359, 403, Chemistry Tutorial, 531, 583, Use Models, 733, Use Visuals, 763, Build Background, 92, 739, Build Chemistry Concepts, 97, Concepts in Action, 149, 355, Differentiated Instruction, 72, 136, 164, 182, 213, 229, 293, 321, 343, 356, 403, 424, 500, 568, 614, 647, 724, 756, 773, 828, Explore: Active Learning, 125, 355, Quick Lab, 800

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Washington Science Learning Standards	Pearson Chemistry Foundation Edition
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> 19, 65, 66, 73, 74, 80, 81, 109, 133, 135, 280, 281, 285, 286, 288, 294, 298, 300, 301, 304, 305, 364, 365, 367, 370, 371, 372, 373-374, 376, 377, 379, 382, 383, 386-387, 398, 399, 429, 432, 433, 435, 438-439, 442, 443, 444, 445, 450, 451, 474, 475, 493, 497, 499, 501, 503, 511, 511, 515, 516, 517, Sample Problem, 19, 65, 66, 73, 80, 109, 133, 135, 280, 285, 288, 294, 298, 300, 301, 304, 364, 365, 367, 370, 371, 372, 373, 376, 377, 379, 382, 386, 398, 399, 429, 432, 433, 435, 438, 439, 3,442, 443, 444, 445, 450, 451, 474, 475, 493, 497, 499, 501, 503, 511, 514, 515, 516, 517-518, Build Math Skills, 281, 286, 289, 295, 299, 305, 365, 372, 377, 383, 399, 433, 443</p> <p><b>TE:</b> Teacher Demo, 74, Build Math Skills, 281, 286, 289, 295, 299, 305, 365, 372, 377, 383, 399, 433, 443, 445, 451, 475, 516, Teach Problem, 19, 65, 66, 73, 80, 81, 109, 133, 135, 280, 285, 286, 288, 294, 298, 300, 301, 304, 364, 367, 372, 373, 376, 379, 382, 386, 398, 429, 432, 435, 438, 442, 444, 450, 474, 493, 497, 499, 501, 503, 511, 515, Chemistry Tutorial, 19, 66, 73, 80, 81, 109, 133, 285, 288, 298, 300, 304, 364, 376, 386, 398, 429, 432, 435, 438, 442, 450, 474, 493, 497, 499, 501, 515, Math Tutorial, 281, 383, Build Math Skills, 281, 289, Foundations for Math, 280, 288, 298, 304, 364, 367, 376, 379, 382, 398, 429, 432, 435, 442, 444, 450, 474, 497, 511, 515, Practice Problems Answer, 19, 65, 66, 73, 80, 81, 109, 133, 135, 281, 285, 289, 294, 299, 300, 301, 305, 365, 372, 373, 377, 383, 386, 399, 433, 438, 443, 445, 451, 475, 493, 501, 503, 516, 517, Extend: Additional Problems, 19, 65, 66, 73, 80, 81, 109, 133, 135, 281, 289, 295, 299, 301, 305, 365, 372, 374, 377, 383, 399, 433, 445, 451, 475, 499, 501, 516, Skills and Math Workbook, 66, 81, 109, 133, 135, 286, 289, 299, 365, 377, 383, 433, 443, 451, 475, 499, 516</p>

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<ul style="list-style-type: none"> <li>Use computers, probes, and software when available to collect, display, and analyze data.</li> </ul>	<b>SE/TE:</b> 13, 30, 34, 43, 60, 79, 96, 98, 122, 123, 137, 149, 156, 171, 187, 191, 193, 210, 218, 225, 248, 265, 267, 284, 293, 297, 321, 354, 359, 375, 403, 408, 414, 426, 431, 449, 466, 469, 480, 490, 505, 530, 551, 566, 576, 639, 664, 665, 693, 694, 722, 736, 743, 760, 767, 792, 809, 819, 831, Kinetic Art, 13, 30, 34, 60, 79, 96, 98, 122, 137, 156, 171, 191, 193, 210, 225, 265, 267, 284, 293, 321, 359, 375, 403, 414, 431, 449, 466, 469, 490, 505, 551, 566, 576, 664, 693, 736, 743, 760, 767, 792, 809, 819, 831, Concepts in Action, 43, 123, 149, 187, 218, 248, 297, 354, 408, 426, 480, 530, 639, 665, 694, 722
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>Analyze a societal issue that may be addressed through <i>science</i> and/or <i>technology</i>. Compare alternative <i>solutions</i> by <i>considering trade-offs</i> and unintended consequences (e.g., removing dams to increase salmon spawning).</li> </ul>	<b>SE:</b> 21, 77, 121, 227, 255, 269, 307, 385, 440, 638, 667, 805, Chemistry & You: Technology, 21, 227, 307, 667, 805, Chemistry & You: Green Chemistry, 77, 255, Chemistry & You: Everyday Matter, 385, 638, Chemistry & You: Careers, 269, 440, Take It Further, 21, 77, 121, 227, 255, 269, 307, 385, 440, 638, 667, 805 <b>TE:</b> Chemistry & You, 21, 77, 227, 255, 269, 307, 385, 440, 638, 667, 805, Active Learning, 21, Real-World Connection, 21, 269, Take It Further, 77, 269, 385, 440, 667, 805, Extend: Lead a Discussion, 227, 255, 385, Build Chemistry Concepts, 227, Apply Concept, 255, 638, 667, Use Visuals, 307, Differentiated Instruction, 307, Connect to Civics, 440, Build Study Skills, 667, Connect to Biology, 805

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Washington Science Learning Standards	Pearson Chemistry Foundation Edition
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> 21, 77, 121, 227, 255, 269, 307, 385, 440, 638, 667, 697, 805, Chemistry &amp; You: Technology, 21, 227, 307, 667, 805, Chemistry &amp; You: Green Chemistry, 77, 255, Chemistry &amp; You: Everyday Matter, 385, 638, Chemistry &amp; You: Careers, 269, 440, Chemistry &amp; You: History, 121, 697, Take It Further, 21, 77, 121, 227, 255, 269, 307, 385, 440, 638, 667, 697, 805</p> <p><b>TE:</b> Chemistry &amp; You, 21, 77, 121, 227, 255, 269, 307, 385, 440, 638, 667, 805, Active Learning, 21, Real-World Connection, 21, 269, Take It Further, 77, 269, 385, 440, 667, 805, Extend: Connect to Language, 121, Lead a Discussion, 227, 255, 385, Build Chemistry Concepts, 227, Apply Concept, 255, 638, 667, Use Visuals, 307, Differentiated Instruction, 307, Connect to Civics, 440, Build Study Skills, 667, Connect to Biology, 805</p>

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Washington Science Learning Standards	Pearson Chemistry Foundation Edition
<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 <i>direction</i> .	
<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>	<b>SE:</b> 564-565, Chemistry & You, 564, Key Questions, 564, Build Vocabulary, 565, Vocabulary Flashcards, 565  <b>TE:</b> Key Objections, 564, Lesson Resources, 564, PearsonChem.com, 564, Engage: Chemistry & You, 564, Build Background, 564, Preview the Pages, 564, Focus on ELL, 565, Explain: Build Vocabulary, 565, Visual Learning, 565, Use Visuals, 565, Speed Bump, 565
<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>Pearson Chemistry</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 <i>direction</i> .	
<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>	<b>SE:</b> 564-565, Chemistry & You, 564, Key Questions, 564, Build Vocabulary, 565, Vocabulary Flashcards, 565  <b>TE:</b> Key Objections, 564, Lesson Resources, 564, PearsonChem.com, 564, Engage: Chemistry & You, 564, Build Background, 564, Preview the Pages, 564, Focus on ELL, 565, Explain: Build Vocabulary, 565, Visual Learning, 565, Use Visuals, 565, Speed Bump, 565

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Washington Science Learning Standards	Pearson Chemistry Foundation Edition
<ul style="list-style-type: none"> <li>• <i>Explain how an object moving at constant speed can be accelerating.*b</i></li> </ul>	<p><b>SE:</b> 566-571, Build Vocabulary, 566, 571, Vocabulary Flashcards, 566, 571, Build Understanding, 568, Build Connections, 569, Quick Lab, 570</p> <p><b>TE:</b> Build Vocabulary, 566, 571, Use Visuals, 566, 567, Lead a Discussion, 566, Kinetic Art, 566, Differentiated Instruction, 566, 568, Reading Support, 567, Skills and Math Workbook, 567, 571, Check Understanding, 567, 569, Extend: Build Chemistry Concepts, 567, Speed Bump, 567, Build Understanding, 568, Build Connections, 569, Quick Lab, 570, Explore: Teacher Demo, 568, Focus on ELL, 569, 570, Visuals Learning, 569, Speed Bump, 570, Real-World Connection, 571, Evaluate: Informal Assessment, 571, Reteach, 571</p>
<p>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)</p>	
<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>	<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 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, <math>F=ma</math>)</p>	
<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>	<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>• 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>	<p><b>SE:</b> 422-426, Chemistry &amp; You, 422, Key Question, 422, Build Vocabulary, 422, Vocabulary Flashcards, 422, Build Connections, 425, Lesson Check Answers, 426</p> <p><b>TE:</b> Key Objectives, 422, Lesson Resources, 422, PearsonChem.com, 422, Engage: Chemistry &amp; You, 422, Activate Prior Knowledge, 422, Preview the Pages, 422, Focus on ELL, 423, Explain: Build Vocabulary, 423, Active Learning, 423, Visual Learning, 423, 424, 426, Speed Bump, 423, 424, Differentiated Instruction, 424, Reading Support, 425, Explain: Build Connections, 425, Use Visuals, 425, Check Understanding, 425, Explore: Concepts in Action, 426, Evaluate: Informal Assessment, 426, Reteach, 426, Lesson Check Answers, 426</p>

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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 <b>Pearson Chemistry</b> 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 of Universal Gravitation</i> )	
<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 <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><i>Explain how</i> the <i>weight</i> of an object can change while its <i>mass</i> remains constant.</li> </ul>	<b>SE:</b> 71 <b>TE:</b> Real-World Connection, 71, Explore: Class Activity, 71
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.	
<ul style="list-style-type: none"> <li><i>Predict</i> whether two charged objects will attract or repel each other, and <i>explain why</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 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> .	
<ul style="list-style-type: none"> <li>Demonstrate and <i>explain that</i> an electric current flowing in a wire will create a magnetic field around the wire (electromagnetic effect).</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>Demonstrate and <i>explain that</i> moving a magnet near a wire will cause an electric current to flow in the wire (the generator effect).</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 Foundation Edition
<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 are composed of protons, neutrons, and electrons. The nucleus of an atom takes up very little of the atom's volume but makes up almost all of the mass. The nucleus contains protons and neutrons, which are much more massive than the electrons surrounding the nucleus. Protons have a positive charge, electrons are negative in charge, and neutrons have no net charge.</i></p>	
<ul style="list-style-type: none"> <li>• <i>Describe the relative charges, masses, and locations of the protons, neutrons, and electrons in an atom of an element.</i></li> </ul>	<p><b>SE:</b> 90-91, 92-94, 95-99, 100-115, Foundations for Learning, 90, PearsonChem.com, 90, Big Idea, 91, Chemystery, 91, Chemistry &amp; You, 92, Key Questions, 92, Build Understanding, Build Vocabulary, 92, Vocabulary Flashcards, 92, Lesson Check, 94</p> <p><b>TE:</b> Chapter Planner, 90A-B, Untamed Science Video, 90B, 91, Foundations for Learning, 90, Big Idea, 91, PearsonChem.com, 90, Chemystery, 91, Key Objectives, 92, Lesson Resources, 92, PearsonChem.com, 92, Engage: Chemistry &amp; You, 92, Build Background, 92, Preview the Pages, 92, Explain: Use Visuals, 93, Build Vocabulary, 93, Build Science Skills, Visual Learning, 94, Explore: Focus on ELL, 90, 93, Speed Bump, 93, Evaluate: Informal Assessment, 94, Reteach, 94, Lesson Check Answers, 94</p>



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Washington Science Learning Standards	Pearson Chemistry Foundation Edition
9-11 PS2B <i>Atoms of the same element have the same number of protons. The number and arrangement of electrons determines how the atom interacts with other atoms to form molecules and ionic crystals.</i>	
<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>, <i>predict</i> the <i>chemical properties</i> of the <i>element</i>.</li> </ul>	<p><b>SE:</b> 124-128, Chemistry &amp; You, 124, Key Questions, 124, Build Understanding, Build Vocabulary, 124, 125, Vocabulary Flashcards, 124, 125, Build Connections, 126, Sample Problem, 127, Practice Problems, 128, Lesson Check, 128</p> <p><b>TE:</b> Key Objectives, 124, Lesson Resources, 124, PearsonChem.com, 124, Engage: Chemistry &amp; You, 124, Build Background, 124, Preview the Pages, 124, Explain: Build Vocabulary, 125, Apply Concepts, 125, Active Learning, 125, Build Connections, 126, Build Chemistry Concepts, 126, Explore: Focus on ELL, 125, Skills and Math Workbook, 128, Speed Bump, 125, 126, Differentiated Instruction, 126, Practice Problems, 127, Teach Problem, 127, 128, Chemistry Tutorial, 127, Evaluate: Informal Assessment, 128, Reteach, 128, Lesson Check Answers, 128</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> .	
<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> 146-147, 148-153, Foundations for Learning, 146, PearsonChem.com, 146, Untamed Science, 146, Big Idea, 147, Chemystery, 147, Chemistry &amp; You, 148, Key Questions, 148, Concepts in Action, 149, Build Connections, 151, Build Vocabulary, 150, 152, Vocabulary Flashcards, 150, 152, Build Understanding, 153, Lesson Check, 153</p> <p><b>TE:</b> Foundations for Learning, 146, Big Idea, 146, Performance Goals, 146, PearsonChem.com, 146, 148, Untamed Science, 146, Chemystery, 147, Chapter Planner, 146A-B, Key Objectives, 148, Lesson Resources, 148, Engage: Chemistry &amp; You, 148, Build Background, 148, Preview the Pages, 148, Concepts in Action, 149, Explain: Use Visuals, 149, 150, Build Vocabulary, 150, 152, Visual Learning, 152, Build Connections, 151, Lead a Discussion, 151, Explore: Focus on ELL, 149, Speed Bump, 150, 152, Reading Support, 151, Check Understanding, 150, Teacher Demo, 149, Differentiated Instruction, 150, 152, Build Understanding, 153, Evaluate: Informal Assessment, 153, Reteach, 153, Lesson Check Answers, 153</p>

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<ul style="list-style-type: none"> <li>• <i>Explain the arrangement of the elements on the Periodic Table, including the significant relationships among elements in a given column or row.</i></li> </ul>	<p><b>SE:</b> 154-161, 162-171, Chemistry &amp; You, 154, 162, 171, Key Questions, 154, 162, Build Vocabulary, 155, 158, 160, 162, 165, 166, 170, Vocabulary Flashcards, 155, 158, 160, 162, 165, 166, 170, Build Connections, 163, Kinetic Art, 156, 171, Quick Lab, 169, Lesson Check, 161, 171</p> <p><b>TE:</b> Key Objectives, 154, 162, Lesson Resources, 154, 162, PearsonChem.com, 154, 162, Engage: Chemistry &amp; You, 154, 162, Activate Prior Knowledge, 154, 162, Preview the Pages, 154, 162, Explain: Use Visuals, 156, 157, 159, 160, 163, 164, 165, 166, 167, 168, Build Vocabulary, 155, 158, 160, 163, 165, 166, 170, Apply Concepts, 158, Visual Learning, 155, 161, Build Connections, 163, Build Chemistry Concepts, 165, Explore: Focus on ELL, 155, 160, 163, 169, Skills and Math Workbook, 163, 166, Speed Bump, 155, 159, 164, 168, Reading Support, 156, 159, 165, 167, 170, Kinetic Art, 156, 171, Check Understanding, 158, 170, Extend: Connect to Physiology, 157, Differentiated Instruction, 157, 158, 164, 166, 168, Quick Lab, 169, Lead a Discussion, 156, 170, Chemistry Tutorial, 160, Teacher Demo, 167, 168, Evaluate: Informal Assessment, 161, 171, Reteach, 161, 171, Lesson Check Answers, 161, 171</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> 178-179, 180-185, Foundations of Learning, 178, Big Idea, 179, Chemystery, 179, PearsonChem.com, 178, Chemistry &amp; You, 180, 185, Key Questions, 180, Build Vocabulary, 181, 185, Vocabulary Flashcards, 181, 185, Lesson Check, 185</p> <p><b>TE:</b> Chapter Planner, 178A-B, Untamed Science, 178B, 179, Foundations of Learning, 178, Big Idea, 178, Chemystery, 179, Key Objectives, 180, Lesson Resources, 180, PearsonChem.com, 179, Engage: Chemistry &amp; You, 180, 185, Activate Prior Knowledge, 180, Preview the Pages, 180, Explain: Use Visuals, 182, 184, Build Vocabulary, 181, 185, Lead a Discussion, 181, Apply Concepts, 182, Explore: Teacher Activity, Focus on ELL, 178, 181, Speed Bump, 182, 183, Reading Support, 184, Build Chemistry Concepts, 183, 184, Teacher Demo, 181, Differentiated Instruction, 182, 183, Evaluate: Informal Assessment, 185, Reteach, 185, Lesson Check Answers, 185</p>

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<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> 186-192, 193-196, 197-201, Chemistry &amp; You, 186, 193, Chemistry &amp; You: Everyday Matter, 196, Key Questions, 186, 193, Build Understanding, 194, Build Vocabulary, 186, 193, Vocabulary Flashcards, 186, 193, Build Connections, 195, Sample Problem, 188, Kinetic Art, 191, 193, Quick Lab, 192, Concepts in Action, 187, Build Math Skills, 189, Lesson Check, 192, Study Guide, 197, Assessment, 198-200, Foundations of Learning, 199, Standardized Test Prep, 201</p> <p><b>TE:</b> Key Objectives, 186, 193, Lesson Resources, 186, 193, PearsonChem.com, 186, 193, Engage: Chemistry &amp; You, 186, 193, 196, Activate Prior Knowledge, 186, 193, Preview the Pages, 186, Concepts in Action, 187, Check Understanding, 187, Big Idea, 196, Explain: Use Visuals, 187, 190, 194, Build Understanding, 194, Check Understanding, 195, Build Vocabulary, 187, 194, 195, Lead a Discussion, 191, Build Connections, 195, Explore: Class Activity, 190, Focus on ELL, 187, 191, 194, 198, Active Learning, 191, Foundations for Math, 188, Skills and Math Workbook, 189, Speed Bump, 195, Reading Support, Kinetic Art, 191, 193, Build Chemistry Concepts, 195, Build Math Skills, 189, Teacher Demo, 194, Differentiated Instruction, 190, 195, Practice Problems, 189, Teach Problem, 188, Chemistry Tutorial, 188, Extend: Additional Problems, 189, Evaluate: Informal Assessment, 192, 196, Reteach, 192, 196, Lesson Check Answers, 192, 196, Review and Assessment Resources: Reading and Study Workbook, 197, ExamView Assessment Suite, 197, PearsonChem.com, 197, UbD: Performance Tasks, 197, Foundations of Learning, 199, STP Answers, 201</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> 202-203, 204-207, 462-467, Chemistry &amp; You, 202, 207, 462, 467, PearsonChem.com, 202, Big Idea, 203, Chemystery, 203, Key Questions, 204, 462, Build Vocabulary, 204, 464, Vocabulary Flashcards, 204, 464, Kinetic Art, 466, Quick Lab, 465, Lesson Check, 207, 467</p> <p><b>TE:</b> Chapter Planner, 202A-B, Untamed Science, 202B, 203, Foundations of Learning, 202, Big Idea, 202, Chemystery, 203, Key Objectives, 204, 462, Lesson Resources, 204, 462, PearsonChem.com, 203, 204, 462, Engage: Chemistry &amp; You, 204, 462, Activate Prior Knowledge, 204, 462, Preview the Pages, 204, 462, Explain: Use Visuals, 205, 463, 466, Build Vocabulary, 205, Lead a Discussion, 465, Visual Learning, 205, 206, 467, Real-World Connection, 467, Explore: Active Learning, 464, Focus on ELL, 202, 205, 463, 465, Speed Bump, 205, 464, Reading Support, 466, Kinetic Art, 466, Build Chemistry Concepts, 464, 466, Check Understanding, 206, 466, Teacher Demo, 207, Differentiated Instruction, 206, 464, Quick Lab, 465, Evaluate: Informal Assessment, 207, 467, Reteach, 207, 467, Lesson Check Answers, 207, 467</p>

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<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> 208-219, 462-467, Chemistry &amp; You, 208, 462, 467, Key Questions, 208, 462, Build Vocabulary, 209, 212, 214, 217, 218, 464, Vocabulary Flashcards, 209, 212, 214, 217, 218, 464, Build Connections, 213, Sample Problem, 211, 215, Kinetic Art, 210, 466, Quick Lab, 219, 465, Concepts in Action, 218, Lesson Check, 219, 467</p> <p><b>TE:</b> Key Objectives, 208, 462, Lesson Resources, 208, 462, PearsonChem.com, 208, 462, Engage: Chemistry &amp; You, 208, 462, Activate Prior Knowledge, 208, 462, Preview the Pages, 208, 462, Explain: Use Visuals, 214, 217, 463, 466, Build Vocabulary, 209, 212, 214, 217, 218, Apply Concepts, 209, 210, 214, Visual Learning, 209, 213, 467, Build Connections, 213, Lead a Discussion, 465, Real-World Connection, 213, 467, Explore: Active Learning, 212, 217, 464, Focus on ELL, 209, 218, 463, 465, Skills and Math Workbook, 211, Speed Bump, 210, 212, 214, 216, 464, Reading Support, 212, 214, 217, 466, Kinetic Art, 210, 466, Build Chemistry Concepts, 210, 212, 218, 464, 466, Check Understanding, 466, Teacher Demo, 216, 218, Concepts in Action, 218, Differentiated Instruction, 210, 213, 216, 464, Practice Problems, 211, 215, Teach Problem, 211, 215, Chemistry Tutorial, 211, Extend: Additional Problems, 211, 215, Evaluate: Informal Assessment, 219, 467, Reteach, 219, 467, Lesson Check Answers, 219, 467, Quick Lab, 219, 465</p>

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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> 718-719, 720-730, 731-733, 734-738, 739-741, 742-745, 746-751, 787-789, Foundations for Learning, 718, Untamed Science, 718, PearsonChem.com, 718, Big Idea, 719, Chemystery, 719, Key Questions, 720, 731, 734, 739, 742, 743, 787, Chemistry &amp; You, 720, 731, 734, 739, 741, 742, 787, Build Vocabulary, 720, 722, 724, 726, 731, 733, 734, 736, 739, 740, 742, 743, 787, 788, Vocabulary Flashcards, 720, 722, 724, 726, 731, 733, 734, 736, 739, 740, 742, 743, 787, 788, Build Connections, 721, 723, 732, 745, Concepts in Action, 722, Sample Problem, 725, 728, 729, 737, Quick Lab, 735, Kinetic Art, 736, 743, Practice Problem, 738, Lesson Check, 730, 733, 738, 741, 745 Study Guide, 746, Math Tutorial, 746, Skills Tune-Up, 746-750, Foundations Wrap-Up, 749, Chemystery, 750, Standardized Test Prep, 751</p> <p><b>TE:</b> Chapter Planner, 718A-B, Untamed Science, 718B, 719, Foundations for Learning, 718, Understanding by Design, 718, Focus on ELL, 718, 721, 732, 735, 736, 740, 743, 747, 789, Chemystery, 719, Key Objectives, 720, 734, 739, 742, 787, Lesson Resources, 720, 734, 739, 742, 787, PearsonChem.com, 719, 720, 734, 739, 742, 746, 787, Engage: Chemistry &amp; You, 720, 734, 739, 742, 787, Activate Prior Knowledge, 720, 734, 739, 742, 787, Preview the Pages, 720, 734, 739, 742, 787, Explain: Real-World Connections, 726, 745, Build Vocabulary, 721, 722, 724, 732, 733, 735, 788, Build Connections, 721, 723, 732, Use Visuals, 722, 740, 743, 744, 788, Check Understanding, 722, 727, 732, Concepts in Action, 722, Lead a Discussion, 735, 741, 743, Apply Concepts, 724, Build Science Skills, 724, Visual Learning, 732, Quick Lab, 735, Kinetic Art, 736, 743, Active Learning, 741, Explore: Teacher Demo, 721, 788, Class Activity, 722, 727, 736, 789, Skills and Math Workbook, 723, 730, Speed Bump, 724, 727, 736, 740, 743, 744, 788, Reading Support, 723, 726, Build Chemistry Concepts, 723, 726, Differentiated Instruction, 722, 724, 727, 744, Practice Problem, 730, Teach Problem, 725, 728, 729, 730, 737, 738, Chemistry Tutorial, 728, 737, Extend: Additional Problems, 725, Practice Problems Answer, 728, 729, 737, Use Models, 733, Evaluate: Informal Assessment, 730, 733, 738, 741, 745, 789, Reteach, 730, 733, 738, 741, 745, 789, Lesson Check Answers, 730, 733, 738, 741,</p>

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<ul style="list-style-type: none"> <li>Demonstrate how carbon <i>atoms form 4 covalent bonds</i> to make large molecules. 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>(Continued)</b> 745, 789, Resources, 746, UbD: Performance Tasks, 746, Reading and Study Workbook, 747, Skills and Math Workbook, 747, Foundations Wrap-Up, 749</p>
<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> 314-315, 316-325, 326-339, 596-601, 784-785, Foundations of Learning, 314, PearsonChem.com, 314, Big Idea, 314, 339, Chemystery, 315, Chemistry &amp; You, 316, 326, 339, 596, 784, Key Questions, 316, 326, 596, 784, Build Vocabulary, 318, 320, 326, 330, 334, 336, 597, 598, 785, Vocabulary Flashcards, 318, 320, 326, 330, 335, 336, 597, 598, 785, Build Connections, 317, Sample Problem, 319, 323, 324, 328, 331, 333, 335, 337, Kinetic Art, 321, Quick Lab, 325, Concepts in Action, 336, Build Math Skills, 324, 329, Lesson Check, 325, 339, 601</p> <p><b>TE:</b> Chapter Planner, 314A-B, Untamed Science, 314B, Foundations of Learning, 314, Big Idea, 314, Chemystery, 315, Key Objectives, 316, 326, 596, 784, Lesson Resources, 316, 326, 596, 784, PearsonChem.com, 315, 316, 326, 596, 784, Engage: Chemistry &amp; You, 316, 326, 596, 784, Activate Prior Knowledge, 316, 326, 596, 784, Preview the Pages, 316, 326, 596, 784, Build Connections, 317, Explain: Use Visuals, 317, 318, 327, 330, 335, 336, 598, 600, 785, Real-World Connections, 317, 336, Build Vocabulary, 318, 320, 330, 332, 335, 336, Visual Learning, 321, 327, Build Math Skills, 324, 329, Foundations for Math, 328, Concepts in Action, 336, 785, Explore: Active Learning, 332, 338, Focus on ELL, 314, 317, 322, 327, 336, 597, Skills and Math Workbook, 319, 323, 329, 331, 333, Speed Bump, 317, 318, 321, 327, 330, 336, 598, 785, Reading Support, 320, 332, 335, 598, Kinetic Art, 321, Build Chemistry Concepts, 318, 321, 330, Build Science Skills, 785, Check Understanding, 322, 597, 601, Teacher Demo, 320, 322, 332, 335, 339, 343, 599, 600, Differentiated Instruction, 318, 321, 330, 336, 598, 600, Quick Lab, 325, Lead a Discussion, 330, Practice Problems, 319, 323, 324, 329, 331, 333, 335, 337, Teach Problem, 319, 323, 324, 328, 331, 333, 335, 337, Chemistry Tutorial, 323, 324, Extend: Additional Problems, 319, 329, 333, 335, 337, Evaluate: Informal Assessment, 325, 339, 601, Reteach, 325, 339, 601, Lesson Check Answers, 325, 339, 601</p>



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<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> 314-315, 316-325, 326-339, 340-351, 346-351, Foundations of Learning, 314, PearsonChem.com, 314, Big Idea, 314, 339, Chemystery, 315, 350, Chemistry &amp; You, 316, 326, 339, 340, Key Questions, 316, 326, 340, Build Understanding, 340, Build Vocabulary, 318, 320, 326, 330, 334, 336, 341, Vocabulary Flashcards, 318, 320, 326, 330, 335, 336, 341, Build Connections, 317, Sample Problem, 319, 323, 324, 328, 331, 333, 335, 337, 342, 344, Kinetic Art, 321, Quick Lab, 325, Concepts in Action, 336, Build Math Skills, 324, 329, Lesson Check, 325, 339, 345, Study Guide, 346, Math Skills, 347, Assessment, 348-350, Foundations of Learning, 349</p> <p><b>TE:</b> Chapter Planner, 314A-B, Untamed Science, 314B, Foundations of Learning, 314, Big Idea, 314, Chemystery, 315, 350, Key Objectives, 316, 326, 340, Lesson Resources, 316, 326, 340, PearsonChem.com, 315, 316, 326, 340, 347, Engage: Chemistry &amp; You, 316, 326, 340, Activate Prior Knowledge, 316, 326, 340, Preview the Pages, 316, 326, 340, Build Connections, 317, Explain: Use Visuals, 317, 318, 327, 330, 335, 336, 341, 343, Real-World Connections, 317, 336, Build Understanding, 341, Build Vocabulary, 318, 320, 330, 332, 335, 336, Visual Learning, 321, 327, Build Math Skills, 324, 329, Foundations for Math, 328, Concepts in Action, 336, Explore: Active Learning, 332, 338, Focus on ELL, 314, 317, 322, 327, 336, 341, 347, Skills and Math Workbook, 319, 323, 329, 331, 333, 347, Speed Bump, 317, 318, 321, 327, 330, 336, 341, Reading Support, 320, 332, 335, Kinetic Art, 321, Build Chemistry Concepts, 318, 321, 330, 341, Check Understanding, 322, 343, Teacher Demo, 320, 322, 332, 335, 339, Differentiated Instruction, 318, 321, 330, 336, 343, Quick Lab, 325, Lead a Discussion, 330, Practice Problems, 319, 323, 324, 329, 331, 333, 335, 337, 342, 344, Teach Problem, 319, 323, 324, 328, 331, 333, 335, 337, 342, 344, Chemistry Tutorial, 323, 324, 342, 344, Extend: Additional Problems, 319, 329, 333, 335, 337, 342, 345, Evaluate: Informal Assessment, 325, 339, 345, Reteach, 325, 339, 345, Lesson Check Answers, 325, 339, Skills Review, 347, Reading and Study Workbook, 347, STP Answers, 351</p>

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<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> 533-540, 596-601, Chemistry &amp; You, 533, 596, Key Questions, 533, 596, Build Understanding, 537, Build Vocabulary, 533, 534, 537, 538, 597, 598, Vocabulary Flashcards, 533, 534, 537, 538, 597, 598, Build Connections, Sample Problem, Kinetic Art, 534, Sample Problem, 535, 539, Quick Lab, Concepts in Action, Lesson Check, 540, 601</p> <p><b>TE:</b> Key Objectives, 533, 596, Lesson Resources, 533, 596, PearsonChem.com, 533, 596, Engage: Chemistry &amp; You, 533, 596, Build Background, 533, Activate Prior Knowledge, 596, Preview the Pages, 533, 596, Explain: Use Visuals, 537, 598, 600, Build Understanding, 537, Build Vocabulary, 533, 534, 537, 538, 597, 598, Kinetic Art, 534, Lead a Discussion, 534, 598, Check Understanding, 534, Speed Bump, 534, 538, Focus on ELL, 534, 597, Foundations for Math, 535, Teach Problem, 535, 536, 539, Chemistry Tutorial, 535, Extend: Additional Problems, 536, Practice Problems Answers, 536, 539, Differentiated Instruction, 537, 598, 600, Teacher Demo, 538, 599, 600, Reading Support, 538, 599, Build Chemistry Concepts, 597, Explain: Active Learning, 599, Apply Concepts, 601, Evaluate Assessment, 601, Reteach, 601</p>

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<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> 486-487, 488-494, 495-504, 505-508, 509-517, 518-523, Foundations of Learning, 486, PearsonChem.com, 486, Big Idea, 487, Chemystery, 487, 522, Chemistry &amp; You, 488, 495, 505, 509, Key Questions, 488, 495, 505, 509, Build Understanding, 500, Build Vocabulary, 490, 492, 495, 505, 507, 508, 509, 510, 513, Vocabulary Flashcards, 490, 492, 495, 505, 507, 508, 509, 510, 513, Build Connections, 489, 502, Sample Problem, 497, 499, 501, 502, 511, 514, Kinetic Art, 490, 505, Quick Lab, 489, Concepts in Action, 507, Practice Problems, 494, 504, Build Math Skills, 498, 512, 515, Lesson Check, 494, 504, 508, 517, Study Guide, 518, Math Skills, 519, Assessment, 520-522, Foundations of Learning, 521</p> <p><b>TE:</b> Chapter Planner, 486A-B, Untamed Science, 486B, 487, Foundations of Learning, 386, Big Idea, 486, 504, Chemystery, 487, 522, Key Objectives, 488, 495, 505, 509, Lesson Resources, 488, 495, 505, 509, PearsonChem.com, 487, 488, 495, 505, 509, Engage: Chemistry &amp; You, 488, 495, 504, 505, 509, Activate Prior Knowledge, 488, 495, 505, 509, Preview the Pages, 488, Explain: Use Visuals, 496, 506, 508, Real-World Connections, 513, Build Understanding, 500, 513, Build Vocabulary, 490, 496, 506, 508, 513, Build Connections, 489, 502, Explore: Class Activity, 496, 502, 507, 510, Active Learning, 490, 506, Focus on ELL, 486, 489, 490, 496, 506, 510, 519, Foundations for Math, 497, 511, 514, Skills and Math Workbook, 491, 498, 499, 512, 515, Speed Bump, 491, 492, 502, 506, 510, Reading Support, 492, 507, 513, Kinetic Art, 490, 505, Build Study Skills, 491, Build Chemistry Concepts, 513, Build Math Skills, 498, 512, 515, Check Understanding, 496, Concepts in Action, 507, Differentiated Instruction, 491, 500, 502, Lead a Discussion, 500, Practice Problems, 493, 498, 499, 501, 502, 515, 516, Teach Problem, 493, 494, 497, 498, 499, 501, 502, 504, 511, 512, 514, 516, Chemistry Tutorial, 493, 497, 514, Extend: Additional Problems, 493, 494, 498, 499, 501, 512, 515, 517, Evaluate: Informal Assessment, 494, 504, 508, 517, Reteach, 494, 504, 508, 517,</p>

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Washington Science Learning Standards	Pearson Chemistry Foundation Edition
<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>(Continued)</b> Lesson Check Answers, 494, 504, 508, 517, Review and Assessment, 518, UbD: Performance Tasks, 518, Math Support Resources, 519, Foundations of Learning, 521, STP Answers, 523</p>
<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> 468-471 618-630, 631-637, Chemistry &amp; You, 468, 618, 631, Key Question, 468, 618, 631, Build Vocabulary, 468, 470, 476, 618, 619, 622, 631, 632, 636, Vocabulary Flashcards, 468, 470, 476, 618, 619, 622, 631, 632, 636, Build Connections, 469, 470, 623, 637, Kinetic Art, 469, Lesson Check, 476, 630, 637, Sample Problem, 620, 624, 626, Build Math Skills, 621, 625, 627, 635, Math Tutorial, 625, Quick Lab, 630</p> <p><b>TE:</b> Key Objectives, 468, 618, 631, Lesson Resources, 468, 618, 631, PearsonChem.com, 468, 618, 631, Engage: Chemistry &amp; You, 468, 618, 631, Activate Prior Knowledge, 468, 618, 631, Preview the Pages, 468, 618, 631, Focus on ELL, 469, 619, 629, 632, Build Vocabulary, 468, 470, 476, 618, 619, 622, 631, 632, 636, Build Connections, 469, 470, 473, 623, 637, Kinetic Art, 469, Check Understanding, 469, Use Visuals, 469, 628, 629, 632, 633, 637, Teacher Demo, 471, 472, 628, Explain: Visual Learning, 471, Lead a Discussion, 470, 636, Differentiated Instruction, 470, 472, 622, 628, 633, Reading Support, 471, 473, 623, 636, Real-World Connections, 473, Explore: Class Activity, 473, 629, Teach Problem, 474, 620, 624, 626, 634, Chemistry Tutorial, 474, 624, 634, Foundations for Math, 474, 620, 624, 626, Practice Problems Answer, 475, 620, 625, 627, 635, Build Math Skills, 475, 621, 625, 627, 635, Extend: Additional Problems, 475, 621, 627, 635, Skills and Math Workbook, 475, 625, 627, 632, Math Tutorial, 625, Speed Bump, 619, 633, Apply Concept, 619, 622, Visual Learning, 622, 623, Build Chemistry Concept, 619, Evaluate: Informal Assessment, 476, 630, 637, Reteach, 476, 630, 637, Lesson Check Answer, 476, 630, 637, Quick Lab, 630</p>

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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, 43-46, 401-406, 407-410, 411-419, 427-440, Key Questions, 36, 43, 401, 407, 411, 427, Chemistry &amp; You, 36, 43, 46, 401, 407, 410, 411, 427, Big Idea, 410, Build Understanding, 37, 414, Build Vocabulary, 36, 43, 45, 46, 402, 403, 406, 407, 409, 410, 411, 413, 427, Vocabulary Flashcards, 36, 43, 45, 46, 402, 403, 406, 407, 409, 410, 411, 413, 427, Build Connections, 406, 410, Sample Problem, Kinetic Art, 403, Quick Lab, 412, Concepts in Action, Lesson Check, 46, 410, 414, Study Guide, 415, Assessment, 416-418, Foundations of Learning, 417, Chemystery, 418, Standardized Test Prep, 419</p> <p><b>TE:</b> Key Objectives, 43, 401, 407, 411, 427, Lesson Resources, 43, 401, 407, 411, 427, PearsonChem.com, 43, 401, 407, 411, 427, Engage: Chemistry &amp; You, 36, 43, 401, 407, 410, 411, 427, Activate Prior Knowledge, 36, 401, 407, 411, 427, Preview the Pages, 36, 43, 401, 407, 411, 427, Explain: Use Visuals, 46, 403, 404, 405, 414, Real-World Connections, 45, 409, Build Understanding, 37, 414, Build Vocabulary, 36, 45, 46, 402, 404, 406, 409, 412, 413, Build Connections, 406, 410, Visual Learning, 44, 402, 413, Concepts in Action, 408, Explore: Class Activity, 405, Focus on ELL, 37, 44, 402, 408, 412, 413, Build Connections, 406, Skills and Math Workbook, 403, 405, 414, Speed Bump, 37, 45, 402, Reading Support, 45, 404, Kinetic Art, 403, 413, Check Understanding, 45, 402, 408, 409, 413, Teacher Demo, 37, 44, 403, 404, Concepts in Action, 44, Differentiated Instruction, 403, 404, 409, Quick Lab, 412, Lead a Discussion, 408, Big Idea, 410, Evaluate: Informal Assessment, 46, 406, 410, 414, Reteach, 46, 406, 410, 414, Lesson Check Answers, 46, 406, 410, 414, Review and Assessment, 415, UbD: Performance Tasks, 415, Foundations of Learning, 417, STP Answers, 419</p>

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<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> 100-110, Chemistry &amp; You, 100, Key Questions, 100, Activate Prior Knowledge, 100, Build Vocabulary, 100, 102, 104, 106, Vocabulary Flashcards, 100, 102, 104, 106, Build Connections, 107, Build Understanding, 107, Sample Problem, 101, 105, 109, Practice Problem, 110, Concepts in Action, Lesson Check, 11</p> <p><b>TE:</b> Key Objectives, 100, Lesson Resources, 100, PearsonChem.com, 100, Engage: Chemistry &amp; You, 100, Activate Prior Knowledge, 100, Preview the Pages, 100, Explain: Use Visuals, Real-World Connections, 106, Build Understanding, 107, Build Vocabulary, 100, 102, 104, Lead a Discussion, 104, Apply Concepts, 108, Visual Learning, 102, 106, Explore: Active Learning, 108, Focus on ELL, 102, 107, Skills and Math Workbook, 103, 107, Speed Bump, 102, 104, 107, Reading Support, 106, Build Chemistry Concepts, 104, 106, Check Understanding, 102, Differentiated Instruction, 104, 108, Practice Problems, 101, 103, 105, 109, Teach Problem, 101, 103, 105, 109, Chemistry Tutorial, 103, 109, Math Tutorial, 108, Extend: Additional Problems, 101, 103, 105, 110, Evaluate: Informal Assessment, 110, Reteach, 110, Lesson Check Answers, 110</p>

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<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> 822-829, Chemistry &amp; You, 822, 829, Key Questions, 822, Build Vocabulary, 823, 824, 828, Vocabulary Flashcards, 823, 824, 828, Build Connections, 825, Sample Problem, 826, Build Math Skills, 827, Quick Lab, Concepts in Action, Lesson Check, 829</p> <p><b>TE:</b> Key Objectives, 822, Lesson Resources, 822, PearsonChem.com, 822, Engage: Chemistry &amp; You, 822, Activate Prior Knowledge, 822, Preview the Pages, 822, Explain: Use Visuals, 823, 824, 825, 829, Real-World Connections, 828, Build Vocabulary, 823, 824, Lead a Discussion, 825, Visual Learning, 823, Explore: Class Activity, 828, Active Learning, 824, Focus on ELL, 823, Foundations for Math, 826, Skills and Math Workbook, 823, 824, 827, Speed Bump, 823, 824, 828, Reading Support, 825, Build Science Skills, 824, Build Chemistry Concepts, 823, 825, Build Connections, 825, Build Math Skills, 827, Differentiated Instruction, 824, 828, Teach Problem, 826, Chemistry Tutorial, 826, Extend: Additional Problems, 827, Evaluate: Informal Assessment, 829, Reteach, 829, Lesson Check Answers, 829</p>
<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> 830-833, Chemistry &amp; You, 830, Key Questions, 830, Build Understanding, 832, Build Vocabulary, 830, 833, Vocabulary Flashcards, 830, 833, Build Connections, Sample Problem, Kinetic Art, 831, Quick Lab, Concepts in Action, Lesson Check, 833</p> <p><b>TE:</b> Key Objectives, 830, Lesson Resources, 830, PearsonChem.com, 830, Engage: Chemistry &amp; You, 830, Activate Prior Knowledge, 830, Preview the Pages, 830, Explain: Use Visuals, 831, Real-World Connections, 832, Build Understanding, 832, Build Vocabulary, 830, 833, Lead a Discussion, 831, Explore: Focus on ELL, 831, Speed Bump, 831, 832, Kinetic Art, 831, Check Understanding, 833, Teacher Demo, 832, Differentiated Instruction, 832, Evaluate: Informal Assessment, 833, Reteach, 833, Lesson Check Answers, 833</p>

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<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</i> of <i>conservation of energy</i>, applies to all physical and chemical changes.</p>	
<ul style="list-style-type: none"> <li>• <i>Describe</i> 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> 526-532, Chemistry &amp; You, 526, Key Questions, 526, Build Understanding, Build Vocabulary, 526, 527, 529, Vocabulary Flashcards, 526, 527, 529, Sample Problem, 528, 531, Practice Problem, 532, Lesson Check, 532</p> <p><b>TE:</b> Key Objectives, 526, Lesson Resources, 526, PearsonChem.com, 526, Engage: Chemistry &amp; You, 526, Build Background, 526, Preview the Pages, 526, Explain: Build Vocabulary, 527, 529, 530, Explore: Focus on ELL, 527, Active Learning, 529, Reading Support, 530, Check Understanding, 527, Differentiated Instruction, 529, Teach Problem, 528, 531, Chemistry Tutorial, 531, Use Visuals, 530, Real-World Connection, 530, Concepts in Action, 530, Explore: Teacher Demo, 527, 532, Skills and Math Workbook, 530, 532, Extend: Additional Problems, 528, Practice Problems Answers, 528, Speed Bump, 529, Evaluate: Informal Assessment, 532, Reteach, 532, Lesson Check Answers, 532</p>



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<ul style="list-style-type: none"> <li>Describe a situation in which <i>energy</i> is transformed from one <i>form</i> to another and explain how <i>energy</i> is conserved. *a</li> </ul>	<p><b>SE:</b> 533-540, Chemistry &amp; You, 533, Key Questions, 533, Build Understanding, 537, Build Vocabulary, 53, 534, 537, 538, Vocabulary Flashcards, 533, 537, 538, Kinetic Art, 534, Sample Problem, 535, 539, Build Math Skills, 536, Lesson Check, 540</p> <p><b>TE:</b> Key Objectives, 533, Lesson Resources, 533, PearsonChem.com, 533, Engage: Chemistry &amp; You, 533, Build Background, 533, Preview the Pages, 533, Kinetic Art, 534, Explain: Build Understanding, 537, Build Vocabulary, 534, 537, 538, Explore: Focus on ELL, 534, Reading Support, 538, Check Understanding, 534, Speed Bump, 534, 538, Teach Problem, 535, 536, 539, 540, Foundations for Math, 535, Chemistry Tutor, 535, Differentiated Instruction, 537, Lead a Discussion, 534, Use Visuals, 537, Extend: Additional Problems, 536, Practice Problems Answer, 536, 539, Explore: Teacher Demo, 538, Skills and Math Workbook, 540, Evaluate: Informal Assessment, 540, Reteach, 540, Lesson Check Answers, 540</p>
<p>9-11 PS3B <i>Kinetic energy</i> is the <i>energy of motion</i>. The kinetic <i>energy</i> of an object is defined by the equation: <math>E_k = \frac{1}{2} mv^2</math></p>	<p>The kinetic <i>energy</i> of an object is defined by the equation: <math>E_k = \frac{1}{2} mv^2</math></p>
<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> 396-400, Chemistry &amp; You, 396, Key Questions, 396, Build Vocabulary, 396, Vocabulary Flashcards, 396, Sample Problem, 398, Build Math Skills, 399, Kinetic Art, Quick Lab, Lesson Check, 400</p> <p><b>TE:</b> Key Objectives, 396, Lesson Resources, 396, PearsonChem.com, 396, Engage: Chemistry &amp; You, 396, Activate Prior Knowledge, 396, Preview the Pages, 396, Explain: Build Vocabulary, 397, Explore: Focus on ELL, 397, Check Understanding, 400, Use Visuals, 397, 400, Explore: Teacher Demo, 397, Teach Problem, 399, Foundations for Math, 398, Chemistry Tutor, 398, Practice Problems, 399, Build Math Skills, 399, Extend: Additional Problems, 399, Skills and Math Workbook, 400, Evaluate: Informal Assessment, 400, Reteach, 400, Lesson Check Answers, 400</p>

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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</i> of <i>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>	<b>SE:</b> 129-131, Chemistry & You, 129, 131, Build Vocabulary, 129, 131, Vocabulary Flashcards, 129 <b>TE:</b> Preview the Pages, 129, Key Objectives, 129, Lesson Resources, 129, PearsonChem.com, 129, Engage: Chemistry & You, 129, Activate Prior Knowledge, 129, Explain: Build Vocabulary, 130, 131, Active Learning, 130, Visual Learning, 130, Focus on ELL, 130, Reading Support, 131, Use Visuals, 131, Explore: Student Activity, 131
<ul style="list-style-type: none"> <li>Apply 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.
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.	
<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>	<b>SE:</b> 131, 834-837, Chemistry & You, 834, 837, Key Questions, 834, Build Vocabulary, 131, 834, Vocabulary Flashcards, 131, 834, Quick Lab, 836, Lesson Check, 837 <b>TE:</b> Reading Support, 131, Explain: Build Vocabulary, 131, Explore: Student Activity, 131, Key Objectives, 834, Lesson Resources, 834, PearsonChem.com, 834, Engage: Chemistry & You, 834, 837, Build Background, 834, Preview the Pages, 834, Focus on ELL, 835, 836, Explain: Build Vocabulary, 835, Real-World Connections, 835, Explore: Teacher Demo, 835, Quick Lab, 836, Speed Bump, 836, Check Understanding, 837, Extend: Connect to Medicine, 837, Evaluate: Informal Assessment, 837, Reteach, 837, Lesson Check Answer, 837