Alignment to the CCSS Mathematical Content

The instructional materials demonstrate evidence of key shifts that are reflected in the CCSS:

Focus
1. Addresses all grade-level CCSS mathematics standards by including a clear and explicit purpose for instruction and prioritizing critical concepts for each grade.

The Carnegie Learning Middle School Math Series instructional materials were developed after the final draft of the Common Core State Standards for Mathematics’s (CCSSM) release (copyright 2011). In planning, the authors and development teams reviewed the Standards and Critical Areas as outlined in the CCSSM documentation. The series instructional materials’ scope and sequence align to the CCSS at each grade level. Since the release of the Standards both assessment consortia have since designated clusters as Major, Additional or Supporting. The Standards of the major clusters have been given considerable instructional attention and focus in each Middle School Math Series course’s beginning.

- Almost 90% of the lessons in Course 3 address specific Grade 8 standards with approximately 79% of those lessons devoted to the Major Work clusters.
- Caution should be taken when counting lessons that address content. Counts of lessons should not be interpreted as an indicator of the amount of class time to be devoted to given standards; some standards require more development and/or more practice for mastery.

The Standards for Grade 8 include seven major clusters from Expressions and Equations, Functions, and Geometry.

- **Chapter 1, Linear Equations**, focuses on strategies to solve linear equations and solve real-world problems involving linear equations.
- **Chapter 2, Linear Functions, Chapter 3, Analyzing Linear Equations, and Chapter 4, Multiple Representations of Linear Functions**, develop the understanding of function and use functions to model relationships between quantities. Students have the opportunity to understand the connections between proportional relationships, lines, and linear equations. Lessons throughout provide students with the opportunities to work with and compare multiple representations of functions.
- **Chapter 5, The Real Number System**, extends the understanding of properties of numbers and number systems to include irrational and real numbers, which is pre-requisite to using the Pythagorean Theorem developed in **Chapter 6, The Pythagorean Theorem**. In addition, students work with radicals when solving volume problems found in **Chapter 14, Volume**. In Chapter 6, students develop the Pythagorean Theorem and the Converse of the Pythagorean Theorem and then apply their knowledge to solve problems.
- **Chapter 7, Translations, Reflections, and Rotations, Chapter 8, Congruence of Triangles, and Chapter 9, Similarity, and Chapter 10, Line and Angle Relationships**, address the major cluster work to understand congruence and similarity. After exploring translations, rotations, and reflections, students use this knowledge to develop the concepts of congruence and similarity.
- **Chapter 11, Systems of Equations, and Chapter 12, More with Systems of Equations**, focus on analyzing and solving pairs of simultaneous linear equations using graphs and algebraic reasoning.
- **Chapter 13, Properties of Exponents**, focuses on the development of properties of exponents and includes learning and operating with numbers expressed using scientific notation.
- The remaining chapters in Course 3 include work with statistics. This work uses linear models to describe data and is directly connected to the work in the Expressions and Equations cluster.
Coherence
2. Materials are consistent with the learning progressions in the Standards based on previous understandings.

Carnegie Learning’s Middle School Math Series was developed specifically for the Common Core State Standards for Mathematics. Careful attention was paid to the grade-by-grade progressions in the Standards. An overview of how the Standards are addressed in each course can be found in the Teacher’s Implementation Guide’s Front Matter pages “Modules and Standards”. Each Chapter Overview in the Teacher’s Implementation Guide provides a summary of the Standards covered in each lesson. Each lesson provides the detail of the cluster and Standards addressed.

The model for grade-to-grade progression ensures students make progress during each grade level and spend minimal time working with below-grade-level standards. Remediation may be necessary, and any below-grade-level standards are clearly marked. Because math knowledge builds on prior knowledge, review and extension content is sometimes included in a lesson without specifically marking the above- or below-grade level standard. In almost every case, on-grade-level content is included in the lesson.

In Course 3, Chapter 10, Line and Angle Relationships, includes a review of key angle relationships developed in Grade 7 and is clearly marked with the below-grade-level standard as well as with the Grade 8 standard also addressed in the lesson. In triangle congruence, the Carnegie Learning Course 3 text explores the formal triangle congruence theorems. Because these are situated at the end of the chapter, teachers may opt to skip the lessons, thereby not interfering with the instruction of grade-level content.

<table>
<thead>
<tr>
<th>CCSS</th>
<th>Carnegie Learning</th>
<th>CCSS</th>
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<th>CCSS</th>
<th>Carnegie Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 6</td>
<td>Course 1</td>
<td>Grade 7</td>
<td>Course 2</td>
<td>Grade 8</td>
<td>Course 3</td>
</tr>
<tr>
<td>Apply and extend previous understandings of multiplication and division to divide fractions by fractions</td>
<td>Chapter 3</td>
<td>Apply and extend previous understanding of operations with fractions to add, subtract, multiply, and divide rational numbers</td>
<td>Chapters 4 and 5</td>
<td>Work with radical and integer exponents</td>
<td>Chapters 6 and 13</td>
</tr>
<tr>
<td>Apply and extend previous understandings of numbers to the system of rational numbers</td>
<td>Prevalent throughout Chapters 1 through 6</td>
<td>Analyze proportional relationships and use them to solve real-world and mathematical problems</td>
<td>Chapters 1, 2, 3, and 11</td>
<td>Understand the connections between proportional relationships, lines, and linear equations</td>
<td>Chapters 1, 3, and 10</td>
</tr>
<tr>
<td>Understand ratio concepts and use ratio reasoning to solve problems</td>
<td>Chapter 5</td>
<td>Use properties of operations to generate equivalent expressions</td>
<td>Chapter 6</td>
<td>Analyze and solve linear equations and pairs of simultaneous linear equations</td>
<td>Chapters 1, 3, 4 11, and 12</td>
</tr>
<tr>
<td>Apply and extend previous understanding of arithmetic to algebraic expressions</td>
<td>Chapters 7 and 8</td>
<td>Solve real-life and mathematical problems using numerical and algebraic expressions and equations</td>
<td>Chapters 7 and 8</td>
<td>Define, evaluate, and compare functions</td>
<td>Chapter 2</td>
</tr>
<tr>
<td>Reason about and solve one-variable equations and inequalities</td>
<td>Chapter 9</td>
<td></td>
<td></td>
<td>Use functions to model relationships between quantities*</td>
<td>Chapters 2, 3, 4, and 16</td>
</tr>
<tr>
<td>Represent and analyze quantitative relationships between dependent and independent variables</td>
<td>Chapter 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Rigor
3. **Application:** Provides opportunities for students to independently apply mathematical concepts in real-world situations.

It is the intent of Carnegie Learning’s instructional materials to take students from their intuitive understanding of the world and apply that knowledge to the mathematics that they are learning at any grade level. Real-world problem situations provide concrete examples of mathematics. The use of scenarios in lessons helps students recognize and understand that the quantitative relationships seen in the real world are no different than the quantitative relationships in mathematics. The format of some Problems begins with a real-world context; associated questions provide opportunities for students to use a variety of problem-solving strategies. Through exploration and analysis using different models or by describing problem situations, classifying, and reasoning, students are engaged as they develop the mathematics of the grade. Other Problems present various hands-on activities where students match or sort verbal descriptions, tables, and graphs. These types of activities allow students develop skills in recognizing and categorizing patterns in mathematics.

In the Major Work of Grade 8, students are expected to develop an understanding of functions. In **Chapter 2, Linear Functions**, the first lesson, *Patterns, Patterns, Patterns*... provides various real-world sequences for students to analyze. This work lays the foundation for later activities in the chapter when students are formalizing the concept of a function. In the next lesson, *Every Graph Tells a Story*, students are provided with a non-routine sorting activity of various graphical displays to understand the characteristics of graphs. Questions ask students to distinguish between various graphical characteristics. This work provides students with experiences they can access when formalizing the concept of a function from a graphical perspective.

In the Major Work of Grade 8, students are expected to solve real-world and mathematical problems leading to two linear equations in two variables. Students first introduction to this cluster of Standards appears early in the course. In **Chapter 2, Linear Functions**, students complete Lesson 2.5, *U.S. Shirts*, and Lesson 2.6, *Hot Shirts*, Problem 1, *Analyzing the Competition*, where they are provided with two different real-world, t-shirt situations and answer questions using equations, tables, and graphs. In Lesson 2.6, Problem 2, *Which is the Better Buy?*, students compare the costs for the orders from the two t-shirt companies using graphs to determine which company offers the best buy for different circumstances. This series of lessons uses a context and allows students the opportunity to begin development on this Major Work before it is formally introduced in **Chapter 11, Systems of Equations**.
4. **Conceptual Understanding:** Develops understanding through conceptual problems and questions, multiple representations and opportunities for students to write and speak mathematically.

The Carnegie Learning instructional materials were developed to engage students as they develop their own mathematical understanding. The lesson structure drives conceptual understanding by requiring students to construct and interpret models, use multiple representations, compare and contrast concepts, and explain their reasoning. The activities foster a connection between different concepts. The goal of the instructional materials is for students to understand why algorithms work, as opposed to blindly memorizing procedures.

The lessons are structured to provide students with various opportunities to reason, to model, and to expand on explanations about mathematical ideas. The overarching questioning strategy throughout the text promotes analysis and higher order thinking skills beyond simple “yes” or “no” responses. By examining problem-solving steps or the rationale for a solution, students internalize the processes and reasoning behind the mathematics. To achieve the learning goals of each lesson, students respond to questions that ask them to:

- Look for patterns
- Estimate
- Predict
- Describe
- Determine
- Represent
- Compare and contrast
- Calculate
- Solve
- Write a rule
- Generalize
- Explain your reasoning

The *Teacher's Implementation Guide* provides additional questions for teachers as they facilitate discussions at various points in the implementation of each lesson. The questions are written to prompt student responses that clarify, justify or extend their understanding.

Many lessons contain a specific Problem named Talk the Talk. This provides open-ended questions requiring students to summarize and generalize their mathematical understandings of key concepts. This is an opportunity for students to demonstrate their understanding of essential concepts and make connections between concepts they have previously learned. Each Talk the Talk is written so students can formatively assess their own understanding by providing appropriate reasoning and evidence.

*Chapter 2, Linear Functions,* is cited as one example that addresses the attention given to the conceptual understanding of functions. In the first lesson, students analyze and describe the patterns of numerous sequences. In the Talk the Talk, questions ask students to summarize their understanding of the sequences and describe similarities among the sequences. After the work in the first two lessons, Lesson 2.3, *To Be or Not Be a Function?*, formally defines a function. The questions throughout ask students to recognize if relations presented as mappings, sets of ordered pairs, tables, equations, and graphs are functions and to explain their reasoning. A sorting activity utilizing graphs is used to solidify student understanding of functions. There are also additional questions in the *Teacher's Implementation Guide* for teachers to utilize to promote additional discussion if necessary.
5. **Procedural Skill and Fluency:** Expects, supports and provides guidelines for procedural skill and fluency with core calculations and mathematical procedures (when called for in the standards for the grade) to be performed quickly and accurately.

The Carnegie Learning materials focus on fluency when fluency is explicitly mentioned in the Common Core State Standards for Mathematics. The Carnegie Learning instructional development aids students in the effective transition from the concrete to the abstract. Once students have ample opportunities to build understanding, procedural problems and exercises are presented to increase computational fluency. These include cases in which opportunistic strategies are valuable—as well as an ample number of generic cases—so that students can learn and practice efficient algorithms. Methods and algorithms are general and based on principles of mathematics, not mnemonics or tricks. The Carnegie Learning materials offer a balance of the “how” and “why” to ensure both conceptual understanding and procedural fluency. As students progress through mathematics, algebra is their core language. Like learning any language, one learns by using it. Sufficient help is provided throughout the program, allowing students to move beyond the need to manage computational details so that they can observe structure and express regularity in repeated reasoning.

Carnegie Learning offers a skills worksheet to accompany each student lesson. The *Student Skills Practice* is a supplemental resource to provide targeted practice of discrete skills within each student lesson. Each *Skills Practice* worksheet contains two sections—vocabulary and problem sets. The vocabulary section provides additional practice with the key terminology of the lesson through a variety of tasks such as matching, fill-in-the-blank, and identifying similarities and differences. The problem sets should be assigned as needed, based on formative assessment. The mathematical reasoning and solution for the first question in each problem set is provided as a worked example to help students. The answers for the odd questions are provided in the back of *Student Skills Practice*.

In Grade 8, students are expected to develop fluency with solving linear equations in one variable. This concept was specifically introduced in Chapter 1, Linear Equations, to provide students with multiple opportunities to practice solving all types of linear equations in one variable throughout the course. Lesson 1.1 provides students opportunities to write and solve two-step equations within a real-world situation and algebraically. In Lesson 1.2, *Why Doesn’t This Work?*, students analyze pre-written student work and interpret the final equations in each solution to develop rules for linear equations that have one solution, infinitely many solutions, or no solutions. Students also graph each side of the same equations to understand how linear equations with one solution, infinitely many solutions, and no solutions are represented graphically. It is important to make connections for students with different representations. In the Talk the Talk, students solve equations algebraically and answer questions to describe how they know when there is only one solution, infinitely many solutions, or no solutions.

This concept was specifically developed early in the course sequence to provide students with multiple opportunities to practice writing and solving linear equations in other chapters in Course 3.
Alignment to the CCSS Mathematical Practices
The instructional materials identify and utilize the Standards for Mathematical Practice (MP)

6. The mathematical practices are explicit and central to the lessons, handled in a grade-appropriate way and well connected to the content being addressed.

The Carnegie Learning Middle School Math Series instructional materials align to the Common Core State Standards for Mathematics (CCSSM). The pedagogical approach of the instructional materials focuses on how students think, learn, and apply new knowledge in mathematics and empowers them to take ownership of their learning. This approach is consistent with the Standards for Mathematical Practice (SMP), which describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. Although the SMP are not explicitly marked, each lesson provides opportunities for students to think, to reason, and to communicate their mathematical understanding. The Mathematical Practices pages (pages FM 34-42) in the Front Matter of the Teacher’s Implementation Guide provide more detail into how the SMPs are addressed in the Carnegie Learning Math Series.

The Academic Glossary found in the Front Matter of the Student Text (pages xiv – xix) provides support for understanding important terms (e.g. analyze, represent, and explain your reasoning) that students encounter while working through each lesson. The graphic organizers shown in the Academic Glossary display a definition, related words, sample questions, and examples to help students know what is meant by specific terms and how they are used to think, reason, and communicate ideas. The SMP are also described in the Teacher’s Implementation Guide, using graphic organizers; each graphic organizer states a single SMP, a general statement of how the instructional materials support that SMP, and at least one example of how the SMP is evident in the text. The lessons and problems within the Carnegie Learning Middle School Math Series were developed to engage students as they develop their own mathematical understanding.

Each lesson:
- Demonstrates the usefulness of mathematics in the real world
- Provides access for all students
- Connects to and builds upon prior knowledge and experiences
- Develops conceptual and procedural knowledge
- Requires thinking, modeling, reasoning, and explaining mathematical ideas
- Engages students in accountable discourse
- Provides opportunities to assess student understanding

The instructional strategies embedded into the tasks support the development of the SMP. These specific types of problems support student learning of mathematics while developing expertise as mathematical thinkers.
- Motivators
- Real-world connections and applications
- Worked Examples
- Pre-written student methods
- Analysis of correct and incorrect responses
- Who’s Correct?
- Using models, manipulatives, and calculators
- Matching, sorting, and exploring
- Talk the Talk

Oregon Adoption
Criteria for Review and Adoption of Instructional Materials
Carnegie Learning Response Middle School Course 3
7. **Overarching habits of mind of a productive mathematical thinker.**
   a. Engages students in productive struggle through relevant, thought-provoking questions, problems and tasks that stimulate interest and elicit mathematical thinking (MP.1)
   b. Uses and encourages precise and accurate mathematics, academic language, terminology and concrete or abstract representations. (MP.6)

The language of mathematics is woven throughout the Carnegie Learning Middle School Math Series. Vocabulary and key mathematical terms are placed at the beginning of each chapter, at point of use in the instruction, in the end of chapter summaries, and the full glossary. The glossary provides a written definition as well as a visual representation of each term. These terms are used throughout instruction and are grounded in meaning with real-world problem scenarios and applications to ensure conceptual understanding.

Students have many opportunities to develop appropriate mathematical vocabulary and use language to communicate their mathematical ideas. Questions throughout require students to explain, conjecture, and defend their ideas orally and in writing. As students mature and develop, the program expects students’ mathematical communication to become more formal and symbolic. The student is asked to form multiple representations of ideas, express relationships within and among representations systems, and formulate generalizations. Students create and use representations to organize, record, and communicate mathematical ideas in each lesson.

Carnegie Learning provides an Academic Glossary found in the Front Matter of the **Student Text** to provide support for understanding important terms (e.g. analyze, represent, and explain your reasoning) that students encounter while working through each lesson. The graphic organizers shown in the Academic Glossary display a definition, related words, sample questions, and examples to help students know what is meant by specific terms and how they are used to think, reason, and communicate ideas.

<table>
<thead>
<tr>
<th>SMP</th>
<th>Carnegie Learning Problem Types</th>
</tr>
</thead>
</table>
| Make sense of problems and persevere in solving them | • Motivators  
• Real-world connections and applications  
• Matching, sorting, and exploring  
• Pre-written student methods  
• Analysis of correct and incorrect responses  
• Who’s Correct?  
• Talk the Talk |

Carnegie Learning instructional materials focus on a collaborative approach to problem solving. As students work through problems together, they plan and execute a solution strategy. Groups monitor and evaluate their progress and provide suggestions for changing course, if needed.

The SMP are embedded throughout the Math Series. A few examples are listed in the table below.

<table>
<thead>
<tr>
<th>Mathematical Practice</th>
<th>Citation 1 in Student Text</th>
<th>Citation 2 in Student Text</th>
<th>Citation 3 in Student Text</th>
</tr>
</thead>
</table>
8. **Reasoning and explaining**
   a. Provides sufficient opportunities for students to reason mathematically and express reasoning through classroom discussion, written work and independent thinking. (MP.2 & MP.3)

Carnegie Learning believes a key instruction goal is to get students to think about and discuss math. Research shows that different classroom environments may require different methods to engage students. Carnegie Learning recommendations offer a balance of whole group, small group and individual instructional approaches. Ideally, students are provided multiple opportunities to discuss mathematics and share their thinking and ideas daily.

<table>
<thead>
<tr>
<th>SMP</th>
<th>Carnegie Learning Problem Types</th>
</tr>
</thead>
</table>
| **Reason abstractly and quantitatively** | • Real-world connections and applications  
 • Analysis of correct and incorrect responses  
 • Who’s Correct?  
 • Matching, sorting, and exploring  
 • Talk the Talk |
| **Construct viable arguments and critique reasoning of others** | • Motivators  
 • Real-world connections and applications  
 • Pre-written student methods  
 • Analysis of correct and incorrect responses  
 • Who’s Correct?  
 • Matching, sorting, and exploring  
 • Talk the Talk |
| **Look for and express regularity in repeated reasoning** | • Worked Examples  
 • Pre-written student methods  
 • Matching, sorting, and exploring  
 • Talk the Talk |

Scenarios throughout our curricula help students recognize and understand that quantitative relationships seen in the real world are no different than those in mathematics. Some problems begin with a real-world context to remind students that the quantitative relationships they already use can be formalized mathematically. Other problems use real-world situations as an application of mathematical concepts. The student-centered classroom provides opportunities for students to present, justify, and defend their solutions and methods. Students exercise communication skills while exploring and analyzing the appropriateness of various strategies. Each lesson ends with the statement, “Be prepared to share your solutions and methods.” Students are expected to be able to communicate their reasoning and critique the explanation of others. The instructional materials provide opportunities for students to make observations, notice patterns, and make generalizations. Students are required to communicate their generalizations verbally and symbolically. This understanding leads to greater transfer of knowledge and the ability to solve non-routine problems.

The SMP are embedded throughout the Math Series. A few examples are listed in the table below.

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<thead>
<tr>
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<th>Citation 3 in Student Text</th>
</tr>
</thead>
</table>
9. **Modeling and using tools**
   a. Encourages the strategic use of concrete or abstract representations (e.g. pictures, symbols, expressions, equations, graphics, models, technology-based tools) in the discipline. (MP.4 & MP.5)

The Carnegie Learning Middle School Math Series instructional materials include rich, rigorous real-world problems and investigations to connect the pictorial, concrete stage of concept development to the symbolic, abstract stage. The progression of chapters and lessons are meaningfully structured to promote connections. Problems include the extensive use of models—real-world situations, manipulatives, graphs, diagrams, and equations, among others—to allow students to make connections among different mathematical concepts and understand mathematical representations.

Manipulatives are used throughout the Middle School Math Series to foster a conceptual understanding of mathematical concepts. The Manipulatives are faithful representations of the mathematical objects they represent. The use of manipulatives provides students with opportunities to develop strategies and reasoning that serve as the foundation for learning more abstract mathematics. The goal within the instructional materials is for students to ultimately perform operations and exhibit their understanding without using manipulatives. To foster the transfer of student understanding from concrete manipulatives to the abstract procedures, the materials use a variety of instructional prompts.

<table>
<thead>
<tr>
<th>SMP</th>
<th>Carnegie Learning Problem Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model with mathematics</td>
<td>• Using models, manipulatives, and calculators</td>
</tr>
<tr>
<td></td>
<td>• Real-world connections and applications</td>
</tr>
<tr>
<td></td>
<td>• Pre-written student methods</td>
</tr>
<tr>
<td></td>
<td>• Matching, sorting, and exploring</td>
</tr>
<tr>
<td></td>
<td>• Talk the Talk</td>
</tr>
<tr>
<td>Use appropriate tools strategically</td>
<td>• Using models, manipulatives, and calculators</td>
</tr>
<tr>
<td></td>
<td>• Who’s Correct?</td>
</tr>
<tr>
<td></td>
<td>• Talk the Talk</td>
</tr>
</tbody>
</table>

Activities throughout the instructional materials provide students with the opportunity to use multiple representations (words, tables, graphs and symbolic statements) to organize, record, and communicate mathematical ideas. Manipulatives and various models are incorporated throughout to develop a conceptual understanding of mathematical concepts. These activities provide opportunities for students to develop strategies and reasoning that will serve as the foundation for learning more abstract mathematics. To foster the transfer of student understanding from concrete manipulatives to the abstract procedures, a variety of prompts are used.

Carnegie Learning instructional materials facilitate the appropriate use of tools such as calculators, rulers, protractors, compasses, and manipulatives. Tools are used in a variety of ways: to build conceptual understanding, explore concepts, and verify solutions.

The SMP are embedded throughout the Math Series. A few examples are listed in the table below.

<table>
<thead>
<tr>
<th>Mathematical Practice</th>
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</table>

Oregon Adoption
Criteria for Review and Adoption of Instructional Materials
Carnegie Learning Response Middle School Course 3
10. **Seeing structure and generalizing**
   a. Connect prior knowledge in order to retell and reflect on patterns and evaluate reasoning.
   (MP.7 & MP.8)

The Carnegie Learning Middle School Math Series instructional materials carefully connect the learning within and across grades so that students can build new understanding on foundations built in previous years. The materials are designed so that prior knowledge becomes reorganized and extended to accommodate the new knowledge. Each Standard is not a new event but an extension of previous learning.

One instructional design element throughout the Carnegie Learning Middle School Math Series is the incorporation of Crew Characters. The Crew Characters are embedded to remind students to stop and think in order to promote productive reflection. The characters are used in a variety of ways; they may remind students to recall a previous mathematical concept and help students develop expertise to think through problems.

In Chapter 3, *Analyzing Linear Equations*, students develop an understanding of the rate of change of linear functions represented in graphical displays, tables, and in real-world problem situations. In 3.1, *Hitting the Slopes*, the understanding of rate of change is developed as an extension of students’ previous work with ratios, rates, and unit rates from Grade 7.

<table>
<thead>
<tr>
<th>SMP</th>
<th>Carnegie Learning Problem Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Look for and make use of structure</td>
<td>• Worked Examples</td>
</tr>
<tr>
<td></td>
<td>• Pre-written student methods</td>
</tr>
<tr>
<td></td>
<td>• Analysis of correct and incorrect responses</td>
</tr>
<tr>
<td></td>
<td>• Who’s Correct?</td>
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<tr>
<td></td>
<td>• Matching, sorting, and exploring</td>
</tr>
<tr>
<td></td>
<td>• Talk the Talk</td>
</tr>
<tr>
<td>Look for and express regularity in</td>
<td>• Worked Examples</td>
</tr>
<tr>
<td>repeated reasoning</td>
<td>• Pre-written student methods</td>
</tr>
<tr>
<td></td>
<td>• Matching, sorting, and exploring</td>
</tr>
<tr>
<td></td>
<td>• Talk the Talk</td>
</tr>
</tbody>
</table>

Carnegie Learning instructional materials provide opportunities for students to analyze numeric, geometric and algebraic patterns. Accompanying questions help students notice relationships within and across mathematical topics for themselves as opposed to memorizing facts.

The instructional materials provide opportunities for students to make observations, notice patterns, and make generalizations. Students are required to communicate their generalizations verbally and symbolically. This understanding leads to greater transfer of knowledge and the ability to solve non-routine problems.

The SMP are embedded throughout the Math Series. A few examples are listed in the table below.

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<th>Citation 3 in Student Text</th>
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</thead>
</table>
**Instructional Supports**

*The teacher materials are responsive to varied teacher needs.*

11. Includes clear, sufficient and easy to use guidance to support teaching and learning of the targeted standards and vocabulary, including, when appropriate, the use of supported technology, web and media.

The **Teacher’s Implementation Guide** is for understanding the overall instructional design, planning, guiding and facilitating student learning.

The **Front Matter** of the *Teacher’s Implementation Guide* provides implementation and research notes on the features and Problem Types (Models, Worked Examples, Peer Analysis, Talk the Talk, and Technology) students experience with the materials. These include: Dear Student Letter; The Crew; Mathematical Representations; Academic Glossary; and Problem Types You Will See.

Each **chapter** contains an overview that begins with a narrative of the chapter’s organizing concepts and includes a lesson summary table and **Skills Practice** summary table. The lesson summary table includes: the Common Core State Standards addressed, pacing suggestions, lesson highlights, and various Problem.

Each **Teacher’s Implementation Guide’s lesson** contains a detailed narrative of the lesson’s concepts and how the lesson unfolds. It also includes a lesson map with the Essential Ideas, the Common Core State Standards addressed, the key terms, the learning goals, any materials needed to facilitate the activities, and a warm-up exercise. There are mathematical representation process icons throughout the lesson as guides on how to facilitate and chunk the lesson into parts for individual, small group, whole class discussion, work time and presentations. Throughout each lesson, relevant teacher notes include: a description of the mathematical concepts embedded and the task flow; grouping suggestions; additional questions for the teacher to prompt student responses to clarify, justify or extend thinking; and common student misconceptions. A Check for Understanding question is provided at each lesson’s end. These questions help teachers ascertain how well students understood the learning goals of the lesson.
12. Provides a discussion of the mathematics addressed within each unit and the mathematical point of each lesson as it relates to the organizing concepts of the unit.

Each chapter in the *Teacher’s Implementation Guide* contains a Chapter Overview. This overview begins with a narrative of the organizing concepts of the chapter, and includes a lesson summary table and a *Skills Practice* summary table. The lesson summary table includes: the Common Core State Standards addressed, pacing suggestions, lesson highlights, and the various Problem Types (Models, Worked Examples, Peer Analysis, Talk the Talk, and Technology). The *Skills Practice* summary table outlines the available problem sets with objectives for each lesson.

<table>
<thead>
<tr>
<th>Lesson</th>
<th>CCSS</th>
<th>Pacing</th>
<th>Highlights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Translations Using Geometric Figures</td>
<td>8.G.1a, 8.G.2, 8.G.3</td>
<td>1</td>
<td>This lesson provides cut outs of various figures to explore horizontal, vertical, and diagonal translations on a coordinate plane. Questions ask students to identify the new coordinates of the figure as it moves through a translation and to notice that the image is congruent.</td>
</tr>
</tbody>
</table>

Each lesson in the *Teacher’s Implementation Guide* contains a detailed narrative of the concepts of the lesson and how the lesson unfolds. It also includes a lesson map with the Essential Ideas, the Common Core State Standards addressed, the key terms, the learning goals, any materials needed to facilitate the activities, and a warm-up exercise. There are mathematical representation process icons throughout the lesson as guides on how to facilitate and chunk the lesson into parts for individual, small group, whole class discussion, work time, and presentations. Throughout each lesson, relevant teacher notes include:

- a description of the mathematical concepts embedded and the flow of the task;
- grouping suggestions;
- additional questions for the teacher to prompt student responses to clarify, justify or extend their thinking; and
- common student misconceptions

A Check For Understanding question is provided at the end of each lesson. These questions help teachers ascertain how well students understood the learning goals of the lesson.

The Carnegie Learning teacher materials do not include separate discussions on student ways of thinking or a variety of student responses; these elements are embedded in the student lessons. The instructional design includes a variety of peer analysis problem types (Thumbs Up, Thumbs Down, Who’s Correct?) for students to analyze and critique as a part of their lessons. These problems provide a framework that allows students opportunities to analyze viable methods and problem-solving strategies. Questions are presented along with the student work to help students think deeper about the various strategies, and to focus on an analysis of correct and incorrect responses. These types of problems help students analyze their own work for errors and correctness. The goal is to foster flexibility and a student’s internal dialog about the mathematics and strategies used to solve problems.
13. Recommends and facilitates a mix of instructional approaches for students with diverse learning needs, such as using multiple representations (e.g., including models, using a range of questions, checking for understanding, flexible grouping, pair-share, etc.).

Carnegie Learning believes a key goal with instruction is to get students to think about and discuss mathematics. The Lessons and Problems within the Carnegie Learning Middle School Math Series were developed to engage students as they develop their own mathematical understanding. Each lesson: demonstrates the usefulness of mathematics in the real world; provides access for all students; connects to and builds upon prior knowledge and experiences; develops conceptual and procedural knowledge; requires thinking, modeling, reasoning, and explaining mathematical ideas; engages students in accountable discourse; and, provides opportunities to assess student understanding.

Each chapter is written to accommodate a variety of learners including English Learners, students with special needs, and students that are on-, above-, and below-course level. Support is provided to help teachers plan lessons that create access for their students, maintain student access and support pacing throughout the lesson, and formatively assess student understanding along the way.

Each problem within a lesson exhibits one of these attributes: New concept development through problem solving and investigations; continued practice of concepts in new situations; immediate practice for concepts that have been developed; distributive practice to reach mastery and to allow for connections to prior concepts; synthesis of key mathematical concepts and understandings.

The Carnegie Learning Middle School Math Series makes extensive use of models—real-world situations, manipulatives, graphs, and diagrams, among others—to help students see and make connections between different topics. Lessons include a variety of problem types for students. These instructional features include the use of real-world scenarios, investigations, Worked Examples, pre-written student methods, error analysis, sorting activities, and more. The materials thoughtfully lead and support students to develop an understanding of mathematical ideas.

Within each student lesson, questions, instructions and Worked Examples are interwoven to engage students. Lessons are structured to provide various opportunities to reason, model and expand on mathematical idea explanations. The overarching questioning strategy promotes analysis and higher order thinking skills beyond yes or no responses. By examining problem-solving steps or a solution rationale, students internalize the processes and reasoning behind the mathematics.

As the learning facilitator, teachers must decide how to pair and group students (e.g. homogenous or heterogeneous groups). During Initial Training, grouping strategies and rationales are discussed. Teachers have access to the online Resource Center’s Community page which includes suggestions from Carnegie Learning Managers of School Partnerships and classroom teachers for grouping strategies and activities to foster productive group work.
14. Gradually removes supports, requiring students to demonstrate their mathematical understanding independently.

The overarching design of the Carnegie Learning instructional materials promotes a discuss-pair-share classroom environment. Process icons appear throughout each lesson as prompts (see page xiii of the Student Text Front Matter for an explanation of the Process icons). If teachers expect students to work together in a productive manner, students need to understand what that means and how it benefits them. Carnegie Learning recommends teachers establish classroom guidelines and structure groups to create a community of learners. As teachers facilitate groups, they should listen carefully and value thought diversity thought, redirect students’ questions with guiding questions, provide additional support with those struggling with a task, and hold groups accountable for an end product. During the share phase of the Lesson, teachers should make their expectations clear, require that students defend and talk about their solutions, and monitor student progress by checking for understanding. The front matter of the Student Text provides prompts to support and explain this instructional approach.

Throughout the instructional materials supports are provided to assist students in becoming independent thinkers and allow them to demonstrate their mathematical understanding. Students encounter a specific problem type called Worked Examples. The Worked Examples provide a means for students to view the flow of each step taken to solve the example problem. In most cases, students then answer questions posed about the Worked Example. The questions are designed to serve as a model for self-questioning and self-explanations which is useful because some students don’t do this naturally. The questions represent and mimic an internal dialog about the mathematics and the strategies. This approach doesn’t allow students to skip over the example without interacting with it, thinking about it, and responding to the questions. This approach helps students develop the desired habits of mind for being conscientious about the importance of steps and their order.
15. Teacher materials are organized and easy to use.

All teacher materials are organized into four volumes to provide information in an organized and easy to use manner. The *Teacher’s Implementation Guide*, provides guidance for understanding the overall instructional design, planning, guiding and facilitating student learning, contains two volumes and the *Teacher’s Resources & Assessments*, an answer guide.

The *Front Matter* of the *Teacher’s Implementation Guide* sections structured to provide insight and guidance:

- The Research section discusses the motivational and learning research behind the materials.
- The Instructional Design section describes how the lessons are structured and the questioning strategies used throughout.
- The Planning section provides a template for teachers to use when considering how to create access, maintain access, and assess student knowledge for each lesson.
- The Standards for Mathematical Practice section describes how the instructional materials support students’ development of the practices.

The *Teacher’s Implementation Guide* provides implementation and research notes on the various features and Problem Types (Worked Example, Thumbs Down, Thumbs Up, Who’s Correct?) students experience throughout their use of the materials.

Each chapter contains a Chapter Overview that begins with a narrative of the organizing concepts of the chapter, and includes a lesson summary table and a *Skills Practice* summary table. The lesson summary table includes: the Common Core State Standards addressed, pacing suggestions, lesson highlights, and the various Problem Types (Models, Worked Examples, Peer Analysis, Talk the Talk, and Technology). The *Skills Practice* summary table outlines the available problem sets with objectives for each lesson.

Each lesson in the *Teacher’s Implementation Guide* contains a detailed narrative of the concepts of the lesson and how the lesson unfolds. It also includes a lesson map with the Essential Ideas, the Common Core State Standards addressed, the key terms, the learning goals, any materials needed to facilitate the activities, and a warm-up exercise. There are mathematical representation process icons throughout the lesson as guides on how to facilitate and chunk the lesson into parts for individual, small group, whole class discussion, work time, and presentations.

A Check For Understanding question is provided at the end of each lesson. These questions help teachers ascertain how well students understood the learning goals of the lesson.

In addition to the *Teacher’s Implementation Guide*, Carnegie Learning offers an online Resource Center. The Resource Center is a dynamic community that provides teachers with a variety of implementation tools. In the Community section, teachers can access resources that have been posted by other teachers using Carnegie Learning materials and by Carnegie Learning’s Managers of School Partnerships. These resources include: assessments, related outside readings, syllabi, lesson plans, supplemental problems, and classroom strategies. The Online PD section contains videos that cover a variety of implementation strategies and educational research topics. [http://resources.carnegielearning.com/](http://resources.carnegielearning.com/)
The materials are responsive to varied student learning needs:

16. Differentiation for ELD, SPED, students above or below grade level and other special populations is evident. The language in which problems are posed is carefully considered.

Carnegie Learning’s Middle School Math Series has made it a priority to help all students experience success in the math classroom. The instructional design supports and meets the standards. Each chapter is written to accommodate a variety of learners, including ELs, students with special needs and students that are on-, above- and below-course level. Support is provided to help teachers plan lessons that create access for their students, maintain student access and support pacing throughout the lesson, and formatively assess student understanding along the way.

Students internalize new basic and academic language by using and reusing it in meaningful ways in speaking and writing activities that build concept and language attainment. The Academic Glossary found in the Front Matter of the Student Text provides support for important terms (e.g. analyze, represent, and explain your reasoning) that students encounter while working through each lesson. The graphic organizers shown in the Academic Glossary display a definition, related words, sample questions and examples to help students know specific terms and their usage.

Instructional strategies to support all student populations are available in the Textbooks section of the online Carnegie Learning Resource Center (http://resources.carnegielearning.com/textbooks), a dynamic community providing teachers with a variety of implementation tools.

The Language in the Carnegie Learning Middle School Math Series was carefully considered and evaluated using the Lexile® Framework for Reading. Lexile measures are based on two well-established predictors of how difficult a text is to comprehend: word frequency and sentence length.

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Recognizing there are other factors that affect a reader, such as content, interest of the reader, and book design, the Carnegie Learning Middle School Math Series motivates students to think about and discuss mathematics in real world contexts relevant to a high-school student. In addition, each Student Edition contains a glossary with each entry including the definition, a pictorial representation if possible, and example to support various learners.
17. Uses technology and media to deepen learning.

An online Resource Center is available for teachers, parents, and students. The Resource Center provides access to Carnegie Learning texts as well as to dynamic tools and a user community. In the Textbooks section, all books (Student Text, Student Skills Practice, Student Assignments) are available, by chapter, to teachers, students, and parents; teachers have additional access to the teacher versions of all documents. All users also have access to the available dynamic videos called See It, Try Its. Parents and students also have access to a Home Connection section that includes links to additional resources for practice.

In the Community section, teachers access resources posted by other teachers using the materials and by Carnegie Learning’s Managers of School Partnerships. These resources include grouping strategies, assessments, related outside readings, syllabi, lesson plans, supplemental problems and classroom strategies. The Online PD section contains videos covering implementation strategies and educational research topics.

Carnegie Learning provides online professional development which is designed to support with on-demand, just-in-time learning. Available through the Carnegie Learning Resource Center, the online professional development modules include both interactive and video content. It was developed to make instructors more successful and confident using Carnegie Learning curricula.

The Carnegie Learning Middle School Math Series Blended Curricula provides a complete set of research-based educational materials which include worktexts and MATHia® Software and are supported by our comprehensive professional development solutions. The MATHia Software digital experience individualizes instruction and motivates students with a personalized prescriptive pathway to math success. This unique solution provides students with highly individualized and self-paced instruction that adapts to their exact needs to improve their secondary math skills. The instruction strengthens student conceptual understanding by integrating adaptive learning technologies, rich problem-solving activities and assessment.

The easy-to-use Teacher’s Toolkit interface for performing administrative tasks lets educators:

1. Manage instructors, classes and students
2. Change student placement within curriculum
3. Resequence and customize curricula
4. View/print detailed curricula with the Curriculum Browser
5. Receive real-time feedback from the Custom Curriculum Advisor
6. View Student Activities to see how they are solving problems
7. Generate automated assessments such as pre- and post-tests
8. Produce student data reports
18. Cultivates student interest and engagement in math through culturally relevant practices free of bias regarding student race, ethnicity, disability status, gender, religion, sexual orientation, national origin, marital status, or color.

Recent research regarding academic achievement shows that student beliefs about the nature of intelligence, their goals within a learning task and their perception of academic expectations have strong effects on their academic performance. Carnegie Learning programs include elements designed to guide students toward appropriate and effective attitudes about learning.

The teacher and crew characters throughout the text represent a wide range of nationalities and present teachers and students of both genders. Student names used throughout the texts also represent a wide variety of diversity. Names used in problems in Course 3 include Amy, Damon, Kenesha, Jerry, Betty, Donna, Dan, Heddy, and more.

The Carnegie Learning Middle School Math Series includes rich, rigorous real-world problems and investigations. It is the intent of Carnegie Learning instructional materials to take students from their intuitive understanding of the world and apply that knowledge to the mathematics that they are learning in any course. Real-world problem situations provide concrete examples of mathematics. The scenarios in the lessons help students recognize and understand that the quantitative relationships seen in the real world are no different than the quantitative relationships in mathematics. Some problems begin with a real-world context to remind students that the quantitative relationships they already use can be formalized mathematically. Other problems will use real-world situations as an application of mathematical concepts. The problems chosen are intended to engage students with a wide variety of interests. In Chapter 1, Lesson 1.3, Problem 1 How Many DVDs Do I Have, students model a scenario in which 5 friends discuss the number of DVDs they own. In Chapter 5, Lesson 5.1, Problem 1, students model the difference in distance paper airplanes can fly due to differences in paper weight.

In the Carnegie Learning Software, which is part of the Blended Curricula, relevant real-world connections motivate students to think about and discuss the usefulness of mathematics in a variety of real-world context that are relevant to a high school student. The Student Dashboard allows students to personalize the software with their interest areas, choose their character crew, monitor their badges and accomplishments and view their daily schedule.

Personalization features, available in the profile section, increase student interest and motivation by giving students more control and choice with their experience in the software and recognizing and rewarding their efforts as they progress through the curriculum.

Students can select student and teacher characters to provide thought-provoking questions, hints and other support as they progress through the curriculum. Students can choose colors or graphic themes to customize the software look and feel to their own taste, keeping them engaged.

Interest areas allow students to rank categories so they receive more problems related to their own interests such as sports, nature, business and art. Students can also enter names of friends or family members to appear in their problems.
19. Provides appropriate extensions scaffolding, differentiation and extra support for a broad range of learners, including supporting students above and below a given course level.

Carnegie Learning believes a key goal in the instruction is to get students to think about and discuss math. Carnegie Learning instructional materials include recommendations that offer a balance of whole group, small group, and individual instructional approaches. Students are provided multiple opportunities to discuss mathematics and share their thinking and ideas daily. The dynamics for teaching and learning may vary from classrooms to classrooms. Teachers have choices about how to implement the instructional materials in the way deemed best to engage students to think about math and understand the content.

The implementation of the instructional materials is meant to be flexible to support teacher’s instructional goals and decision-making. The Teacher’s Implementation Guide provides guidance and support, including process icons, teacher notes and implementation strategies. Process icons appear in each lesson as prompts for students. Teacher notes provide recommendations for grouping students and provide guiding questions for each lesson to facilitate instruction. Each chapter is written for a variety of learners including English Learners, students with special needs, and students that are on-, above- and below-course level. Support is provided to help teachers plan lessons that create access for students, maintain student access and support pacing in the lesson, and formatively assess student understanding.

Student Texts provide scaffolded tasks for exploration; they do not delineate specific problems or activities for lower- or higher-performing students. Teachers use student knowledge including the use of ongoing formative assessment, to make decisions about investigations, problems and ancillary resources to use. All students need a challenging curriculum and instructional materials; teachers decide how much of the scaffolding to use with each student. Student Skills Practice book contains problems sets to differentiate practice for each lesson component skills based on student need.

Supports are provided to assist students in becoming independent thinkers and allow them to demonstrate mathematical understanding. Students encounter a specific problem type called Worked Examples. These provide a means for students to view the flow of each step taken to solve the example problem. In most cases, students then answer questions posed about the example. The questions are designed to serve as a model for self-questioning and self-explanations which is useful because some students don’t do this naturally. This approach helps students develop the desired habits for being conscientious about the importance of steps and their order.

A strategy embedded in each lesson is character use which reminds students to stop and think in order to promote productive reflection. Characters remind students to recall a previous mathematical concept, develop expertise to think through problems, and present a fun fact.

Additionally, in the Blended Curriculum, the Skillometer™ ensures each student receives a sufficient number of math problems to achieve mastery before progressing to the next topic in the curriculum. The Skillometer differentiates instruction for individual students in a way that is unique because multiple skills are assessed at one time. As a student becomes more proficient in a skill, the bars on the Skillometer increase in length and change from orange to green as the skill is mastered. It tracks every click a student makes and tells educators what students do next, what they know and what they need help with so teachers can respond immediately.
Assessment

The instructional materials regularly assess whether students are mastering standards-based content and skills:
20. Demonstrates grade-level CCSS (content and Mathematical Practices) and are rigorous.

Carnegie Learning’s Middle School Math Series was developed specifically for the Common Core State Standards for Mathematics. Careful attention was paid to the grade-by-grade progressions in the Standards. An overview of how the Standards are addressed in each course can be found in the Teacher’s Implementation Guide’s Front Matter pages “Modules and Standards”. Each Chapter Overview in the Teacher’s Implementation Guide provides a summary of the Standards covered in each lesson. Each lesson provides the detail of the cluster and Standards addressed.

The basic model for grade-to-grade progression ensures students make progress during each grade level and spend minimal time working with below-grade-level standards. Remediation may be necessary, and any below-grade-level standards are clearly marked in the Chapter Overviews. Because mathematics knowledge builds on prior knowledge, review and extension content is sometimes included in a lesson without specifically marking the above- or below-grade level standard. However, in almost every case, on-grade-level content is also included in the lesson.

The Teacher’s Resources and Assessments volumes contain five tests per each chapter of the Student Text: a pre-test, a post-test, a mid-chapter test, an end-of-chapter test, and a standardized practice test. All tests, as well as all the items in the Skills Practice and Student Assignment books are available through ExamView, which gives the teacher the ability to quickly, and easily create their own resource.

The einstruction suite includes a Test Generator, Test Manager, and a Test Player. Teachers can generate their own assessments, using existing problems from the Carnegie Learning Assessments, Skills Practice, and Student Assignments and/or from teacher-created questions. A single assessment can contain a mixture of problems from a variety of sources. Within the Test Generator, teachers have the flexibility to edit questions, altering instructions, question wording, and numbers within problems.

When creating a test, teachers can select questions using a variety of tools (see below), including selecting by standard.

Within the Test Generator, all questions (Assessment, Skills Practice, and Student Assignment) are tagged with key standards, lesson of reference, and key terms. When an assessment is built, an answer key that includes these tags, is also built.

Oregon Adoption
Criteria for Review and Adoption of Instructional Materials
Carnegie Learning Response Middle School Course 3
21. Available in digital/non-digital formats and are accessible to all students.

Carnegie Learning instructional materials include extensive formative and summative assessment opportunities. Ongoing formative assessment is embedded within the Student Text. The Student Assessments mirror the types of problems presented in the student lessons and focus on evaluating students’ ability to make sense of problems, reason abstractly and persevere in problem solving while also maintaining expectations around fluency.

Carnegie Learning offers a skills worksheet to accompany each student lesson. The Student Skills Practice is a supplemental resource to provide targeted practice of discrete skills within each student lesson. Each Skills Practice worksheet contains two sections—vocabulary and problem sets. The vocabulary section provides additional practice with the key terminology of the lesson through a variety of tasks such as matching, fill-in-the-blank, and identifying similarities and differences. The problem sets should be assigned as needed, based on formative assessment. The mathematical reasoning and solution for the first question in each problem set is provided as a worked example to help students. The answers for the odd questions are provided in the back of Student Skills Practice.

The Teacher’s Resources and Assessments volumes contain five tests per each chapter of the Student Text: a pre-test, a post-test, a mid-chapter test, an end-of-chapter test, and a standardized practice test. All tests, as well as all the items in the Skills Practice and Student Assignment books are available through ExamView, which gives the teacher the ability to quickly, and easily create their own resource. All assessments in the Teacher’s Resources and Assessment guides are available in print and digital formats on the Resource Center.

Assessment tools are available in the Community section of the online Carnegie Learning Resource Center, a dynamic community providing teachers with a variety of implementation tools. These tools include rubrics for classroom presentations, team grading, and textbook lesson grading.

Problem scenarios and names within scenarios were carefully chosen to provide meaning and accessibility to real-world connections that avoid bias. Assessment problems are available that allow for multiple solution paths, supporting a variety of learning styles.

The language in the Carnegie Learning Middle School Math Series, including all assessments, was carefully considered and evaluated using the Lexile Framework for Reading. Lexile measures are based on two well-established predictors of how difficult a text is to comprehend: word frequency and sentence length.

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In the Blended Curriculum, MATHia Software uses the most precise method ever designed to differentiate instruction for students. Each keystroke is assessed and evaluated and new problems are selected based on each student’s individual needs. Carnegie Learning worktexts and software provide opportunities to monitor student knowledge and progress. In the text, open-ended question strategies provide opportunities to formatively assess the class as well as individual students.
22. Includes rubrics and proficiency criteria.

The Teacher's Implementation Guide provides the reasoning and solutions for all questions asked in each student lesson. The Teacher’s Resources and Assessment volumes contain the reasoning and solutions for all Student Assignments, Skills Practice, and assessment. Questions in which student responses may vary are clearly indicated, often with a sample solution provided.

Assessment tools are available in the Community section of the online Carnegie Learning Resource Center, a dynamic community providing teachers with a variety of implementation tools. These tools include rubrics for classroom presentations, collaborative group work, self-assessment, team grading, and textbook lesson grading.

Sample Teacher's Implementation Guide Page

Sample Teacher's Assessment Page

Sample Rubrics Available in Community Section of Resource Center
23. Uses varied modes which must include selected, constructed, extended response items, self-
assessments and performance task to provide teachers with a range of formative and summative
data to inform instruction.

The Carnegie Learning Math Series provides ongoing opportunities for students to be active participants
in the learning process by expressing their knowledge and ideas to the teacher, to their peers, and to
themselves. Knowing how students think enables teachers to make informed instructional decisions,
pace appropriately, and adapt their teaching to meet the needs
of students.

The Teacher’s Resources and Assessments volumes contain five tests per each chapter of the Student
Text: a pre-test, a post-test, a mid-chapter test, an end-of-chapter test, and a standardized practice test.
All tests, as well as all the items in the Skills Practice and Student Assignment books are available
through ExamView, which gives the teacher the ability to quickly, and easily create their own resource.

The Carnegie Learning Middle School Math Series embeds self-explanation prompts within the learning
materials that encourage students to more thoughtfully self-explain. As students work with the different
problem types, they are encouraged to reflect on what they read, how it connects to prior learning, and
how it generalizes. Overviews of these problem types are included in the Front Matter of the Student
Text.

- **Worked Examples** provide a means for students to view the flow of each step taken to solve the
  example problem. In most cases, students answer questions posed about the Worked Example. The
  questions are designed to serve as a model for self-questioning and self-explanations which is useful
  because some students don’t do this naturally. This approach doesn’t allow students to skip over the
  example without interacting with it, thinking about it, and responding to the questions (sample
  shown below from Student Text Front Matter)

- **Thumbs Up/Thumbs Down, Who’s Correct? and Talk the Talk** problems also help students analyze
  their own work for errors and correctness and are written so students can formatively assess their
  own understanding of key concepts (sample shown below from Student Text Front Matter)