The Research Behind *Progress Mathematics*

Progress™ Grades K–8 Mathematics

The instructional and programmatic features of *Progress Mathematics* were built to support the findings and recommendations of the National Mathematics Advisory Panel (NMAP) in the areas of **Curricular Content**, **Learning Process**, **Instructional Practices**, and **Assessment of Mathematics Learning** and the Shifts in Mathematics (**focus**, **coherence**, and **rigor**) as defined by the Student Achievement Partners (www.achievethecore.org) and the Publisher's Criteria.

NMAP Findings & Recommendations		How Addressed in *Progress Mathematics*
Curricular Content	Focused, coherent progression of mathematics learning, with an emphasis on proficiency with key topics, should become the norm in elementary and middle school mathematics curricula. (p. xvi) The mathematics curriculum in Grades PreK–8 should be streamlined and should emphasize a well-defined set of the most critical topics in the early grades. (p. xiii)	The table of contents of each grade level is organized around a focused, coherent group of mathematical topics to help build students' understanding of key skills and concepts. Lessons at each grade level focus on the Benchmarks for the Critical Foundations of the grade levels as defined by NMAP and the National Council of Teachers of Mathematics (NCTM) Curriculum Focal Points. *Learning Progression* charts at the beginning of each Unit in both the Student Worktexts and the Teacher's Editions describe how skills and concepts are developed within and across grade levels.
Learning Process	To prepare students for Algebra, the curriculum must simultaneously develop conceptual understanding, computational fluency, and problem-solving skills. (p. xix) Use should be made of what is clearly known from rigorous research about how children learn, especially by recognizing the mutually reinforcing benefits of conceptual understanding, procedural fluency, and automatic (i.e., quick and effortless) recall of facts. (p. xiv)	Skills and concepts are taught through a consistent lesson design (Guided Instruction, Guided Practice, Independent Practice), which provides routine opportunities with fluency practice, concept development, application problems, and daily formative assessment opportunities. The Guided Instruction section focuses on developing **conceptual understanding** of mathematical skills/concepts through Understand-Connect instructional presentations, often using models to help students visualize math and make connections. The Guided Practice offers students an opportunity to practice their newly learned skills with teacher support and to collaborate with other students. The Independent Practice section provides intentionally sequenced and scaffolded exercises so that students build knowledge to reach the expectation of the learning objective. **Application problems** require students to apply the four-step problem-solving model (Read-Plan-Solve-Check) to efficiently and accurately solve problems. Daily ongoing review in terms of **fluency practice** is available online at **www.SadlierConnect.com** and is identified at point of use in each lesson of the Teacher's Edition.
Instructional Practices	High-quality research does not support the contention that instruction should be either entirely "student centered" or "teacher directed." Research indicates that some forms of particular instructional practices can have a positive impact under specified conditions. (p. xiv) High-quality research does not support the exclusive use of either approach. (p. xxii)	*Progress Mathematics* was built on the Gradual Release of Responsibility instructional model (Pearson and Gallagher, 1983). Each lesson incorporates all three steps of the Gradual Release of Responsibility model beginning with direct and guided instruction (I do it.), guided practice (We do it.), peer collaboration (You do it together.), and concludes with independent practice (You do it independently.).

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Reference: http://www.ed.gov/about/bdscomm/list/mathpanel/index.html *Foundations of Success: The Final Report of the National Mathematics Advisory Panel. March 2008*.

NMAP Findings & Recommendations		How Addressed in *Progress Mathematics*
Assessment	Teachers' regular use of formative assessments improves their students' learning, especially if teachers have additional guidance on using the assessment results to design and individualize instruction. (p. 47)	*Progress Mathematics* provides a range of formative and summative assessment opportunities to help guide students to mathematical proficiency. Observational Assessment suggestions in the Guided Practice section of each lesson in the Teacher's Edition offer formative assessment opportunities to gauge students' conceptual knowledge. Each unit introduction includes a *Progress Check* that allows students to focus on the unit's key skills and concepts, self-assess before the learning, and reflect on progress at the end of the unit. It also provides data for teachers to determine if students need additional instruction on precursor content in order to successfully master new content introduced in that unit. *Unit Reviews* and *Unit Performance Tasks* also support teachers in determining students' level of mastery.

Shifts in Mathematics		
Shift	**Requirement**	**How Addressed in *Progress***
Focus	Class time and energy spent on a deeper focus on the key concepts as prioritized by the standards.	*Progress Mathematics* is designed to focus on the critical areas of each grade level.
Coherence	Learning within and across grade levels is carefully connected in order to build student understanding.	Learning Progression and *Progress Check* charts that describe how the learning targets are developed within and across the grade levels are provided for each Unit in both the Student and Teacher's Editions.
Rigor as Fluency	Students are expected to have speed and accuracy with simple calculations; teachers structure class or homework time for students to memorize through repetition.	Fluency practice is provided (online) with references to the extra practice included at point of use in the Teacher's Edition.
Rigor as Deep Understanding	Students deeply understand and can operate easily within a math concept before moving on.	The structure of the lesson allows students to develop a deep understanding of the concept being taught, with the Guided Instruction and Guided Practice sections of the lesson establishing conceptual understanding.
Rigor as Application	Students use math and choose appropriate concept for application–not only when prompted.	While working independently on the Independent Practice and the Performance Tasks, students must determine which skills, strategies, and practices best serve to solve the problems and tasks at hand.
Rigor as Dual Intensity	Students are practicing and understanding with intensity.	As students work through the scaffolded Independent Practice exercises, teachers can gauge student understanding of the concepts by referencing the Common Error Analysis guidance provided in the Teacher's Edition. Through both direct instruction and practice students work toward a deep understanding of the concept.

Reference: http://www.ed.gov/about/bdscomm/list/mathpanel/index.html *Foundations of Success: The Final Report of the National Mathematics Advisory Panel. March 2008.* http://achievethecore.org The Common Core State Standards Shifts in Mathematics.

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