

The *Big Ideas Math* program was developed around the Common Core State Standards for Mathematics (CCSSM) with the Mathematical Practices as the underlying structure in every section throughout the program. Our curriculum was not written around the methodology that it was tested against for this review. EdReports methodology differs from Big Ideas Math's fundamental principles, that standards do not dictate curriculum. *Big Ideas Math* has consistently received high scores from accredited reviewers from across the country.

Many aspects of the *Big Ideas Math* program were overlooked. According to the EdReports results, it seems that less than half of the chapters cover the major clusters by grade level, when in fact *Big Ideas Math* meets the requirements set forth by the K-8 Publishers' Criteria for the Common Core State Standards for Mathematics. The major work identified by the EdReports does not include all of the critical areas determined by the CCSSM.

It is important to note that EdReports only used the content from the Teaching Edition and the Student Edition in their review. *Big Ideas Math* has more to offer than just the textbooks. The program includes ancillaries that support all levels of students, from the Skills Review and Basic Skills Handbook for students who are struggling to grasp specific concepts, to the Enrichment and Extension worksheets for advanced students. The program also has additional online materials, including but not limited to Differentiating the Lesson, Lesson Tutorial Videos, and the Dynamic Assessment System which provides immediate feedback and remediation. Focus and coherence are met in *Big Ideas Math* by using the entire program. We strive to provide the best resources possible to ensure the required, in-depth, strategic learning put forth by the CCSSM.

The National Council of Teachers of Mathematics and the National Council of Supervisors of Mathematics have similar concerns about the EdReports results. The following article offers further explanation by these organizations: <http://www.nctm.org/News-and-Calendar/News/Other-News/Concerns-Regarding-the-Use-of-EdReports-Mathematics-Materials-Reviews>.

Although EdReports claims to have revised their review process, the Gateway 1 reviews of *Big Ideas Math* were not reevaluated. EdReports did pass *Big Ideas Math* Grade 8 onto Gateway 2 however, the methodology was also contradictory to our fundamental principles.



The following is in response to some of the scores received by EdReports based on their criteria.

Coherence

Indicator 1b: Instructional material spends the majority of class time on the major clusters of each grade.

Even though our books cite a standard for a specific section, that is not the only standard covered in that section. For example in our Grade 6 book, we cite 6.EE.2.C. Another standard that is primarily covered in this section is 6.EE.6 which is also part of the major work for the 6th grade level as set forth by the EdReports criteria. Taking into consideration that the standards cited in the PE and TE are not the only standards covered for a particular section, the *Big Ideas Math* program meets every expectation for this criteria. The Common Core Standards are covered throughout our program and connect two or more clusters in a domain, or two or more domains in a grade, in cases where these connections are natural and important.

Indicator 1c: Supporting content enhances focus and coherence simultaneously by engaging students in the major work of the grade.

The *Big Ideas Math* program exceeds every expectation for the supporting content enhancing focus and coherence simultaneously by engaging students in the major work of the grade. The chapters and the individual lessons support focus and coherence to the major work of the grade level. There are many lessons within the supporting chapters that address standards that are also addressed elsewhere. All of the lessons flow together coherently because the concepts are discussed in relationship to one another. For example in Grade 8, 8.F (using functions to solve) is enhanced by 8.G.C (perimeter and area of common and complex shapes). Also, 8.EE (setting up equations) is enhanced by 8.SP (patterns and fitting lines in scatter plots) and 8.EE and 8.F (using equations and graphs of functions) is enhanced by 8.SP (linear vs. nonlinear modeling of data).

Indicator 1d: The amount of content designated for one grade level is viable for one school year in order to foster coherence between grades.

The *Big Ideas Math* program fully meets the expectations for the amount of content designated for one grade level being viable for one school year in order to foster coherence between grades. The limited number of suggested days of instruction allows teachers to have flexibility in their instruction depending on the needs of their students and still have time to address every standard for their grade level within the year. The pacing guides include time for additional or alternative material as seen fit by the teacher. We offer this as a guide for teachers to use so they can cover all necessary material within the school year. However, it is up to the teachers to modify the pacing suggestions as needed for their particular class.

Indicator 1e: Materials are consistent with the progressions in the Standards

The *Big Ideas Math* program meets every expectation for the material to be consistent with the progressions in the standards. At every stage of authoring, from designing the table of contents to writing actual content, the common core progressions were considered. For example, in Grade 6, decisions throughout chapter 5 were heavily influenced by the *Progressions for the Common Core State Standards on Ratios and Proportional Relationships*. We included activities using tape diagrams, double number lines to compare rates, and we even devoted an entire section to ratio tables (Section 5.2) for determining equivalent ratios. This sets the stage for further development in Grade 7 on proportional relationships. These are only a few examples to indicate that the *Big Ideas Math* progression of thought is consistent with the progressions of the standards.

Indicator 1f: Materials foster coherence through connections at a single grade, where appropriate and required by the Standards

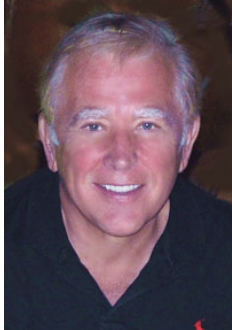
After each standard is introduced in the *Big Ideas Math* program it is revisited many times in subsequent activities, lessons, and exercises. The *Big Ideas Math* program connects the supporting clusters in each grade level to the major clusters, where appropriate, in order to help students understand how mathematical concepts are connected to each other. For example in Grade 7, students use their prior knowledge of adding positive fractions, positive decimals, and integers as a basis for learning content covered in standards 7.NS.1a-b, d, and 7.NS.3. They also use their knowledge of using algebra tiles to model solving equations involving addition and subtraction to cover material for standard 7.EE.4a.

The examples given above only cover a few of the areas we would like to respond to. If you would like more information about how the *Big Ideas Math* program effectively incorporates the Common Core State Standards and Mathematical Practices into its curriculum, please contact Big Ideas Learning.

Big Ideas Math

Authors

No other authorship team in the industry provides the balance of classroom experience and mathematical expertise that the *Big Ideas Math* program authors bring to the table. Dr. Ron Larson and Dr. Laurie Boswell began writing together in 1992. Since that time, they have authored over three dozen textbooks. In their collaboration, Ron is primarily responsible for the student edition while Laurie is primarily responsible for the teaching edition.



Ron Larson, Ph.D., is well known as the lead author of a comprehensive program for mathematics that spans middle school, high school, and college courses. He holds the distinction of Professor Emeritus from Penn State Erie, The Behrend College, where he taught for nearly 40 years. He received his Ph.D. in mathematics from the University of Colorado. Dr. Larson's numerous professional activities keep him actively involved in the mathematics education community and allow him to fully understand the needs of students, teachers, supervisors, and administrators.

Laurie Boswell, Ed.D., is the Head of School and a mathematics teacher at the Riverside School in Lyndonville, Vermont. Dr. Boswell is a recipient of the Presidential Award for Excellence in Mathematics Teaching and has taught mathematics to students at all levels, from elementary through college. Dr. Boswell is a Tandy Technology Scholar and served on the NCTM Board of Directors from 2002 to 2005. She currently serves on the board of NCSM and is a popular national speaker.



- **A Research Based Program**
 - The *Big Ideas Math* program is a research-based curriculum providing a rigorous, focused, and coherent curriculum for middle school and high school students. Ron Larson and Laurie Boswell utilized their expertise as well as the body of knowledge collected by additional expert mathematicians and researchers to develop each course.

The pedagogical approach to this program follows the best practices outlined in the most prominent and widely-accepted educational research and standards.

- Achieve, ACT, and The College Board
- Adding It Up: Helping Children Learn Mathematics
- National Research Council ©2001
- Common Core State Standards

- National Governors Association Center for Best Practices and the Council of Chief State School Officers ©2010
 - Curriculum Focal Points
 - National Council of Teachers of Mathematics (NCTM) ©2006
 - Principles and Standards for School Mathematics
 - National Council of Teachers of Mathematics (NCTM) ©2000
 - Project Based Learning
 - The Buck Institute
 - Rigor / Relevance Framework™
 - International Center for Leadership in Education
 - Universal Design for Learning Guidelines
 - CAST ©2011
- **A Balanced Approach to Instruction**
- The *Big Ideas Math* program follows a balanced instructional approach. The program balances conceptual understanding with procedural fluency, as research shows that students benefit from equal exposure to discovery learning and direct instruction.

Each section in the program begins with a discovery *Activity* that encourages conceptual understanding. These provide students with the opportunity to explore, question, explain, and persevere as they seek to answer Essential Questions that encourage abstract thought.

Essential Question How do you know which operation to choose when solving a real-life problem?

1 ACTIVITY: Choosing an Operation

Work with a partner. The double bar graph shows the history of a citywide cleanup day.

City Cleanup Day

Year	Trash (pounds)	Recyclables (pounds)
2010	2130	183
2011	3975	555
2012	4970	732
2013	6390	1095

- Copy each question below.
- Underline a key word or phrase that helps you know which operation to use to answer the question. State the operation. Why do you think the key word or phrase indicates the operation you chose?
- Write an expression you can use to answer the question.

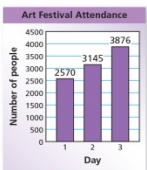
1.1 Lesson



Recall the four basic operations: addition, subtraction, multiplication, and division.

Operation	Words	Algebra
Addition	the <i>sum</i> of	$a + b$
Subtraction	the <i>difference</i> of	$a - b$
Multiplication	the <i>product</i> of	$a \times b$ $a \cdot b$
Division	the <i>quotient</i> of	$a \div b$ $\frac{a}{b}$ $b\overline{)a}$

EXAMPLE 1 Adding and Subtracting Whole Numbers



The bar graph shows the attendance at a three-day art festival.

a. What is the total attendance for the art festival?
 You want to find the total attendance for the three days. In this case, the phrase *total attendance* indicates you need to find the sum of the daily attendances. Line up the numbers by their place values, then add.

$$\begin{array}{r} 111 \\ 2570 \\ 3145 \\ + 3876 \\ \hline 9591 \end{array}$$

The total attendance is 9591 people.

b. What is the increase in attendance from Day 1 to Day 2?
 You want to find how many more people attended on Day 2 than on Day 1. In this case, the phrase *how many more* indicates you need to find the difference of the attendances on Day 2 and Day 1. Line up the numbers by their place values, then subtract.

$$\begin{array}{r} 10 \\ 2814 \\ 3145 \\ - 2570 \\ \hline 575 \end{array}$$

The increase in attendance from Day 1 to Day 2 is 575 people.

EXAMPLE 2 Multiplying Whole Numbers

Study Tip
 In Example 2, you can use estimation to check the reasonableness of your answer.
 $12 \times 95 \approx 12 \times 100 = 1200$
 Because $1200 \approx 1140$, the answer is reasonable.

A school lunch contains 12 chicken nuggets. Ninety-five students buy the lunch. What is the total number of chicken nuggets served?
 You want to find the total number of chicken nuggets in 95 groups of 12 chicken nuggets. The phrase *95 groups of 12* indicates you need to find the product of 95 and 12.

$$\begin{array}{r} 12 \\ \times 95 \\ \hline 60 \\ 108 \\ \hline 1140 \end{array}$$

Multiply 12 by the ones digit, 5.
 Multiply 12 by the tens digit, 9.
 Add.

There were 1140 chicken nuggets served.

Real-life applications are utilized throughout the program. These applications are opportunities for students to connect classroom lessons to realistic scenarios, and assist teachers with turning mathematical learning into an engaging and meaningful way to see and explore the real world.

EXAMPLE 4 Real-Life Application



A 301-foot-high swing at an amusement park can take 64 people on each ride. A total of 8983 people ride the swing today. All the rides are full except for the last ride. How many rides are given? How many people are on the last ride?

To find the number of rides given, you need to find the number of groups of 64 people in 8983 people. The phrase *groups of 64 people in 8983 people* indicates you need to find the quotient of 8983 and 64.

Divide the place-value positions from left to right.

$$\begin{array}{r} 140 \text{ R}23 \\ 64 \overline{)8983} \\ \underline{- 64} \\ 258 \\ \underline{- 256} \\ 23 \\ \underline{- 0} \\ 23 \end{array}$$

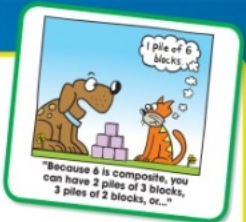
There is one group of 64 in 89.
 There are four groups of 64 in 258.
 There are no groups of 64 in 23.
 The remainder is 23.

Do not stop here. You must write a 0 in the ones place of the quotient.

The quotient is $140\frac{23}{64}$. This indicates 140 groups of 64, with 23 remaining.

So, 141 rides are given, with 23 people on the last ride.

What You Learned Before



Identifying Prime and Composite Numbers

Example 1 Determine whether 26 is prime or composite.
Because the factors of 26 are 1, 2, 13, and 26, it is composite.

Example 2 Determine whether 37 is prime or composite.
Because the only factors of 37 are 1 and 37, it is prime.

Try It Yourself
Determine whether the number is prime or composite.

1. 5	2. 14	3. 17
4. 23	5. 28	6. 33
7. 43	8. 57	9. 64

Adding and Subtracting Mixed Numbers with Like Denominators

Example 3 Find $2\frac{3}{5} + 4\frac{1}{5}$.

$$2\frac{3}{5} + 4\frac{1}{5} = \frac{2 \cdot 5 + 3}{5} + \frac{4 \cdot 5 + 1}{5}$$

Rewrite the mixed numbers as improper fractions.

$$= \frac{13}{5} + \frac{21}{5}$$

Simplify.

$$= \frac{13 + 21}{5}$$

Add the numerators.

$$= \frac{34}{5}, \text{ or } 6\frac{4}{5}$$

Simplify.

Try It Yourself
Add or subtract.

10. $4\frac{1}{9} + 2\frac{7}{9}$	11. $6\frac{1}{11} + 3\frac{6}{11}$	12. $3\frac{7}{8} + 4\frac{3}{8}$
13. $5\frac{8}{13} - 1\frac{2}{13}$	14. $7\frac{1}{4} - 3\frac{3}{4}$	15. $4\frac{1}{6} - 2\frac{5}{6}$

Chapter openers focused on *What You Learned Before* promote the development of the habits of mind mathematically proficient students demonstrate.

The Mathematical Practices are woven into every chapter, including a full page dedicated to mastering one of the Mathematical Practices. In addition, *On Your Own* problems allow students to practice and sharpen their skills as they work toward mathematical understanding.

Now You're Ready
Exercises 24–26

On Your Own

Find the value of the expression. Use estimation to check your answer.

8. $\frac{6096}{30}$	9. $45,691 \div 28$	10. $3215 \div 430$
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11. **WHAT IF?** In Example 4, 9038 people ride the swing. What is the least number of rides possible?


- **Continuous Preparation**

- Every chapter of the *Big Ideas Math* program utilizes question types frequently found on standardized tests, including the PARCC and Smarter Balanced assessments. The balanced approach to instruction helps students develop the habits of mind required to be successful on high-stakes assessments.
 - The *Exercises* available throughout the *Big Ideas Math* program provide students with opportunities to use multiple approaches to solve problems.
 - The *Dynamic Assessment System* allows teachers to assign assessments directly related to the *Big Ideas Math* program to just some students or to an entire classroom.
 - The *Activities* that begin every section require students to use higher-level thinking to work through each problem and to explain their reasoning in the solution.
 - A *Cumulative Assessment* is included in every chapter. The questions in each assessment were carefully chosen to represent problem types and reasoning patterns frequently found on standardized tests.
 - The *Quizzes* and *Tests* allow students to extend concepts learned in each lesson.
 - The *Online Self-grading Practice* allows students to receive immediate feedback on their progress.
 - The *Performance Tasks* allow students to apply their knowledge of multiple content standards and work through realistic scenarios.
 - The *Alternative Assessments* provide teachers with the opportunity to assess students on the same content in a variety of ways.

- **Personalized Learning with Complete Teacher Support**

- The *Big Ideas Math* program offers teachers and students a number of tools to personalize and enrich their classroom experience. Teachers can use Laurie's Notes, the Dynamic Classroom, and the Answer Presentation Tool on a daily basis. Students can use the online Lesson Tutorial Videos which are valuable for students who miss a class, need a second explanation, or just need some help with a homework assignment. *Big Ideas Math* completely supports the 3-Tier Response to Intervention Model, so the program can be customized for every level of learner.

Laurie's Notes



Introduction
Applying Mathematical Practices

- Make Sense of Problems and Construct Viable Arguments:** From the first day, you want to establish a norm in your classroom that each student will discuss mathematical problems with a partner and learn to form arguments based upon stated assumptions, definitions, and previously established results. Students need time to think, discuss, and evaluate their reasoning. Assure students that this will be the case in math this year.

Motivate

- Share some recycling facts with students in the form of, did you know...
 - An average American uses 465 trees worth of paper during his or her lifetime.
 - Each person creates about 4.7 pounds of waste every single day.
 - Paper plus cardboard combined make up 73% of the materials in landfills.
 - Over 25 billion styrofoam cups are thrown away in the United States each year.
 - Approximately 350,000 aluminum cans are made in a minute.
- If there is a recycling program at your school, take time to discuss the importance of the program.

Activity Notes
Activity 1

- As a warm-up, you may want to have students briefly describe the amount of debris collected in the city for the last four years to make sure students understand how to read the double bar graph.
- In this activity, students need to read carefully, looking for words that suggest an operation to be performed.
- Common Error:** The word "times" does not immediately imply that multiplication is to be done. In part (c), "times" is used, and it is a division problem. You could point out that in part (d), the problem could be rephrased as "two times the amount of trash..." to help students see the difference.
- As you circulate, do an informal assessment of whole number operations. Are there students unsure about the process?
- Ask volunteers to share their work at the board.
- Extension:** Discuss recycling efforts in your town.

What Your Students Will Learn

- Determine which operation to perform in real-life applications.
- Divide multi-digit numbers fluently.

Previous Learning
Students need to be familiar with basic computation facts involving whole numbers.

Technology for the Teacher

Dynamic Classroom

Lesson Plans
Complete Materials List

1.1 Record and Practice Journal

Essential Question: How do you choose which operation to use in a real-world situation?

Exit Ticket: Complete the operation.

Write a number that is greater than the sum of the numbers in the table.

Year	Plastic	Paper
2010	100	150
2011	120	180
2012	140	210
2013	160	240
2014	180	270

Problems:

- Find the sum of the numbers in the table. Write the number that is greater than the sum.
- Write a number that is greater than the sum of the numbers in the table.
- Write a number that is greater than the sum of the numbers in the table.

Answers:

- Sum: $100 + 150 + 120 + 180 + 140 + 210 + 160 + 240 + 180 + 270 = 1650$
- Greater than 1650: $1650 + 1 = 1651$
- Greater than 1650: $1650 + 1 = 1651$

- **Teaching Edition with Laurie's Notes**
The *Big Ideas Math Teaching Edition* is unique in its organization. Throughout the book, master educator Laurie Boswell shares insights on Learning Progressions and Mathematical Practices.

Laurie includes connections to previous learning, support for the Mathematical Practices, and closure opportunities for the entire *Student Edition*. The *Teaching Edition* also provides Differentiated Instruction, Response to Intervention, and English Language Learner support.

▪ **Editable Online Resources**

Complete and editable *Lesson Plans* and *Pacing Guides* are available online for every lesson in the program to provide teachers with planning support.

Grade 6 Chapter Opener for Chapter 1: Numerical Expressions and Factors

<p>Opener Objective: To review previously learned skills necessary for the upcoming chapter. Vocabulary: prime number, composite number, mixed number, improper fraction Pacing: 45 minutes</p>	<p>CC State Standards 4.OA.4, 4.NF.3c</p>
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1. INTRODUCTION (10 minutes)

Cartoons

Group students in pairs or small groups and have them study and discuss the cartoons. Each group should explain what they think the cartoons mean.

2. Part 1 (10 minutes)

Identifying Prime and Composite Numbers

Review the examples with the students. Check for understanding. Have students work through the Try It Yourself exercises.

3. Part 2 (20 minutes)

Adding and Subtracting Mixed Numbers with Like Denominators

Review the examples with the students. Check for understanding. Have students work through the Try It Yourself exercises.

4. ASSESS (5 minutes)

Homework Assignment

- Fair Game Review in the Record and Practice Journal

Other Resources

- Record and Practice Journal
- Skills Review Handbook
- Dynamic Classroom
- Lesson Tutorials

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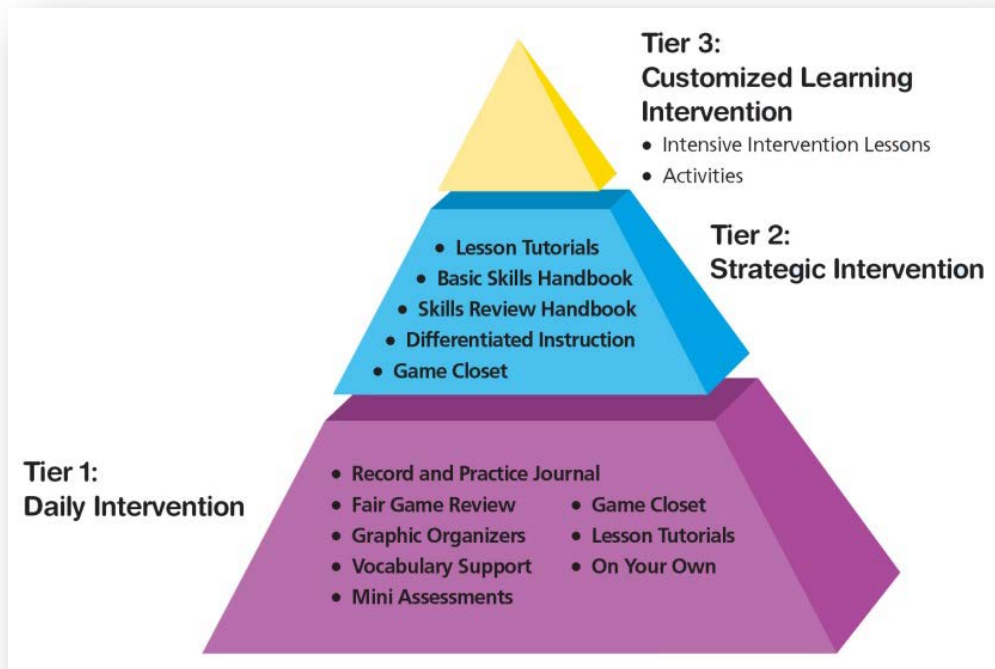
- ExamView® Assessment Suite

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Chapter Opener	1 Day
Section 1	1 Day
Activity	1 Day
Lesson	1 Day
Section 2	1 Day
Activity	1 Day
Lesson	1 Day
Section 3	1 Day
Activity	1 Day
Lesson	1 Day
Study Help / Quiz	1 Day
Section 4	1 Day
Activity	1 Day
Lesson	1 Day
Section 5	1 Day
Activity	1 Day
Lesson	1 Day
Section 6	1 Day
Activity	1 Day
Lesson	1 Day
Extension	1 Day
Chapter Review/Chapter Tests	2 Days
Total Chapter 1	17 Days
Year-to-Date	18 Days

▪ **Differentiated Instruction**

Through print and digital resources, the *Big Ideas Math* program completely supports the 3-Tier Response to Intervention model. Using research-based instructional strategies, teachers can reach, challenge, and motivate each student with high-quality instruction targeted to individual needs.



Big Ideas Learning works with educators in every step of the development process. Using mathematical and pedagogical research, the *Big Ideas Math* program focuses on fewer topics at each grade level, providing a narrower and deeper course of study that leads students to mastery of each benchmark as they move from grade to grade. Big Ideas Learning provides students and teachers with all the tools they need to succeed from middle school to high school math.

Ron Larson's textbooks are known for their readability, accuracy, and real-life applications. They are used by over five-million students each year. He has been deeply committed to providing innovative and coherent print and online materials to the education community for nearly 40 years.