

Implementing the Common Core State Standards

Introduction

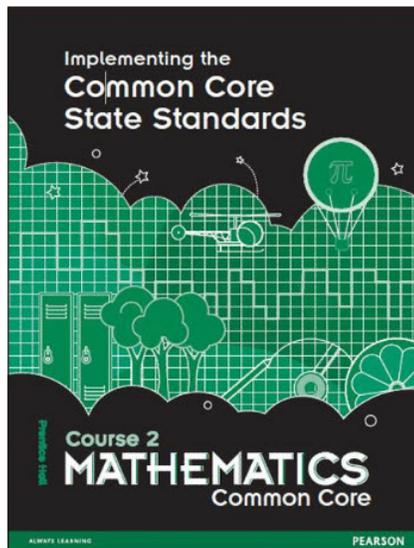
This guide explains how to meet the Common Core State Standards for Mathematics (CCSSM) with Prentice Hall Mathematics: Courses 1, 2 and 3 and Algebra Readiness. It looks at the Common Core curriculum resources that Pearson has integrated into the program, so that you can prepare for a successful implementation.

Common Core Program Resources

Prentice Hall Middle Grades Mathematics Common Core Edition, or Middle Grades Math, is a program built especially for middle school students with full alignment to the CCSSM.

Common Core lessons are included in the Middle Grades Math © 2012 student edition. Teacher support and pacing for these lessons can be found in the Teacher’s Edition.

All Common Core program resources are also available online, so that current users of the Middle Grades Math © 2010 Edition have full access to Common Core lessons and materials. To see some examples, go online to Pearson SuccessNet and see where you access your Common Core program resources.



CC-1 Addition and Subtraction With Rational Numbers

CONTENT STANDARDS

7.NS.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

7.NS.1.c Understand subtraction of rational numbers as adding the additive inverse, $a - b = a + (-b) = c$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.

7.NS.1.d Apply properties of operations as strategies to add and subtract rational numbers.

You already know how to add and subtract integers. The table shows the rules, where $a, b, c,$ and d are positive integers and $a > b$.

| | Same Sign | Different Sign |
|---|--|---|
| ADD: The sum has the sign of the addend with greater absolute value. | $a + b = c$ $-a + (-b) = -c$ | $a + (-b) = d$ $-a + b = -d$ |
| SUBTRACT: Rewrite as adding the additive inverse. | $a - b = a + (-b) = d$ $-a - (-b) = -a + b = c$ | $a - (-b) = a + b = c$ $-a - b = -a + (-b) = -c$ |

You also know how to add positive decimals, fractions, and mixed numbers. Use these skills to add and subtract any rational numbers.

ACTIVITY **MINI-MATH PRACTICES**

1. The sum $\frac{1}{2} + (-\frac{1}{4})$ can be represented on a horizontal number line diagram.



Copy the number line diagram and label the parts that represent $\frac{1}{2}$ and $(-\frac{1}{4})$.

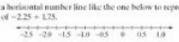
2. What is the sum of these two fractions? Source: [Common Core State Standards Initiative](#)

3. Can you use the same number line diagram to represent $\frac{1}{2} - \frac{1}{4}$?

4. Represent each sum or difference on a horizontal number line. Then find each sum or difference.

a. $-\frac{1}{2} + \frac{3}{4}$
b. $\frac{1}{4} - (-\frac{3}{4})$
c. $-\frac{1}{4} + (-\frac{1}{4})$
d. $-\frac{1}{2} - \frac{3}{4}$

5. Use a horizontal number line like the one below to represent the sum of $-2.25 + 1.75$.



Go for Help
 to Lesson 1-7

Use after Lesson 3-3.

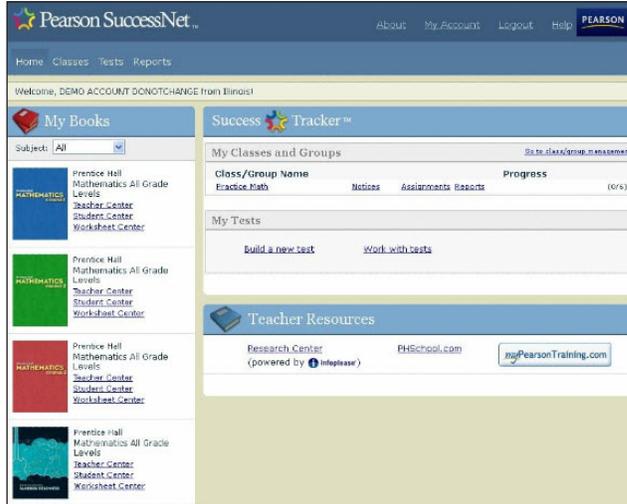
CCS CC-1 Addition and Subtraction with Rational Numbers

Implementing the Common Core State Standards

Click the Worksheet Center link to download Implementing the Common Core State Standards Teacher Resources, Supplemental Lessons, and Teacher Support for Supplemental Lessons.

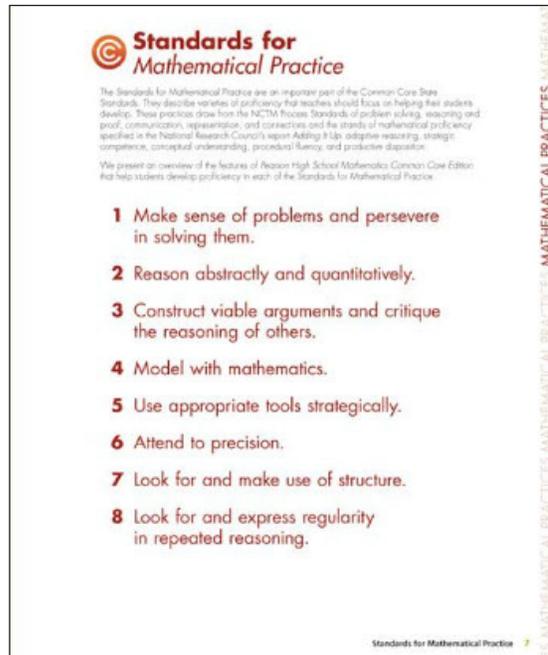
These resources contain instructional guidance for both the Standards for Mathematical Practice and the Standards for Mathematical Content, which are the two sets of standards that make up the CCSSM.

First, look at the Standards for Mathematical Practice and learn how they are embedded in each lesson.



Standards for Mathematical Practice

The CCSSM articulate standards of mathematical practices that describe characteristics of mathematically proficient students. Focusing on these eight practices will help your students develop mathematical behaviors. You will find opportunities for students to practice these behaviors daily.



Standards for Mathematical Practice

The Standards for Mathematical Practice are an integral part of the Common Core State Standards. They describe varieties of proficiency that teachers should focus on helping their students develop. These practices draw from the NCTM Process Standards of problem solving, reasoning and proof, communication, representation, and connections and the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding, procedural fluency, and productive disposition.

We present an overview of the features of Pearson High School Mathematics Common Core Edition that help students develop proficiency in each of the Standards for Mathematical Practice.

- 1 Make sense of problems and persevere in solving them.
- 2 Reason abstractly and quantitatively.
- 3 Construct viable arguments and critique the reasoning of others.
- 4 Model with mathematics.
- 5 Use appropriate tools strategically.
- 6 Attend to precision.
- 7 Look for and make use of structure.
- 8 Look for and express regularity in repeated reasoning.

Standards for Mathematical Practice 7

HS MATHEMATICAL PRACTICES: MATHEMATICAL PRACTICES: MATHEMATICS

Make Sense of Problems and Persevere in Solving Them

For example, consider the first mathematical practice: Make sense of problems and persevere in solving them. One of the foundational themes of Prentice Hall Middle Grades Math is problem solving. In the Problem-Solving Handbook, found in the front matter of the student edition, students are reminded to understand the problem or make sense of the problem. Guided-Problem Solving leads students to make sense of the problem presented, analyze the givens, and develop a solution plan.

Problem Solving Handbook

USING THE Problem Solving Plan

One of the most important skills you can have is the ability to solve problems. An integral part of learning mathematics is how adept you become at unraveling problems and looking back to see how you found the solution. Maybe you don't realize it, but you solve problems every day—some problems are easy to solve, and others are challenging and require a good plan of action. In this Problem Solving Handbook you will learn how to work through mathematical problems using a simple four-step plan.

THE 4-STEP PLAN

- 1. Understand** Understand the problem.
Read the problem. Ask yourself, "What information is given? What is missing? What am I being asked to find or to do?"
- 2. Plan** Make a plan to solve the problem.
Choose a strategy. As you use problem solving strategies throughout this book, you will decide which one is best for the problem you are trying to solve.
- 3. Carry Out** Carry out the plan.
Solve the problem using your plan. Organize your work.
- 4. Check** Check the answer to be sure it is reasonable.
Look back at your work and compare it against the information and question(s) in the problem. Ask yourself, "Is my answer reasonable? Did I check my work?"

XXXB Problem Solving Handbook

Construct Viable Arguments and Critique the Reasoning of Others

Another mathematical practice asks students to construct viable arguments and critique the reasoning of others. Every chapter includes a More Than One Way feature, where students analyze and critique the solution plans and reasoning of two students, each of whom presents a different solution plan for the same problem.

More Than One Way MATHEMATICAL PRACTICES

Each of 4 workers in a gourmet bakery makes $2\frac{1}{2}$ pounds of cranberry granola every day. The workers also make almond granola. Together, they make 24 pounds of granola every day. How many pounds of almond granola does each worker make daily?

Sarah's Method

I can use number sense. The amount of cranberry granola made daily is $4 \times 2\frac{1}{2}$ or 10 pounds. Since $24 - 10 = 14$ and $14 \div 4 = 3\frac{1}{2}$, each worker makes $3\frac{1}{2}$ pounds of almond granola daily.

Ryan's Method

I can write an equation. Let b represent the pounds of almond granola that each worker makes. Together, the workers make $4(2\frac{1}{2} + b)$ pounds of granola.

$$4(2\frac{1}{2} + b) = 24$$

$$10 + 4b = 24 \quad \leftarrow \text{Use the Distributive Property.}$$

$$4b = 14 \quad \leftarrow \text{Subtract 10 from both sides.}$$

$$b = 3\frac{1}{2} \quad \leftarrow \text{Divide both sides by 4.}$$

Each worker makes $3\frac{1}{2}$ pounds of almond granola daily.

Use Appropriate Tools Strategically

Students use appropriate tools strategically when they use various manipulatives, measuring devices, and technology tools in the Activity Labs. By developing fluency in the use of different tools, students are able to select the appropriate tools to solve a given problem.

The Choose a Method exercises strengthen students' ability to articulate the difference in use of various tools.



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Solve each proportion using cross products. Round to the nearest tenth, if necessary.

31. $\frac{1.7}{2.5} = \frac{3.4}{d}$ 32. $\frac{y}{9.5} = \frac{12.6}{5.4}$ 33. $\frac{33.1}{x} = \frac{6.2}{1.3}$ 34. $\frac{16.9}{13.5} = \frac{t}{7.4}$



35. **Error Analysis** A videocassette recorder uses 2 m of tape in 3 min when set on extended play. To determine how many minutes a tape that is 240 m long can record on extended play, one student wrote the proportion $\frac{2}{3} = \frac{240}{x}$. Explain why this proportion is incorrect. Then write a correct proportion.

36. **Health** Your heart rate is the number of heartbeats per minute.
 a. What is your heart rate if you count 18 beats in 15 seconds?
 b. **Choose a Method** How many beats do you count in 15 seconds if your heart rate is 96 beats/min? Explain the method you chose.

37. **Writing in Math** You estimate you will take 75 min to bike 15 mi to a state park. After 30 min, you have traveled 5 mi. Are you on schedule? Explain.

38. **Challenge** A recipe for fruit salad serves 4 people. It calls for $2\frac{1}{2}$ oranges and 16 grapes. You want to serve 11 people. How many oranges and how many grapes will you need?

Observation Protocol

Look in your Teacher Resources for many more opportunities for students to develop proficiency in the mathematical practices. Notice how the specific program features that support each practice are highlighted in blue. After you read about the supporting features, you will see a selection of pages in your Teacher's Edition that gives students an opportunity to put the standard into practice.

As students apply the standards, you will want to use the Observation Protocol to evaluate your students' level of proficiency. This useful tool gives you a list of evident characteristics to look for as you observe your students. You will also want to use this observation tool for daily formative assessment during your instruction.

| Name of Student: | | | | |
|--|--|--|--|--|
| Standards for Mathematical Practice | Dates of Observations | | | |
| Suggested rating: P = shows proficiency; D = developing; E = emerging; O = No evidence | | | | |
| 1. Make sense of problems and persevere in solving them. | | | | |
| a. identifies main task of the problem | e. checks reasonableness of solution | | | |
| b. relates to other problems | f. checks solution plan | | | |
| c. explains relationships among numbers or quantities | g. uses a different method to check solution | | | |
| d. identifies solution plan | h. compares/contrasts solution plan | | | |
| NOTES | | | | |

Standards for Mathematical Content

Now look at the Standards for Mathematical Content in Prentice Hall Middle Grades Math by first examining the Common Core State Standards Correlations in the Teacher Resources.

CORRELATION OF STANDARDS FOR MATHEMATICAL CONTENT

PRENTICE HALL COURSE 2

The following shows the alignment of Prentice Hall Course 2 Common Core Edition (2012) to the Grade 7 Common Core State Standards for Mathematics. The Lessons and Activity Labs in this book provide complete coverage of the Grade 7 Common Core State Standards for Mathematics.

| Standards for Mathematical Content | PH Course 2 Common Core Edition (2012) |
|--|---|
| RATIOS AND PROPORTIONAL RELATIONSHIPS | |
| Analyze proportional relationships and use them to solve real-world and mathematical problems. | |
| 7.RP.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. | 5-1, 5-2, 5-4, 5-5, CC-2, Activity Lab 5-4a, 5-7a |
| 7.RP.2 Recognize and represent proportional relationships between quantities. | 5-3, 5-4, 5-5, Activity Lab 5-4a |
| 7.RP.2.a Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. | 5-3, CC-10 |
| 7.RP.2.b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. | 5-3, CC-11 |
| 7.RP.2.c Represent proportional relationships by equations. | 5-4, CC-11, GPS p. 240 |
| 7.RP.2.d Graph a point (x, y) on the graph of a proportional relationship (means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate). | 10-2, 10-3, CC-10 |
| 7.RP.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. | 6-7, 6-8, 6-7 |

T36 Correlation of Standards for Mathematical Content

Supplemental Lessons

Notice that there are lessons coded with the letters CC. This indicates a Common Core supplemental lesson. The lessons are included in the new Middle Grades Math Common Core Edition, as well as in the online Common Core resources.

CC-1 Addition and Subtraction With Rational Numbers

CONTENT STANDARDS

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7.NS.1.a Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.

7.NS.1.d Apply properties of operations as strategies to add and subtract rational numbers.

GO For Help in Lessons 1-7

Use after Lesson 3-3.

CC6 CC1 Addition and Subtraction with Rational Numbers

You already know how to add and subtract integers. The table also shows the rules, where $a, b, c,$ and d are positive integers and $a > b$.

| | Same Sign | Different Sign |
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| Add: The sum has the sign of the addend with greater absolute value. | $a + b = c$ $-a + (-b) = -c$ | $a + (-b) = d$ $-a + b = -d$ |
| Subtract: Rewrite as adding the additive inverse. | $a - b = a + (-b) = d$ $-a - (-b) = -a + b = -d$ | $a - (-b) = a + b = c$ $-a - b = -a + (-b) = -c$ |

You also know how to add positive decimals, fractions, and mixed numbers. Use these skills to add and subtract any rational numbers.

ACTIVITY **MATHEMATICAL PRACTICES**

1. The sum $\frac{1}{2} + (-\frac{2}{3})$ can be represented on a horizontal number line diagram.

Copy the number line diagram and label the points that represent $\frac{1}{2}$ and $(-\frac{2}{3})$.

2. What is the sum of these two fractions?

3. Can you use the same number line diagram to represent $\frac{1}{2} - \frac{2}{7}$?

4. Represent each sum or difference on a horizontal number line. Then find each sum or difference.

a. $-\frac{2}{3} + \frac{1}{2}$
b. $\frac{1}{2} - (-\frac{2}{3})$
c. $\frac{2}{3} + (-\frac{1}{2})$
d. $-\frac{1}{2} - \frac{2}{3}$

5. Use a horizontal number line like the one below to represent the sum of $-2.25 + 1.75$.

The writers of Prentice Hall Middle Grades Math have added supplemental lessons that support the content shifts in the new standards. These lessons teach the additional Standards for Mathematical Content that are not already included in the curriculum. The specific CCSSM being addressed is identified in the upper left-hand corner of the lesson.

Technology Components

You will also find updated technology components that align with and assess the CCSSM. This includes LessonView, ExamView, and SuccessTracker—the online assessments system with chapter tests, instant remediation, and benchmark tests.

Pacing Guide

Look over the Common Core Pacing chart in your Teacher Resources. In the Pacing chart, you will see the exact location of where to teach each of the supplemental lessons.

The chart indicates the Standards for Mathematical Content that each lesson addresses and proposes pacing for each chapter.

With your Middle Grades Math Common Core Edition and online resources, you have all of the tools that you need to fully embrace the CCSSM and prepare your students for the rigor of high school mathematics.

PACING FOR A COMMON CORE CURRICULUM WITH PRENTICE HALL COURSE 2

This pacing chart can help you plan your course as you transition to a curriculum based on the Common Core State Standards (CCSS). The Chart indicates the Standards for Mathematical Content that each lesson addresses and proposes pacing for each chapter. Prentice Hall Course 2 provides comprehensive coverage of all of the Common Core State Standards for Grade 7.

The suggested number of days for each chapter is based on a traditional 45-minute class period and on a 180-minute block period. The total of 180 days of instruction leaves time for review and enrichment lessons, additional activity labs, assessments, and projects.

Content to meet the Grade 7 Common Core State Standards
 Review and Remediation for mastery of prior standards
 Content for benchmark to prepare for future study

| Chapter 1 Decimals and Integers | Standards of Mathematical Content | Differentiated Instruction | |
|---|-----------------------------------|----------------------------|------------|
| | | Class | Enrichment |
| Unit 1: Decimals and Integers (12 days) | | | |
| 1-1 Using Addition Strategies | Review 4.GA.3 | ✓ | ✓ |
| 1-2 Adding and Subtracting Decimals | 7.EE.1 | ✓ | ✓ |
| 1-3 Multiplying Decimals | 7.ND.2, 7.ND.3, 7.EE.3 | ✓ | ✓ |
| 1-4 Dividing Decimals | 7.ND.2, 7.ND.3, 7.EE.3 | ✓ | ✓ |
| 1-5 Measuring in Metric Units | Review 5.MD.1 | ✓ | ✓ |
| 1-6 Comparing and Ordering Integers | 7.NE.1B | ✓ | ✓ |
| 1-7 Activity Lab: Modeling Integer Addition and Subtraction | 7.NE.1A, 7.NE.1C | ✓ | ✓ |
| 1-7 Adding and Subtracting Integers | 7.NE.1A, 7.NE.1B, 7.NE.1C | ✓ | ✓ |
| 1-8 Multiplying and Dividing Integers | 7.NE.1B | ✓ | ✓ |
| 1-9 Order of Operations and the Distributive Property | 7.ND.2, 7.ND.3, 7.EE.2a, 7.NE.5 | ✓ | ✓ |
| 1-10 Mass, Masses, Masses, and Range | Review 4.FF.1 | ✓ | ✓ |
| 1-10 Mass, Masses, Masses, and Range | Review 4.FF.1 | ✓ | ✓ |
| Unit 2: Fractions, Factors, and Fractions (18 days) | | | |
| 2-1 Applications of Order of Operations | Review 5.EE.6 | ✓ | ✓ |
| 2-2 Prime Factorization | Review 5.NF.6 | ✓ | ✓ |
| 2-3 Simplifying Fractions | Review 5.NF.1 | ✓ | ✓ |
| 2-4 Comparing and Ordering Fractions | Review 5.NF.7 | ✓ | ✓ |
| 2-5 Mixed Numbers and Improper Fractions | Review 5.NF.1, 5.NF.2 | ✓ | ✓ |
| 2-6 Integers and Decimals | 7.NE.2A, 7.EE.2 | ✓ | ✓ |
| 2-7 Rational Numbers | 7.NE.2, 7.EE.2B | ✓ | ✓ |
| 2-8 Scientific Notation | Prepares for 8.EE.4 | ✓ | ✓ |

T42 Pacing for a Common Core Curriculum

Review

This guide introduced meeting the CCSSM with Prentice Hall Middle Grades Math.

It examined the additional Common Core resources developed for Middle Grades Math and discussed how to use them to effectively integrate the standards into your math classroom.

It also explored how to use the Correlation chart, the Pacing chart, and the Common Core supplemental lessons to maintain the successful instructional approach of the program while highlighting the connections to the Standards for Mathematical Practice.