



## Transitioning to the Common Core

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### Introduction

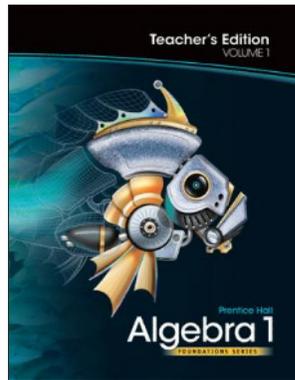
This guide explains how to transition to the Common Core State Standards for Mathematics (CCSSM) using the Prentice Hall High School Math Transition Kit.

It examines the contents of the Kit and discusses how to use it to effectively integrate the Common Core State Standards (CCSS) into a Prentice Hall High School Math classroom.

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### Before We Begin

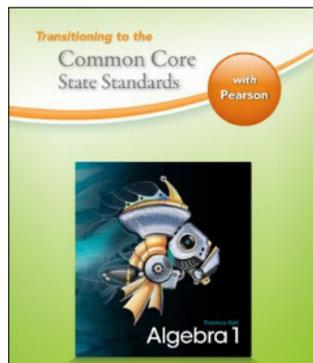
This guide shows specific examples from Algebra 1, Geometry, and Algebra 2. Grab a Teacher's Edition, and follow along with this guide.



### Prentice Hall High School Math Transition Kit

The Transition Kit contains resources to help teachers tackle the CCSS. To download a copy of the Transition Kit, click the Teacher Resources link within Pearson SuccessNet.

In the Transition Kit, teachers will find information about both the Standards for Mathematical Content and the Standards for Mathematical Practice—the two sets of standards that make up the CCSSM. First, take a look at the Standards for Mathematical Content.



## Overview of the Standards for Mathematical Content

Find the Overview of the Standards for Mathematical Content. Here, teachers will learn more about the critical shifts in content as they begin planning a Common Core-based curriculum.



## Standards for Mathematical Content

What are the Standards for Mathematical Content? To answer this question, teachers will first want to look at how the standards are organized.

At the high school level, the standards are organized by conceptual categories. These conceptual categories are Modeling, Algebra, Number and Quantity, Functions, Geometry, and Statistics and Probability.

Within each conceptual category (except modeling) content is organized into domains, clusters, and standards.

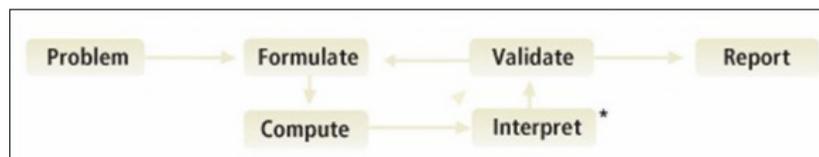
Number and Quantity		Where to find
<b>The Complex Number System</b>		<b>N.CN</b>
Perform arithmetic operations with complex numbers.		
N.CN.1	Know there is a complex number $i$ such that $i^2 = -1$ , and every complex number has the form $a + bi$ with $a$ and $b$ real.	4-8
N.CN.2	Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	4-8
N.CN.7	Solve quadratic equations with real coefficients that have complex solutions.	4-8, 5-5, 5-6
N.CN.8	(+) Extend polynomial identities to the complex numbers.	5-5, 5-6
N.CN.9	(+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	5-6, CC-2

The Transition Kit summarizes the key concepts and progressions of the conceptual categories and correlates them to the Prentice Hall High School Math curriculum. Follow along in the Transition Kit as this guide briefly reviews two of these standards.

## Modeling

Begin with the Modeling standard, because of its unique and prominent focus in the new math standards. The CCSS identifies modeling in relation to other standards.

Specific modeling standards appear throughout the high school standards and are indicated by a star symbol (\*). Throughout the program, students build mathematical models using functions, equations, graphs, tables, and technology.



## Number and Quantity

Next, look at another conceptual category—Number and Quantity.

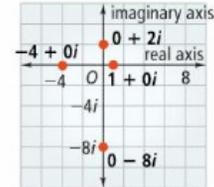
In high school, students deepen their understanding of the real number system and then come to know the complex number system.

You can use the rules for multiplying complex numbers to find powers of complex numbers.

### Example 1

Compute and graph  $(2i)^n$ , for  $n = 0, 1, 2$ , and  $3$ .

$n$	$(2i)^n$
0	$(2i)^0 = 1$
1	$(2i)^1 = 2i$
2	$(2i)^2 = 4i^2 = 4(-1) = -4$
3	$(2i)^3 = 8i^3 = 8(i^2 \cdot i) = 8(-1 \cdot i) = -8i$



Each content summary describes the progression of math that students will learn in earlier grades that will prepare them to master the high school standards.

## Learning More about the Standards for Mathematical Content

To learn more about the Standards for Mathematical Content in greater detail and how to teach them in the classroom, refer to the Overview for Mathematical Standards in the Transition Kit.

## Correlation of the Standards for Mathematical Content

In each of the Transition Kits for Prentice Hall Algebra 1, Geometry, and Algebra 2, teachers will also find a Correlation of Standards for Mathematical Content section.

Notice how the correlations are grouped by conceptual categories. Under each conceptual category, see the domains, clusters, and standards.

Look over to the right column to see where to find a standard in PH High School Math 2011. Here, teachers will find specific lessons and Concept Bytes in the Teacher's Edition or supplemental lessons in the Transition Kit that teach a particular standard.



### Correlation of Standards for Mathematical Content

## Prentice Hall Algebra 2

The following shows the alignment of Prentice Hall Algebra 2 ©2011 to Achieve's Algebra 2 Pathway for the Common Core State Standards for High School Mathematics. Included in this correlation are the supplemental Common Core lessons that are available as part of the transitional support that Pearson is providing. The standards that have (+) indicate additional mathematics that students should learn in order to take advanced courses such as calculus, advanced statistics, or discrete mathematics.

Number and Quantity		Where to find
<b>The Complex Number System</b>		<b>N.CN</b>
<b>Perform arithmetic operations with complex numbers.</b>		
N.CN.1	Know there is a complex number $i$ such that $i^2 = -1$ , and every complex number has the form $a + bi$ with $a$ and $b$ real.	4-8
N.CN.2	Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	4-8
N.CN.7	Solve quadratic equations with real coefficients that have complex solutions.	4-8, 5-5, 5-6
N.CN.8	(+) Extend polynomial identities to the complex numbers.	5-5, 5-6
N.CN.9	(+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	5-6, CC-2

## Supplemental Lessons

The authors of the Prentice Hall High School Math series have written supplemental lessons that support the content shift in the new standards. These lessons teach the additional Standards for Mathematical Content that are not already included in the Prentice Hall High School Math curriculum.

The lessons have the same format and features as the other lessons in the Teacher's Edition, so teachers can easily incorporate them into their lesson plans.

**CC-5 Law of Sines**

**Common Standards**  
 G.SRT.11 Understand and apply the Law of Sines to find unknown measurements in right and non-right triangles.  
 Also G.SRT.10

**Objectives** To apply the Law of Sines.

**Getting Ready!**  
 A rescue boat spots a lost hiker on the edge of a rock shelf. How far is the boat from the hiker?  
 125 ft, 50 ft, 40°

**Essential Understanding** If you know the measures of two angles and the length of a side (AAS or ASA), or two side lengths and the measure of a nonincluded obtuse angle (SSA), then you can find all the other measures of the triangle.

**Key Concept Law of Sines**  
 For any  $\triangle ABC$ , let the lengths of the sides opposite angles  $A$ ,  $B$ , and  $C$  be  $a$ ,  $b$ , and  $c$ , respectively. Then the **Law of Sines** relates the size of each angle to the length of the opposite side.  

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

**Here's Why It Works** Draw the altitude from  $C$  to  $\overline{AB}$  and label it  $h$ .  $\triangle ACD$  and  $\triangle BCD$  are right triangles.  
 $\sin A = \frac{h}{b}$  and  $\sin B = \frac{h}{a}$  Definition of sine  
 $b \sin A = h$  and  $a \sin B = h$  Multiplication Property of Equality  
 $b \sin A = a \sin B$  Transitive Property of Equality  
 $\frac{b \sin A}{a} = \frac{a \sin B}{b}$  Division Property of Equality

## Pacing Guide

Notice that the Transition Kit includes a Pacing Guide that takes the guesswork out of planning for a Common Core curriculum.

The Pacing Guide indicates the Standard for Mathematical Content that each lesson addresses and recommends pacing for each chapter. The supplemental lessons are included in the Pacing Guide.

These lessons, along with the lessons in the student edition, provide comprehensive coverage of all of the CCSS.

		Standards for Mathematical Content	Average	Advanced	Algebra 2 Pathway
<b>Chapter 1 Expressions, Equations, and Inequalities</b>			<b>Traditional 6 Block 3</b>		
1-1	Patterns and Expressions	Reviews A.SSE.3	<input type="radio"/>	<input type="radio"/>	
1-2	Properties of Real Numbers	Reviews N.RN.3	<input type="radio"/>	<input type="radio"/>	
1-3	Algebraic Expressions	A.SSE.1, A.SSE.1.a	<input type="radio"/>	<input type="radio"/>	
1-4	Solving Equations	A.CED.1, A.CED.4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
1-5	Solving Inequalities	A.CED.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
1-6	Absolute Value Equations and Inequalities	A.SSE.1, A.SSE.1.b, A.CED.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>Chapter 2 Functions, Equations, and Graphs</b>			<b>Traditional 12 Block 6</b>		
2-1	Relations and Functions	Reviews F.IF.1, F.IF.2	<input type="radio"/>	<input type="radio"/>	
2-2	Direct Variation	A.CED.2, F.BF.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2-3	Linear Functions and Slope-Intercept Form	A.CED.2, F.IF.4, F.IF.7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2-4	More About Linear Equations	A.CED.2, F.IF.8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Concept Byte: Piecewise Functions</b>		F.IF.7, F.IF.7.b	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2-5	Using Linear Models	A.CED.2, F.IF.4, F.IF.6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2-6	Families of Functions	F.BF.3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2-7	Absolute Value Functions and Graphs	F.IF.7, F.IF.7.b, F.BF.3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2-8	Two-Variable Inequalities	A.CED.2, F.IF.7, F.IF.7.b	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Chapter 3 Linear Systems</b>			<b>Traditional 8 Block 4</b>		
3-1	Solving Systems Using Tables and Graphs	A.CED.2, A.CED.3, A.REI.11	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3-2	Solving Systems Algebraically	A.CED.2, A.CED.3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## Standards for Mathematical Practice

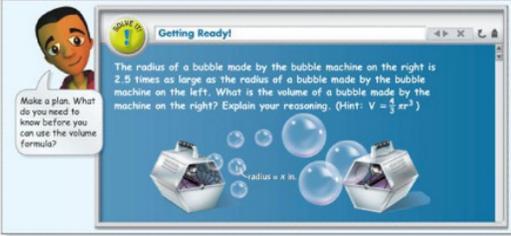
The eight Standards for Mathematical Practice describe mathematical behaviors that teachers should focus on helping their students develop.

- 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.

## Mathematical Proficiency

Read the description for each practice to identify what successful students do as they develop proficiency in the mathematical practices. Find an explanation of the different features and elements of Prentice Hall High School Math program that help students develop mathematical proficiency.

The **Solve It!** opener for each lesson, presents a problem situation for which students work collaboratively or individually. The Solve It! offers opportunities for students to **make sense of problems** and persevere in solving them. Guiding questions in the Teacher's Edition help students **persevere to find entries into the problems** and to **develop a workable solution plan**.



Students look to **understand the meaning** of the problem presented and **develop and implement a solution plan**. The rich visual support helps students make sense of problem situations.

The **Know-Need-Plan** boxes help students **analyze the givens** in the problem and **develop a workable solution plan**.

Know	Need	Plan
<ul style="list-style-type: none"><li>• The function for the acorn's height.</li><li>• The initial height is 20 ft.</li></ul>	<ul style="list-style-type: none"><li>• The function's graph and the time the acorn hits the ground</li></ul>	<ul style="list-style-type: none"><li>• Use a table of values to graph the function. Use the graph to estimate when the acorn hits the ground.</li></ul>

For example, find the page with the standard, "Look for and express regularity in repeated reasoning."

## Support for the Practices

Students who are proficient in this practice

- notice a pattern or structure in expressions or equations; and
- recognize a pattern in the solutions of problems.

The specific program features that help develop these practices are bold. After teachers read about the supporting features, they will see a selection of pages in the Teacher's Edition that provide problems that give students an opportunity to put the standard into practice.

The engaging and innovative program features in this series were built to increase students' mathematical proficiency. With the additional resources in the Transition Kit, teachers can be assured that they have all the tools they need to fully embrace the CCSS and help their students be college and career ready by the completion of high school.

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**Review**

This guide examined how to transition to the CCSSM using the Prentice Hall High School Math Transition Kit.

It looked at the contents of the Transition Kit and discussed how to use them to effectively integrate the CCSS into a Prentice Hall High School Math classroom.

This guide also discussed how to use the Correlation chart, the Pacing Guide, and the supplemental lessons to maintain the successful instructional approach of the Prentice Hall High School Math © 2011 program while highlighting the connections to the Standards for Mathematical Practice.

For more information, please watch the other Prentice Hall High School Math tutorials on this Web site.