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Common Core Math For Parents

FOR DUMMIES®

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Learn to:

- Make sense of Common Core math, grade by grade
- Effectively help with homework
- Team up with teachers and promote your child's success

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Introduction

Math shouldn't be scary. This idea is at the heart of this book. The big reason that many people find math scary (and I know you're out there — you confess it to me when we meet for the first time and I tell you that I teach math) is that math has always felt like one big club with a bunch of rules that make no sense, but that absolutely must be followed.

This book presents a very different vision of math — one that should be empowering rather than frightening. A major goal of the Common Core State Standards is raising the mathematics achievement of large populations of students to whom quality mathematics instruction has previously been denied. Part of this effort involves bringing children's ways of thinking into the classroom and developing these ways of thinking into powerful, useful, and efficient strategies. I wrote *Common Core Math For Parents For Dummies* to help parents like you understand this development.

I have been writing about students' math learning at all levels for many years now, with an audience of both parents and teachers. With this book, I want to bring together many of these ideas into a coherent and comprehensive guide to classroom math learning. *Common Core Math For Parents For Dummies* is that book. So go ahead and join in — the mathematical welcome mat has been laid out for you.

About This Book

This book is your guide to math class in the 21st century. Education policy can be highly political and contentious, so this book cuts through it all and tells you what you need to know about what and how your child is likely to be learning math in the era of Common Core.

In place of inflated claims about the perfect world that will supposedly result from adopting these standards, you can find honest information about the goals and intent of these standards. Instead of scary tales of data mining and big government, you can find reasonable, measured, and careful descriptions of what the standards actually are.

If you’re a parent or guardian, you can find suggestions for helping your children learn the math appropriate to their grade level. This information may take the form of written tips for working example problems or video explanations of important ideas. Furthermore, this book shows you how ideas you learned in school are likely to appear in your children’s math class. Despite what you may have heard, the standards don’t have any New Math in them. Children are being asked to think, and this thinking can look unfamiliar to their parents on the surface. But underneath, many of these ways of thinking are old and familiar. Many times people who identify themselves as “not a math person” will say something such as, “That’s how I always thought about it, but I didn’t know it was okay to do it that way!” This book can help you connect your child’s ways of thinking with your own.

If you’re a teacher, you can find a most welcome big picture. You can see connections between the math that you teach at your grade level (which you probably know quite well) and the math that is taught at adjacent and distant grade levels (which you probably haven’t had time to study).

This book is organized as a reference that you can spend as little or as much time with as you want. You can read the grade level that matters to you without worrying about what came before and what comes after. All in all, I wrote this book with a busy person in mind. I have organized things so you can find what you need and move on.

Foolish Assumptions

As I wrote this book, I made some assumptions about you. I'm sure I didn't get them all right, but at least one of these categories describes you:

- **You have a K–12th grade student in your life**. You may be a parent, guardian, grandparent, neighbor, or tutor to a child you care about very much, and you want to help him (or her) be successful in math in school.
- **You don't really know what Common Core Math means.** You have probably heard of the Common Core State Standards, but you probably haven't read them.
- **You have seen something unfamiliar in your child's homework.** Seeing something that you thought you knew well (for example, multiplication) but realizing that you have no idea what the questions are asking for can be frustrating.
- **You are a teacher looking to know the standards better.** Understanding the standards beyond the grade level you teach is extremely helpful for day-to-day classroom teaching. (How did they learn this last year? How will this get used in high school?) It's also helpful in supporting parents when they have questions. Either way, you need information quickly.

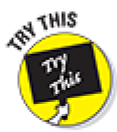
I understand that your life is busy. I wrote this book in a way that makes the phrase Common Core Math concrete. The goal is to bring you up to speed quickly on what Common Core means for your child's math class.

Icons Used in This Book

Throughout this book, I include icons in the margins. You can use these icons to navigate this book.

A tip is intended to make your life easier. A tip can give you suggestions of what to look for in the standards or in your child's work.

This icon helps you find summaries of the most important ideas in a section. This icon points to something that you won't want to forget.



This icon lets you know when you can do something with your child in order to understand the content and help your child. You can do some of them on your own as you read; others suggest things to do together with your child.

Technical stuff gives you the real deal, mathematically speaking. Most of the time, you and your child don't really *need* to know the things that go with this icon, but sometimes you want to know the full story.

Beyond the Book

In addition to the content of this book, you can access some related material online. A series of videos that cover some techniques and big ideas from the book is available at www.dummies.com/go/commoncoremathvids.

Check out the related videos for additional help:

- Chapter 5: Making tens
- Chapter 6: Decomposing numbers
- Chapter 7: Eyeing adding and subtracting strategies
- Chapter 8: Using addition algorithms
- Chapter 9: Comparing fractions
- Chapter 10: Tackling multiplication algorithms

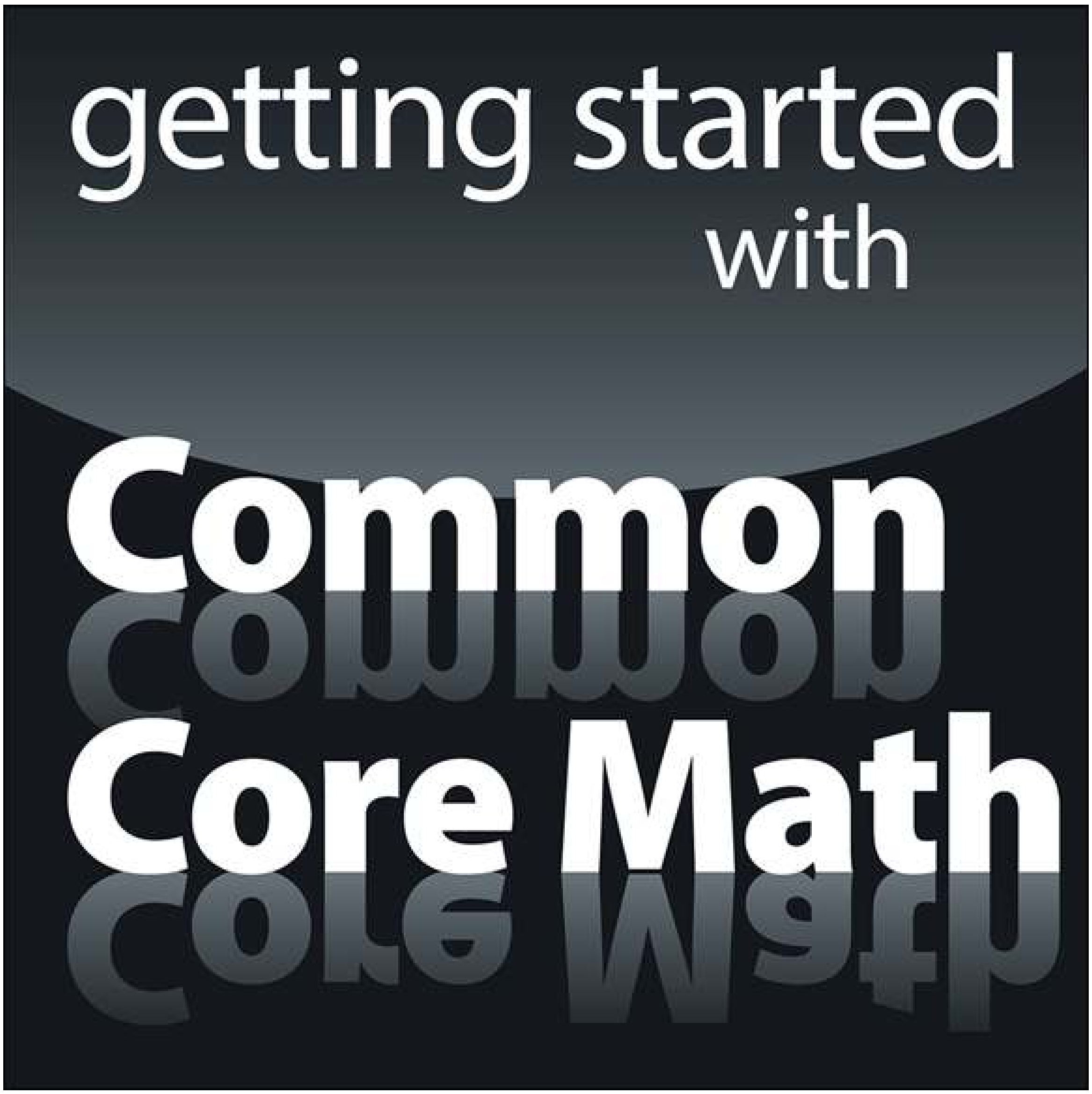
You can access a free Cheat Sheet at www.dummies.com/cheatsheet/commoncoremathforparents that contains additional information about the standards. You can also access some additional helpful bits of information at www.dummies.com/extras/commoncoremathforparents.

Where to Go from Here

Feel free to start reading from Chapter 1 to get an overview of what the book has to offer. You also can turn to the grade that interests you most, which may be the grade one of your children is in right now or (if you're a teacher) it may be the grade you teach. That grade most likely refers to another grade for more information. You can follow the references that interest you and skip the ones that don't. If you've been frustrated by a strange-looking homework assignment, get yourself to Chapter 4 to get an overview of the nature and purpose of homework in Common Core classrooms. Or you can flip through the table of contents or index to search for any topic that interests you.

Part I

Getting Started with Common Core Math Standards



Go to www.dummies.com/cheatsheet/commoncoremathforparents for a Cheat Sheet that gives you some easy-to-refer-to tips that can help you when trying to familiarize yourself with the Common Core State Standards for math.

In this part …

- Understand how the Common Core State Standards fit in the history of math teaching in the United States and how math education has evolved during the last century.
- Look at the different ways that students are doing math in Common Core classrooms so that you know what to expect when your child enters a certain grade.
- Get tips about your child's homework so that you're better prepared to help and can reduce any related stress.
- Comprehend the purpose of some nontraditional homework assignments that you may have seen on social media (or in your own child's backpack!) to avoid frustration on your part or your child's.

Chapter 1

The Lowdown on Common Core Math, Just the Basics

In This Chapter

- Knowing what Common Core Math means
- Getting tips on helping with homework
- Developing math from kindergarten through high school

In recent years, news outlets have regularly covered stories on the math that students are learning in school. Whether the story is about international comparisons of student learning ("You must panic! The United States is falling behind!") or the homework students bring home ("You must panic! Second graders are using number lines!"), these news stories have an element of urgency to them.

This urgency is understandable. Parents want their children to have the best possible opportunities in life and career. In a modern, technology-dependent society, a solid math background is an important part of creating those opportunities. People who struggle to work with numbers, spatial relationships, and algebra can't find employment in sectors that rely on technology and science, and more industries than ever do rely on technology and science.

You can think beyond the employment picture and still be concerned with how your child learns math. Everyday life requires more thinking about quantities than in the past. Is this week's cold weather evidence against global warming? Should I have my child vaccinated? What does it mean for my state's budget if everyone buys more stuff online? To answer these questions confidently requires more comfort with numbers than you need to count change correctly — which may have been a primary concern for citizens 100 years ago. You still need to count change correctly (or risk getting swindled on a daily basis!), but you need so much more than that to participate fully in the modern-day United States.

As of this writing, in 44 states and the District of Columbia —together totaling about 84 percent of the US population — have enacted the Common Core State Standards. Just like your child will need more math for career and citizenship than your grandparents needed, you need a bit more math than your grandparents did to understand what your child is doing in school. This chapter serves as your jumping-off point into the world of Common Core Math.

Understanding What Common Core Math Is

There really is no such thing as Common Core Math. Okay, you're scratching your head, so allow me to explain what I mean and why this book is so important.

In a Common Core classroom, students' ideas are center stage with the focus not on Common Core Math, but on student thinking. Teachers work every day to help students improve their thinking and to provide students with new ideas when they need them and when they're ready for them.

The Common Core Standards still require students to memorize addition and multiplication facts. They still require students to learn the standard algorithms and the Pythagorean theorem. None of those things have disappeared from the math curriculum. Instead, the role of student thinking has changed. Students' ideas are an important beginning place for math learning rather than being seen as an irrelevant distraction.

Many people in this country have experiences with school math that can be summarized as *rules without reasons*. They were told to *do this* in situation A, but *do that* in situation B. They never understood why and they struggled to remember whether to do *this* or *that* in situation A. And they struggled to tell situation A from situation B so they just applied what they hoped was the right rule in the right situation and prayed that they could earn enough partial credit to pass the test.

A quick story helps to illustrate. My mother-in-law, Lucie, is a fabulous woman. She wouldn't describe herself as a math person. While talking to her about math teaching (no one escapes that fate in my personal life), I asked her to calculate 1,001 – 2. She thought for a moment and said 999. I asked her how she knew, and she said that she had learned it in school. I didn't believe that for a moment — there is no way this particular fact was one that she had to memorize in second grade, plus I could see that she thought for a moment before responding. When I pressed, she finally was able to say that she knew 1,000 was one less than 1,001, and so 999 was two less than 1,001.

We talked about her solution, and she noticed that she had done something different in her head than she would have done on paper. The way she solved 1,001 – 2 was different from the way she was taught in school. For

Lucie — and for far too many students — the methods taught in school are disconnected from the ways she thinks about numbers.

Lucie's way of finding 1,001 – 2 wasn't Common Core Math. It was just good mathematical thinking. The standard algorithm (see Chapter 10) is a correct but seriously inefficient way of finding 1,001 – 2. Similarly, it would be inefficient to use Lucie's strategy to find 1,001 – 999 (you would have to count backwards from 1,001 until you got to 2).

Examining the Standards for Mathematical Practice

One unique aspect of the Common Core State Standards is that their focus goes beyond the familiar content of numbers, geometry, algebra, and statistics. They also include a set of Standards for Mathematical Practice that describe how people work when they're doing math. These standards apply across all grade levels, with kindergarteners operating at a level of sophistication appropriate to them and high school students working at a much more sophisticated level.

The list of Standards for Mathematical Practice is fairly long — there are eight of them — and they overlap in ways that make it challenging for the average non-math teacher to tell them apart. But they're important aspects of the work that children do in Common Core classrooms, so in this book, I have boiled the Standards for Mathematical Practice down to four simple statements about what students at all grade levels should be doing in math class. In Chapter 3, I describe these four statements in detail and relate them to the eight standards from the Common Core.

Ask questions

Students should ask questions such as, “What if . . . ?”, “Why?” and “How do we know that?” They should also seek to answer these questions. These may not be the questions that you picture students asking in math class, but they’re really useful questions for learning more math.

Play

When children play, they make things up and try out things. They don’t worry about getting everything perfect. They repeat the same scenario many times, changing it a little bit each time to see what happens. They challenge themselves. They laugh.

All of this can happen in the math classroom, too. Math is challenging, but so are handstands, video games, and soccer. All of these activities involve risk-taking and exploration. Math should too. Often, the line between play and work is drawn with consequences. If an activity has high stakes, it isn’t so much fun and turns into work. A Common Core classroom has many opportunities for students to play with math: to try something new, to create challenges for themselves and others, and to get things wrong and try again.

> Math has right answers, just as football has touchdowns. But not every game is for the championship, and not every math activity needs to be high stakes.

Argue

Arguing is a highly mathematical activity. A good argument has some agreed-upon starting point, has some rules for moving forward, and seeks to uncover the truth. In a Common Core classroom, students have to figure some things out for themselves, which means that they need to formulate an argument to support their thinking. The sophistication of these arguments increases as students age and as they gain more practice.

For example, in second grade, a student might need to convince someone else that 14 is an even number. In high school, a student might need to write a proof that the sum of the angle measures of any quadrilateral is 360°. Both of these activities count as arguing.

Connect

Math is often taught as a long list of disconnected facts, but it shouldn't be. Mathematical ideas are connected to each other, and they're easier to use and to remember when students see connections among them.

Even memorizing multiplication facts — an activity that should be rich with connections — sometimes boils down to a conditioned response activity where each fact is different from each one. Math isn't memorizing. To be sure, being able to quickly remember multiplication and addition facts is useful, but an overemphasis on memorization can keep many students from developing the even more useful skill of thinking through things they don't know right away.

> In a Common Core classroom, students spend time noticing how new ideas relate to old ones, how solutions to certain kinds of problems are just like solutions to others that seem unrelated, and so on. Looking for and talking about connections is an important part of doing math.

Looking at the Standards in the Different Grades

The Common Core State Standards have a grade-by-grade structure. This structure is required of state standards in the era of No Child Left Behind — the federal law that requires standards and high-stakes testing at the state level in return for federal education funding.

Several topics run through the grade levels, such as *geometry*, *the number system*, and so on. These topics are called *domains* in Common Core. The emphasis on these domains shifts through the grade levels — for instance, kindergarteners spend a lot more time with number and high school students spend a lot more time with algebra — but no domain is specific only to one grade level.

Understanding the ways the math builds from one grade to the next is important in knowing how to help your child stay focused on what is important. In the following sections, you find very brief overviews of each grade, and a reference to the chapter where I write about these ideas in depth. The chapter number corresponds to the typical age at each grade K–high school. So kindergarten is Chapter 5, first grade is Chapter 6, and so on.

Kindergarten

Kindergarten is a time of play, fun, and discovery. Kindergarten math is no exception. In kindergarten, students play with numbers and shapes. They count out loud — by ones and by tens — in order to get familiar with the word patterns in English number language. They count small quantities of objects and come to understand (if they don’t already) that the last number you say answers the question “How many?”

They play with addition and subtraction by thinking about a variety of situations where small collections of objects are getting bigger or smaller, or where they are being compared. Kindergarteners play with shapes — naming them, sorting them, cutting them apart, and putting them back together. Chapter 5 goes in-depth on the kindergarten curriculum.

First grade

First grade is about addition and subtraction. Students work with one-digit and small two-digit numbers as they explore the relationships between addition and subtraction. Together, addition and subtraction are referred to as *operations*. Operations are the building blocks of algebra in later grades, so in a sense, first graders are studying algebra when they think about how 3 + 4 = 7 relates to 7 – 3 = 4 and to 7 – 4 = 3.

In Chapter 6, I describe the full scope of first-grade math, and I also discuss why it’s important for children at all grade levels to think their way through word problems rather than hunt for keywords.

Second grade

Second grade is about place value. (*Place value* refers to the idea that 12 and 21 — despite having the same digits — are very different numbers; the 2 in 12 is in the ones place, while the 2 in 21 is in the tens place — those 2s have different values because of the place they are in). This one topic is a stumbling block for students going through elementary school and into algebra if they don’t make sense of it early in their math studies. In Chapter 7, I describe the challenges students encounter in learning place value, and how so much of the math that comes later depends on it.

Third grade

Third grade is about multiplication and division. In Chapter 8, I describe how multiplication and division have the same relationship to each other that addition and subtraction do. Multiplication tells you how many things are in some number of equal-sized groups, and division helps you figure out either the number of groups or the number of things in each group.

Third graders also study fractions in depth for the first time. In particular, they concern themselves with *unit fractions* — fractions that have a numerator of 1.

Fourth grade

In fourth grade, students use their knowledge of multiplication facts to do interesting things. They study factors and multiples. They develop techniques for multiplying large numbers together — both on paper and in their heads. They compare fractions and write equivalent fractions. All of this work depends on knowing single-digit multiplication facts. In Chapter 9, I explain the importance of multiplication across grade levels as well as describe the full scope of math in fourth grade.

Fourth-grade math has a good deal of measurement. Students look at relationships between units, such as feet and inches or meters and kilometers, and they study angle measurement for the first time.

Fifth grade

In fifth grade, students begin to dip their toes into algebra. They write simple expressions using variables to represent quantities they’re trying to figure out, and they continue to deepen their understanding of the relationships among addition, subtraction, multiplication, and division. Fifth graders begin to add and subtract fractions.

In Chapter 10, I detail the work students do in all topics in fifth grade, and I describe the role and importance of standard algorithms in elementary school math.

> The standard algorithms for addition, subtraction, multiplication, and division — what you may think of as *the old-fashioned way* — are all specifically required in the Common Core State Standards, although students learn other ways of doing these things, too (especially so that they can compute mentally).

Sixth grade

In sixth grade, students transition from the addition and subtraction world of elementary school to the multiplication and division world of middle school and of algebra. In earlier grades, students learned *how* to multiply and divide, but in sixth grade, they develop multiplication as a way of beginning to think proportionally by studying ratios and rates. A *ratio* is a comparison of two numbers that depends on a multiplication relationship; a *rate* is a description of changing values that depends on a multiplication relationship.

Students do a bit more sophisticated work with algebraic expressions in sixth grade, including making coordinate graphs to describe how two variables relate to each other. They begin to study interesting area measurement situations, mostly based on the area of a rectangle.

In Chapter 11, I describe all of this in greater detail, and I give you a crash course in dividing fractions (and this turns out to be surprisingly fun — go have a look!).

Seventh grade

Seventh grade is about deeply understanding proportional relationships and solving proportions. A *proportional relationship* is one where if you double one measurement, the other one doubles too. The relationship between feet and inches is proportional, for example. Three feet is 36 inches, while 6 feet is the same as 72 inches — both numbers doubled. Students notice proportional relationships in problems about rates of motion, unit prices, and circumference of a circle. They also notice when a relationship isn't proportional.

In Chapter 12, I write about how seventh graders also study operations on negative numbers, including answering the age-old question: "Why is a negative times a negative equal to a positive?" (See Chapter 12 for the answer to this question.) Seventh graders deepen their study of measurement by considering area and circumference of a circle, and they work hard to understand what information they need before they can conclude that two triangles are the same as each other.

Eighth grade

In eighth grade, students study algebra. Eighth grade algebra in the Common Core State Standards is the algebra of linear relationships. A *linear relationship* is one with a constant rate of change. Put another way, a linear relationship is one that has a straight line graph.

In Chapter 13, I describe the eighth grade standards in depth, including how a skeptical student is likely to think about irrational numbers (these are numbers, like π or the square root of 2, that you can't write as a ratio of whole numbers). Eighth graders learn about exponents and functions, and they solve systems of equations.

High school

In Chapter 14, I give you a whirlwind tour of high school math, including the different structures that schools and districts may choose for high school programs. Of special importance in this chapter is that the phrase *college and career ready* has implications in high school programs. High school students study math that will be useful to them as they move beyond the high school classroom.

Helping Your Child with Homework

Whatever the standards may be — Common Core or anything else — most children will be frustrated with a homework assignment from time to time. The advice to you, the parent, doesn't change just because your home state has adopted the Common Core.

What may change is the ways children are expected to work on their homework (refer to the earlier section, "Examining the Standards for Mathematical Practice" in this chapter for more details). Teachers may ask their students to practice something they worked on in class, but it may look unfamiliar to you. Productive ways of helping children with their homework are the same, though.

Don’t do the homework for your child. Help your child clarify her thinking and identify what she knows and doesn’t know. Monitor the difficulty level to make sure your child has interesting and challenging work, but not work that is far beyond her present abilities. Keep in touch with her teacher if things are out of balance so that you can work together for your child’s benefit.

In the heat of the moment, though, you can easily lose sight of the big picture. So here are three simple tips for productive involvement with math homework. See Chapter 4 for more tips as well as some information about specific homework assignments that have become famous on social media:

- **Ask “How do you know?**” This question forces students to think about their own thinking, which is an important part of making that thinking better.
- **Wait for a response.** Ten or 15 seconds seems like a long time to sit silently when *you* know the answer, but it’s not long at all to the person trying to figure the answer out.
- **Share a strategy.** After your child explains her thinking, talk about your own. If you want your child to engage with math homework, you can model it by talking about how *you* think about these problems.

Chapter 2

Looking at Math Teaching Then and Now

In This Chapter

- Comprehending the history of reform in math education
- Understanding the role of testing and accountability in the development of the Common Core

The Common Core State Standards for mathematics are a sequence of math concepts and skills that students should learn in kindergarten through 12th grade. But these standards didn't just drop out of the sky like the tablets upon which the Ten Commandments were written. These standards have a history. Knowing a little bit about this history can help you understand why the standards are as they are and exactly what problems the standards are purported to solve.

In this chapter, I give you a whirlwind tour of the last 100 years (or so) of math education in the United States so you can grasp why Common Core is here today.

Setting Goals for the 1900s

In 1892, the Committee of Ten met with the charge of making reform recommendations for the structure and content of secondary education in the United States. At the time, Germany, Britain, and France were seen as the major international competitors against which to compare US schools and achievement.

This question of international competitiveness is frequently the concern in education reform initiatives (see the sections “Competing Globally with Advanced Math and Science” and “Reaching Consensus with the Common Core” later in this chapter for specific reforms).

This committee, established by the National Education Association (NEA), put in place a structure for the high school curriculum that continues to predominate today — algebra in ninth grade, geometry in tenth grade, algebra 2 in 11th grade, and trigonometry or more advanced algebra in 12th grade.

With the exception of some initiatives that have sought to place eighth graders in algebra, some districts that view calculus in 12th grade as an important goal and some other tinkering around the edges, very little has changed about the structure of high school mathematics in the 130 years since the Committee of Ten produced its report.

Nonetheless, education reform initiatives have continued, and the question of international competitiveness is frequently the concern. Only the players have changed. The basic game of comparing the United States internationally to other systems of education remains the same.

Competing Globally with Advanced Math and Science

In 1957, the Soviet Union launched Sputnik — the first man-made satellite. This launch was a symbolic victory for the Soviet Union. It also was an event that sparked a great deal of concern about whether the United States had the scientific and mathematical infrastructure to be competitive in the so-called Space Race. As with both earlier reforms and later ones, international comparison was the catalyst for action.

One of the primary concerns was that the United States wasn't adequately preparing a generation of advanced research scientists and mathematicians for the work of outpacing the Soviets in space and defense. As is often the case, the nation looked to the public schools to solve this societal problem.

As one part of the effort to address the perceived lack of math and science research capacity, the National Science Foundation funded curriculum writing in mathematics — most notably through the School Mathematics Study Group. The writers on this project were primarily research mathematicians at institutions such as Yale University and Stanford University. These mathematicians set out to write the math curriculum they wished they had been offered as K–12 students. The resulting texts focused on the abstract foundations of mathematics — set theory, functions, formal logic, and so on. The collection of ideas in these texts became popularly known as *New Math*.

The important thing to know about the New Math textbooks is that their purpose was to better prepare the students who were supposed to go on to be the nation’s mathematical and scientific elite. By contrast, later reforms (see the section “Rethinking Math Teaching in the Age of Information” in this chapter) were based on an interest in raising the mathematical achievement of the general population of students.

Eventually, the New Math reforms failed as a result of public distaste for the unfamiliar ideas coupled with a teaching corps that hadn’t been adequately prepared to teach these ideas. Whether the programs would have been effective in an ideal situation is unclear, but in the messy world of American schools, they were a failure. The School Mathematics Study Group closed up shop in the 1970s, and by this time, few of the textbooks were still in use in the United States.

Returning to Basics

The 1970s were characterized by a call to get back to basics. The prevailing mood was that earlier reform efforts that had focused on preparing advanced mathematicians and research scientists had left out large numbers of students by inadequately preparing them in arithmetic and basic algebra. The feeling was that students had been taught the foundations of mathematics, but few of them could actually *do* any mathematics.

The popular argument of the time was that mathematics is a subject that builds from simple concepts to more advanced ones in a linear way and that the press to focus on advanced mathematical ideas throughout the public school curriculum rejected this basic truth. Step-by-step development of skills, with mastery at each stage before moving on to the next one, became the rule of the day.

Extreme versions of the back-to-basics perspective presented math as a disconnected series of facts. The job of teaching math — in this perspective — was to elicit the correct response to each stimulus. *Two plus three* should make a child say *five*, and *three plus five* should make a child say *eight*.

The 1970s was the era of timed math tests, a practice that is still common in American math education. In a timed math test, students may have had to write all of the multiplication facts involving 9 in one minute with the facts out of order — so 9 × 2, 9 × 7, 9 × 1, and so on. Students who mastered their nines times tables this way would move on to the tens times tables and so on. The key to a timed test is that it doesn't allow time to think: The goal is memorization.

Later reforms were based on different ideas about how children learn mathematics, as I discuss in the next section.

Teaching Math in the Info Age

In 1989, after quite a few years of discussion and work, the National Council of Teachers of Mathematics (NCTM) released the *Curriculum and Evaluation Standards for School Mathematics*, commonly referred to as the *NCTM Standards.* This document was controversial from the get-go, but it was notable for two reasons:

- It presented a comprehensive view of the contemporary and future landscape of math teaching.
- A professional organization of teachers, rather than a government entity, produced it.

A prominent feature of the NCTM Standards was a call for reconsidering the role of mathematics education in the era of computational technology. By 1989 people had been able to carry around calculators and had access to them for simple daily living tasks, such as balancing a checkbook, for a number of years. Also, the committee clearly could see that access to computational power would be greatly increasing in the ensuing years, which has certainly proven to be the case.

The NCTM Standards built the case that the mathematics taught in schools ought to be reconsidered in light of this ready availability of computing power. Much of the mathematics that students studied in school at the time was focused on training students to compute. The NCTM Standards offered a vision for how this should change in an era where computers would crunch numbers with unprecedented speed and economy.

The NCTM Standards laid out proposals for these changes in detail. They called for less paper-and-pencil computation, and more estimation and problem solving.

Many members of the public interpreted (rightly or wrongly) these changes to be calls to do away with teaching students computational skills. As with earlier reform efforts, this public pushback led to controversy and conflict. This time, the conflict had a name — the Math Wars.

The Math Wars were focused in particular on curriculum projects developed through funding in the 1990s by the National Science Foundation. Certain groups of