Frequently Asked Questions

Focused and Coherent

About the Everyday Mathematics® Program

The Everyday Mathematics program was developed by the University of Chicago School Mathematics Project in order to enable children in elementary grades to learn more mathematical content and become life-long mathematical thinkers. Its instructional design was carefully crafted to capitalize on student interest and maximize student learning by developing concepts and skills over time and in a wide variety of contexts. Its core author team at the University of Chicago School Mathematics Project collaborated on all grade levels to provide a focused, coherent, well-articulated Pre-K through Grade 6 curriculum.

As the Everyday Mathematics program enters its third decade of success, we at the University of Chicago School Mathematics Project and Wright Group/McGraw-Hill have been asked a number of questions about how the program aligns with Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics: A Quest for Coherence published by the National Council of Teachers of Mathematics (NCTM). This brief session of frequently asked questions, in conjunction with the Grade-Level Goals and correlations that follow, is an attempt to address these concerns.

The Everyday Mathematics curriculum embodies a well-articulated, coherent curriculum.

At the heart of the Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics: A Quest for Coherence (referred to here as simply “Focal Points”) is NCTM’s Curriculum Principle, which states, “A curriculum is more than a collection of activities: it must be coherent, focused on important mathematics, and well articulated across the grades” (p. 39). As shown by three decades of proven performance, the Everyday Mathematics curriculum embodies a well-articulated, coherent curriculum. In fact, no other mathematics program available has a set of goals as explicit and articulate as does the Everyday Mathematics program. The program’s Grade-Level Goals clearly indicate the focus of the curriculum at every point and the point at which closure is expected on each skill and concept. At the same time, no other program shows as clearly as the Everyday Mathematics program how mathematical content builds coherently across the grades. As we shall see in this booklet, that mathematical content overwhelmingly agrees with the topics suggested by the Focal Points.

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About the Focal Points

In 2006, NCTM published the Focal Points in an attempt to offer “a starting point in a dialogue on what is important at particular levels of instruction” (p. vii). The Focal Points are meant to “provide ideas that may kindle fruitful discussions among teacher leaders and teachers about areas to emphasize as they consider the developmental needs of their students and examine a year’s program of instruction” (p. 1).

By proposing a broad grade-by-grade outline of important mathematical concepts and skills, NCTM intended to spark conversation but did not aim to answer all questions about curriculum. Within the general framework of the Focal Points, there remain many issues to be resolved, including instructional approaches, the sequencing of topics within grades, teaching tools, and professional development. For many of these and other issues, the Focal Points defer to NCTM’s *Principles and Standards for School Mathematics*. Indeed, as the introduction to the Focal Points notes, *Principles and Standards* “remains the comprehensive reference on developing mathematical knowledge across the grades” (p. 1). Many of the remaining details of determining what makes a focused and coherent curriculum are left to the state and local level.

The following are some common questions about the Focal Points, the *Everyday Mathematics* program, and how the two relate, complete with our responses to them.

**Q Are the Focal Points a move to get “back to the basics”?**

**A** No. Basics (e.g., basic skills and basic facts) have always been important and always will be. The Focal Points provide educators with guidance regarding the focus of instruction at each grade level. The Focal Points are intended to take us forward into the future, not backward (or back into the past), with an eye on tackling the perceived “mile-wide, inch-deep” problem in U.S. schools.

The authors of the *Everyday Mathematics* program agree with the importance of coherence in curriculum design and the focus on the topics suggested in the Focal Points. The *Everyday Mathematics* program clearly articulates the topics of focus and places emphasis on these topics throughout the curriculum in a way that both engages students and is paced to fit how they learn and retain knowledge.
**Q** What does it mean for a curriculum to be “focused”?  

**A** The Focal Points are “important mathematical topics for each grade level” and “areas of instructional emphasis” (p. 5) Since the Focal Points are the mathematical concepts and skills to be emphasized, one must first take a holistic look at a curriculum to gauge if the Focal Points are truly being emphasized for each grade. That is, one must ask, “Does the curriculum spend a significant portion of time on these key topics?” Former NCTM president Skip Fennell specifically addressed this question in his 2007 talk “Focal Points—Where We Are, and What’s Next?” when he said,

“The purpose of the focal points is to ensure direct attention, or focus, so that what is taught can be covered thoroughly and understood deeply, with continuous engagement in problem solving, reasoning and proof, communication, connections, and related representations. In all candor, using the focal points calls for more than completing the match game of checking off topics in an existing curriculum.”

Being focused requires emphasizing topics enough so they are treated in-depth in such a way that gives continuous attention to the five Process Standards in *Principles and Standards*: problem solving, communication, representations, reasoning, and making connections. In the *Everyday Mathematics* program, topics of focus are outlined in the Program Goals and the Grade-Level Goals; these mathematical ideas are taught in-depth and revisited periodically over time with constant awareness of the Process Standards to help ensure long-term retention and, ultimately, mastery.

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**Q** Do the Focal Points call for the mastery of specific topics in order to move on?  

**A** No, they do not. Some people think “focus” means that students stay on one topic for a large number of consecutive class periods and then move to another topic assuming mastery has been achieved. You will not find this approach advocated in the Focal Points. In fact, such an approach, though common in many textbooks, is not supported by research on people’s learning methods. That research has shown that “massing” instruction and practice is less effective than spreading it out over time.

NCTM explicitly states that the Focal Points are not mastery objectives, and no instructional approach or topic sequencing is recommended (p. 5). The Focal Points are suggestions regarding what to stress in each grade; they are “not . . . a list of objectives for students to master” (p. 10). An effective curriculum should contain mastery objectives—as the *Everyday Mathematics* curriculum does—but the Focal Points are not meant to be used as such.
There are only a few Focal Points per grade. Are these supposed to make up the whole curriculum?

No. There is a common misconception that the Focal Points provide a complete list of mathematical topics for each grade. That is not true. As former NCTM President, Skip Fennell, stated:

“The next issue is one I often mention during focal points sessions. Are the focal points within a grade the entire curriculum for that particular grade? Absolutely not. You may decide to establish work with data charts and data analysis as expectations. And understandings of time and money can certainly be included as expectations in the primary grades. These are perfectly appropriate as expectations, but we wouldn’t define them as focal points.”

Should I cover only the Focal Points during the year and leave out everything else?

No. The notion that mathematics not specifically mentioned in the Focal Points can simply be omitted from curricula is false and provides a disservice for students. The complete removal of topics based solely on their omission from the Focal Points deprives curricula of valuable opportunities and can result in problems with cross-grade continuity of topics. Indeed, there are other important parts to a curriculum than the focal points. For example, the topic of money, which is not mentioned in the Focal Points, can provide a useful context in which to introduce and learn many number and computation concepts.

“Are the focal points within a grade the entire curriculum for that particular grade? Absolutely not.”

–Skip Fennell, former NCTM President
If I cover topics other than the Focal Points at a certain grade level, is my curriculum guilty of being “a mile wide and an inch deep”?

A Not necessarily. The “mile-wide, inch-deep” charge pertains to the overall scope of the curriculum and has little relevance when the view is restricted to individual grade levels. If your curriculum focuses on important math topics—like the ones laid out by the Focal Points—in a way that allows for in-depth coverage, then the “mile-wide, inch-deep” label should not apply. Obviously, to determine if your curriculum achieves focus, grade-level mastery objectives are needed, but these need not completely agree with the Focal Points at every grade level. Bear in mind that the Focal Points do not recommend how topics should be presented. So, at a particular grade level, your curriculum could have additional objectives that lay the foundation for deeper concepts in future grades or objectives for reviewing and enriching topics from previous grades.

Are the Focal Points final or could they possibly change?

A While considerable thought has been given to the Focal Points, the document was meant as a starting point to a larger discussion. This means topics are subject to possible change. NCTM has stated this numerous times, including in the Focal Points Q&A section of their Web site:

“Curriculum focal points are designed to promote discussion and dialogue about important mathematics. It is hoped that the focal points impact curriculum revision at the state and local level. However, that discussion and dialogue certainly may push focal point topics or elements of the focal points to a lower or higher grade level.”
The *Everyday Mathematics* Program’s Alignment with the Focal Points

**Q** Does the *Everyday Mathematics* curriculum treat the Focal Points topics in-depth at each grade?

**A** Yes. The *Everyday Mathematics* curriculum is research-based and has been developed and refined over more than two decades. Even though the core of the *Everyday Mathematics* curriculum predates the Focal Points, the two match well. (See the correlation of the Focal Points to Grade-level Goals on pages 25–63.) That the key topics identified in the Focal Points should align well with the *Everyday Mathematics* Grade-Level Goals is not surprising for two reasons. First, both the Focal Points and the *Everyday Mathematics* curriculum rely upon the same body of research in mathematics education; and second, both also rely on NCTM’s *Principles and Standards*:

> “Principles and Standards remains the definitive reference on the development of mathematical content and processes across the grades.” (p. 8)

**Q** How did the authors ensure that the *Everyday Mathematics* curriculum is “focused” and “coherent”?

**A** The key to the focus and coherence of the *Everyday Mathematics* curriculum is its goal structure. The *Everyday Mathematics* curriculum has 15 Program Goals, which are the same for all grades. These Program Goals are the overarching aims that weave the curriculum together across grade levels. The grade-level benchmarks for achieving the Program Goals are articulated in the Grade-Level Goals. These are the big ideas of each grade, covered in-depth, which all students are expected to master. The Grade-Level Goals progress logically across grades to create a coherent curriculum focused on achieving the 15 goals of the program. Refer to the tables on pages 10–24 for details on how the *Everyday Mathematics* Grade-Level Goals progress across grades.
Q The Focal Points say to avoid “inefficient reteaching.” How is reteaching in the *Everyday Mathematics* curriculum different?

A Here is what the Focal Points say about reteaching:

“The decision to organize instruction around focal points assumes that the learning of mathematics is cumulative, with work in the later grades building on and deepening what students have learned in the earlier grades, without repetitious and inefficient reteaching.” (p. 5)

The *Everyday Mathematics* curriculum avoids “inefficient reteaching.” Instead, *Everyday Mathematics* students are given cumulative practice and review distributed throughout the curriculum. This method of cumulative distributed practice is based on a wealth of research on how people learn and retain knowledge.

The *Everyday Mathematics* Grade-Level Goals clearly articulate this cumulative learning. Distinctly defined benchmarks are met every year. The progression of content is effectively paced in the *Everyday Mathematics* curriculum to meet the Grade-Level Goals—which are, in turn, paced to meet the Program Goals.

Q There are only a few Focal Points for each grade. Why does each grade of the *Everyday Mathematics* program have many more Grade-Level Goals?

A There are several reasons for the difference:

◆ The first is discrepancy in grain size. The language of the Focal Points is often broad and inclusive. In contrast, the language of the Grade-Level Goals is quite narrow and precise. As a result, multiple Grade-Level Goals can match to one Focal Point. The correlation on pages 25–63 shows the details of how the two match up.

◆ The second is pacing. In some grade levels of the *Everyday Mathematics* program, there is foundational work of a few topics that do not appear as Focal Points until later (see the next question on fractions). There are also Grade-Level Goals detailing review work from an earlier grade’s Focal Point. This difference is not in the focus of the curriculum, but in the pacing. The *Everyday Mathematics* curriculum teaches the Focal Point topics in-depth and to mastery. However, the program is paced so that new ideas are introduced and developed gradually, in-depth, in a coherent way over time.
Q Fractions appear as early as Kindergarten in the Everyday Mathematics curriculum but first appear in the Focal Points in Grade 3. Why are fractions introduced so early?

A In both the Everyday Mathematics curriculum and in the Focal Points, fractions are a focus of instruction in grade 3. In the Everyday Mathematics curriculum, the concept of “fraction” is introduced informally at first in kindergarten; then, students develop deeper understanding of progressively more sophisticated fraction concepts in first and second grades, and are able to read, write, and model fractions by third grade. So, the third-grade Everyday Mathematics mastery objective (Grade-Level Goal) matches the focal point at grade 3.

Part of this pacing is built on research findings that say children can comprehend fraction concepts at a much younger age than previously expected, a finding that Principles and Standards recognized by including significant work with fractions in its recommendations for prekindergarten through grade 2. Topics in the Everyday Mathematics curriculum are carefully introduced in earlier grades in preparation to build a strong foundation for mastery at a later grade. This introductory work is woven into the curriculum in a way that doesn’t hinder development of on-grade mastery of other topics. This is a hallmark of the Everyday Mathematics program, and it is one of the reasons why Everyday Mathematics students retain what they learn and consistently earn high test scores.

Q The Everyday Mathematics curriculum has lessons on probability throughout grades K–6, but the Focal Points don’t mention the topic until grade 7. Why is there such a difference in the two?

A Despite their absence from the Focal Points for elementary grades, topics in probability are reasonable expectations for earlier grades. In fact, NCTM treats probability extensively in the Prekindergarten–2 and 3–5 grade bands in their Principles and Standards—which is the definitive reference on the development of mathematical content. It was previously mentioned that the Focal Points are in no way final, so probability may well be a topic that needs to be discussed further by the mathematics education community.

However, even within the context of the Focal Points, problems with probability provide an excellent application of fraction concepts. By teaching probability, you are providing students not only with fraction practice but also with exposure to a higher level of analytic reasoning gained by meeting the Process Standards from Principles and Standards.
Q The Focal Points require exposure to the standard algorithms for the four arithmetic operations. What does the Everyday Mathematics curriculum do with the standard algorithms?

A Regarding exposure to the standard algorithms, NCTM has further clarified their intent in the Focal Points Q&A section of their Web site:

“Note that the focal point suggests efficient procedures, including the standard algorithm—meaning including, not exclusively, access to the standard algorithm. Students need to understand how and why algorithms work. The standard algorithms are historically validated mathematically efficient procedures. But we want children to understand how these procedures work, which means, in this case, having classroom experience with place value, and the important properties (e.g. commutative and associative) which influence how we add and subtract.”

Based on three decades of validated student achievement†, students using the Everyday Mathematics program demonstrate superior proficiency using many algorithmic methods, including traditional forms. We have found that students are most successful when they understand how an algorithm works (as opposed to merely memorizing rote steps without understanding them). However, given the wide consensus that proficiency with U.S. traditional algorithms is an important expectation in U.S. culture, effective fall 2008, they will become more prominent in the Everyday Mathematics program.

We hope these questions and answers have been helpful in navigating the dynamic waters of mathematics education. Over the three decades of its existence, the Everyday Mathematics program has continuously sought feedback from teachers, administrators, and parents to find ways to improve the curriculum based on what works in the actual classroom, and we certainly look forward to continuing that dialog as the discussion turns to the Focal Points.

†See www.everydaymathsuccess.com for various student achievement data.