

# *Symphony Math*<sup>®</sup>

Foundational Numeracy Educational Software



# Preventing Math Learning Difficulties

Cognitive research has shown that some students at risk for math failure have not developed a sufficient conceptual foundation in number sense and math operations. The hierarchical progression of math concepts requires that students develop a strong mathematical foundation to ensure their future success. The four modules of *Symphony Math*<sup>®</sup> focus on the most fundamental concepts that are essential for understanding algebra, time, money, measurement and statistics. *Symphony Math*<sup>®</sup> fosters learning for students at all levels of the three-tier model.

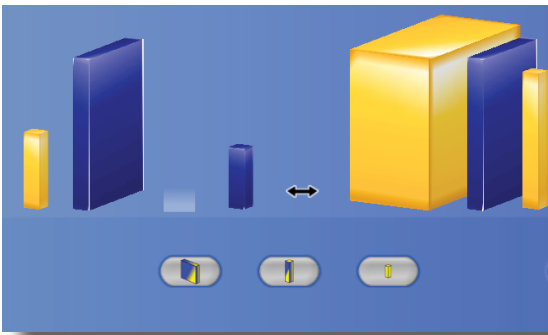
The *Symphony Math*<sup>®</sup> branching system is designed to adapt to each student's needs with appropriate interventions:

- ▶ **Tier 1**-Students develop their knowledge of critical mathematical concepts as they progress at grade level.
- ▶ **Tier 2**-Students gain extra practice and work at their own pace as the program emphasizes fundamental skills.
- ▶ **Tier 3**-Students work intensively to improve their understanding of targeted concepts to ensure their progress.

	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	
<b>Tier 3</b> Intensive Level					Multiplication & Division		20 Minutes 5 times / week
				Place Value			
			Addition & Subtraction				
		Quantity					
<b>Tier 2</b> Strategic Level				Multiplication & Division			15-20 Minutes 4 times / week
			Place Value				
			Addition & Subtraction				
		Quantity					
<b>Tier 1</b> Benchmark Level			Multiplication & Division				15 Minutes 3 times / week
			Place Value				
		Addition & Subtraction					
	Quantity						



# Teaching with the Concrete . . . . . . To Master the Abstract

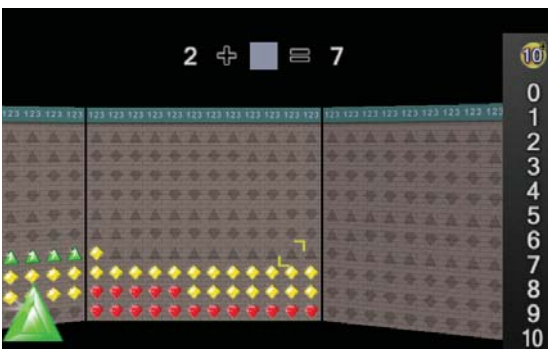
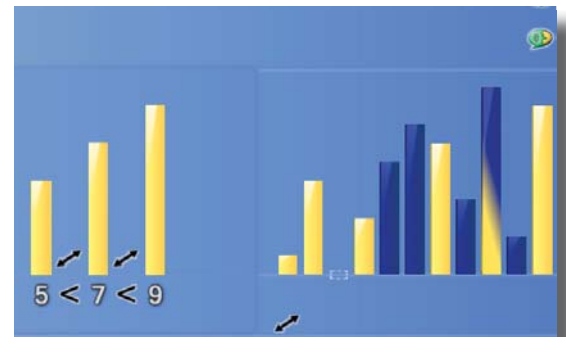


## Learning with Manipulatives

Students use on-screen manipulatives to solve problems. The manipulatives provide a concrete representation of mathematical concepts and number relationships; students readily grasp these concepts, because the manipulatives illustrate them in a tangible way. This solidifies the mental model and inspires learning.

## Understanding Symbols

The program helps students to understand the meaning of symbols by associating them with manipulatives. Students create number sentences based on the manipulatives and arrange them accordingly. This enables students to correlate the concepts with the abstract notation symbols used to represent them.

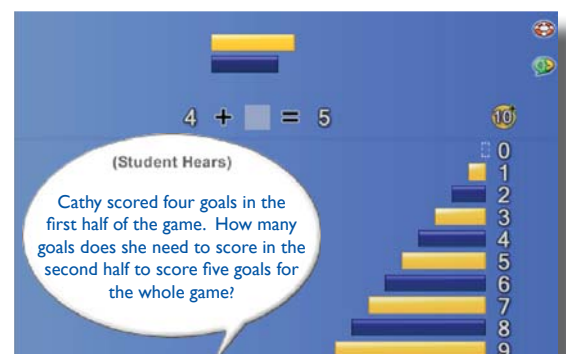


## Mastering Number Facts

Immediate recall of number relationships can be achieved when students develop a solid conceptual understanding of their underlying concepts. Addition, subtraction, multiplication and division facts are practiced in timed activities, and students are challenged to solve problems correctly in five seconds or less.

## Solving Word Problems

Students solve word problems and apply the same concepts and skills they mastered earlier in the program. The word problems model real-world situations, emphasize the relationships between manipulatives and symbols and clarify the relationships between them.



# Developing Problem-Solving Skills

*Symphony Math*<sup>®</sup> is an educational software program that is designed to improve problem-solving skills while developing a strong mathematical foundation. Problem solving is one of the most difficult skills for students to learn, and many students try to memorize the curriculum without understanding critical concepts. When challenged with problem solving on standardized tests, these students often struggle.

*Symphony Math*<sup>®</sup> actively challenges students to solve problems while they make connections between principal concepts. They consolidate their knowledge through time-based fluency activities that help them to master immediate recall of math facts. Word problems take learning to the next level by challenging students to apply their skills to real-world situations. The interactive branching system enables students to progress at their own pace and ensures that they master foundational concepts before progressing to more advanced skills.

*Symphony Math*<sup>®</sup> supports the implementation of the National Council of Teachers of Mathematics' *Curriculum Focal Points*. The Symphony program addresses some of the most significant mathematical concepts and skills identified by the NCTM for each year of kindergarten through grade three.

## Scope & Sequence

### Kindergarten

- ▶ Use numerals to represent quantities & solve quantitative problems
- ▶ Create a specific quantity with manipulatives
- ▶ Model simple joining and separating
- ▶ Count the numbers in combined sets
- ▶ Order several objects according to height

### Grade One

- ▶ Add and subtract whole numbers
- ▶ Model "part-whole," "adding to," "taking away from," and "comparing"
- ▶ Understand commutativity and associativity
- ▶ Relate addition and subtraction as inverse operations
- ▶ Compare and order numbers to 100
- ▶ Study numbers between 10 and 100 and manipulate them in terms of tens and ones

### Grade Two

- ▶ Practice addition and subtraction fluency
- ▶ Understand equal partitioning
- ▶ Apply the base-ten numeration system and place-value concepts to 1,000
- ▶ Manipulate multi-digit numbers and place value
- ▶ Compose and decompose multi-digit numbers

### Grade Three

- ▶ Represent multiplication with manipulatives
- ▶ Represent division with manipulatives
- ▶ Apply the commutative property of multiplication
- ▶ Connect multiplication to division



# Formative Assessment

*Symphony Math*<sup>®</sup> provides detailed data reports for each student. The reports display on a Web browser with an active internet connection.

## Usage

Provides an overview of each student's use of *Symphony Math*<sup>®</sup> including:

- ▶ Days of use
- ▶ Average time of use per session
- ▶ Total use time
- ▶ Percentage completed
- ▶ Rate of progress

## Progress

Offers a detailed analysis of students' progress in the program by generating:

- ▶ Proficiency scores for each core concept addressed within the program
- ▶ Line graphs which show progress over time

## Daily Performance

Summarizes a student's progress on a session-by-session basis including:

- ▶ Session date & start time
- ▶ Time on task for each session
- ▶ Beginning and end-of-session proficiency

## Number Relationships

Displays proficiency with number relationships addressed in the program including:

- ▶ Easy-to-read, color-coded layout
- ▶ Number relationships that are organized by difficulty

## Concepts

Displays level of mastery of key concepts organized by grade level:

- ▶ Clearly reveals where each student is in the program relative to the NCTM *Curriculum Focal Points* framework

The screenshots display the following reports:

- Symphony Usage Report - Mozilla Firefox:** Shows a table of student usage data for the 'School' group. The table includes columns for Student, Software Version, Start Date, Last Use, Days Used, Avg. Daily Use, Total Time, % Completed, and Rate of Progress. Students listed include Burns, Andrew; Busienne, Barbara; Campos, Rose; Conlin, Caylea; and Conlin, Chet.
- Symphony Student Progress Report - Mozilla Firefox:** Shows a 'Student Progress Report' for 'Campos, Rose'. It includes a 'Proficiency' table with columns for Concept, Manipulatives, Manipulatives and Symbols, Symbols, Auditory Statements, and Story Problems. Concepts listed include Equals, Greater, Less, Not Equals, Not Greater, Not Less, Addition, Missing Addend, Subtraction, and Missing Subtrahend.
- Symphony Student Daily Performance Report - Mozilla Firefox:** Shows a 'Student Daily Performance Report' for 'Rose Campos'. It includes a table with columns for Concept, Activity, Problems Solved, Overall Proficiency, and Session Proficiency. Sessions listed include 2007-06-28, 2007-06-29, and 2007-07-05.
- Symphony Student Number Relationships Report - Mozilla Firefox:** Shows a 'Number Relationship Report - Addition - Auditory Statements' for 'David Corda'. It includes a table with columns for Rule, Mastered (91-100%), Developing (61-90%), Needs Improvement (0-60%), and Not Encountered.
- Symphony Concepts Report - Mozilla Firefox:** Shows a 'Concepts Report' for 'School'. It includes a table with columns for Concept, Student, and Grade One/Two/Three/Grade 1/2/3.

# Symphony Math<sup>®</sup>

“ I have found that the program has the right balance of instructional strategies. Our students are becoming more proficient in the foundational skills. The sequencing is outstanding, the repetition assists in mastery and students cannot fool the computer. So far, outstanding! ”

-- Steve Fenton, Principal  
Pronghorn Elementary School Gillette, WY

“ The program’s ability to adapt to the learning style of each child is impressive. Students are motivated to use the software as they watch themselves progress in their learning. They show an improved interest in math and a growing knowledge of number relationships! ”

-- Andra Munger, Ph.D.  
Director, Cognitive Development Center of Lexington, MA

“ I have been excited by the gains my students have made. The kindergarten students really understand the basic concepts. The program allows the student to progress at his own developmental rate. This helps ensure that each student has mastered the foundational concepts before moving on. ”

-- Brent Walker, Principal, Westside Elementary School, Powell, WY

## CURRICULUM

- ▶ Educational software for foundational numeracy
- ▶ Designed to develop important mathematical concepts
- ▶ Immediate visual and auditory recall of number relationships
- ▶ Four modules: Quantity, Addition & Subtraction, Multiplication & Division, and Place Value
- ▶ Word problems
- ▶ Instructions in English and Spanish
- ▶ Students gain independence through individualized practice

## TECHNOLOGY

- ▶ Internet delivery
- ▶ All student data is stored and managed by *Symphony Learning*
- ▶ No school server is required
- ▶ Students can use the program at home and at school
- ▶ Automatic software updates & upgrades are included with the Symphony Support Plan
- ▶ Detailed data tracking and reporting features
- ▶ Student reports are generated and viewed from a Web browser

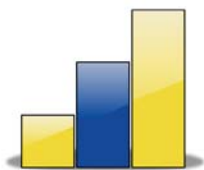
## REQUIREMENTS



- Windows 2000, ME, XP
- 128 MB RAM
- 16 MB Video acceleration
- 15 MB free hard-drive space
- Active internet connection



- Mac OS X version 10.2 +
- 128 MB RAM
- 16 MB Video acceleration
- 15 MB free hard-drive space
- Active internet connection



**SYMPHONY**  
*Learning*<sup>®</sup>

For more information, contact your Symphony Learning Sales Representative:

Problem Solving for Students. Solving Problems for Educators.™