



FASTT Math Next Generation


Aligns to 21st Century Community Learning Centers

The purpose of the 21st Century Community Learning Centers program is to support the creation of community learning centers that provide academic enrichment opportunities during non-school hours for children, particularly students who attend high-poverty and low-performing schools. The program helps students meet state and local standards in core academic subjects, such as reading and math; offers students a broad array of enrichment activities that can complement their regular academic programs; and offers literacy and other educational services to the families of participating children. The following chart shows how **FASTT Math Next Generation** can support a 21st CCLC program. The criteria are drawn from the Federal 21st CCLC Non-Regulatory Guidance, posted at:

<http://www2.ed.gov/programs/21stcclc/legislation.html>

Components of a 21CCLC Program	FASTT Math Next Generation
<p>Activities that provide remedial education activities, including additional assistance to students to allow the students to improve their academic achievement</p>	<p>FASTT Math Next Generation is an efficient, personalized technology program, in English and Spanish, to help students in grades 2-9+ achieve math fact fluency in just 10 minutes a day. Through the identification and remediation process provided by <i>FASTT Math Next Generation</i>, students develop the understanding and skills necessary to automatically recall operations with whole numbers 0-12 for addition, subtraction, multiplication, and division. The program accelerates and fosters the developmental progressions leading to fluency as described by mathematics education researchers. As a result of the development of math fact fluency, students create the number foundation necessary for performing higher-order mathematics.</p> <p><i>FASTT Math Next Generation</i> builds students' abilities to retrieve basic math facts from memory, both accurately and fluently. The program begins with a computer-based assessment that presents all of the number combinations in an operation and records the amount of time that the student takes to evaluate each one correctly. Following the initial placement assessment, <i>FASTT Math Next Generation</i> constructs a fact grid that allows the student and teacher to visually see the fluent, <i>Fast Facts</i> and those that the student answered slowly or incorrectly—the <i>Study Facts</i>. Only after a user is consistently able to retrieve the answer to a target fact within the controlled response time is that fact added to the student's set of drill and practice facts.</p> <p><u>Operations & Algebraic Thinking</u></p> <p>To meet State Standards, <i>FASTT Math Next Generation</i> provides practice for accuracy and speed in addition and subtraction facts within 0–24 and multiplication and division facts within 0–144. The program also employs the research-validated FASTT algorithm to build fact fluency and reduce recall time to 0.8 seconds or less. Further, the program extends beyond fact fluency to more rigorous practice with <i>STRETCH-To-Go™</i>, including inverse relationships, recognizing unknowns, multi-digit operations, associative and commutative properties, number composition, and fact families.</p> <p style="text-align: right;">CONTINUED</p>

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<p>Activities that provide remedial education activities, including additional assistance to students to allow the students to improve their academic achievement <i>Continued</i></p>	<p><u>Number & Operations</u></p> <p>State Standards expect students to understand place value for single and multi-digit operations with whole numbers and decimals. <i>FASTT Math Next Generation</i> builds conceptual understanding of single-digit operations through quantity and mental math strategies using lessons from the Teacher’s Guide. The program ensures every student is appropriately challenged with adaptive instruction that creates an individualized learning progression for each student based on performance. Additionally, the program utilizes arrays to provide visual representations of students non-fluent facts, introduces fact pairs (such as 3×7 and 7×3) simultaneously, and uses visual models to support students in recognizing the pattern of the commutative property. <i>FASTT Math Next Generation</i> develops math fact fluency in addition, subtraction, multiplication, and division as a necessary base for extending knowledge into higher-order mathematics.</p> <p><u>The Number System</u></p> <p>State Standards require students to apply and extend previous understandings of operations to fractions and compute fluently with multi-digit numbers, as well as find common factors and multiples. To meet these standards, <i>FASTT Math Next Generation</i> promotes retention of fluent facts for multi-digit computations through 18 engaging and motivating games. Also, the program supports the transfer of learning to paper and pencil with customized practice sheets, and provides multimodal presentation of math facts—visual, auditory, and kinesthetic—laying the foundation for finding common factors and multiples.</p> <p><u>Expressions & Equations</u></p> <p>State Standards expect students to solve real-life and mathematical problems using numerical expressions. Students’ understanding of arithmetic should extend to algebraic expressions. To meet these standards, <i>FASTT Math Next Generation</i> provides adaptive lessons and activities to develop automaticity. In addition, the program creates efficient strategies for solving problems, expressions, and linear equations by developing rapid retrieval of math facts.</p>
<p>Programs that are based on scientifically based research that provides evidence that the program will help students meet state and local achievement standards</p>	<p>Developed by Dr. Ted Hasselbring, <i>FASTT Math Next Generation</i> employs the research-validated FASTT algorithm (Fluency and Automaticity through Systematic Teaching with Technology) to build fact fluency—retrieval of facts with accuracy, automaticity, and understanding. Designed to carefully manage cognitive load, the FASTT algorithm uses the expanding recall model to help students move facts from working memory to long-term memory by strategically interspersing new facts with fluent facts, controlling response time, and providing instant corrective feedback.</p> <p style="text-align: right;">CONTINUED</p>

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<p>Programs that are based on scientifically based research that provides evidence that the program will help students meet state and local achievement standards <i>Continued</i></p>	<p><i>FASTT Math Next Generation</i> is informed by an extensive body of empirical and theoretical research on best practices for developing math fact fluency. The <i>FASTT Math Next Generation</i> Research Foundation Paper provides descriptions of relevant mathematics education, educational psychology, and instructional design research alongside descriptions of how the research foundations have been translated into the program design and curriculum.</p> <p> To download a copy of the <i>FASTT Math Next Generation</i> Research Foundation Paper, please see: http://teacher.scholastic.com/math-fact-fluency/fastt-math-next-generation/research</p>
<p>Academic activities aligned with the school’s curriculum in the core subject areas</p>	<p>State Standards call for all students to be fast and accurate with math facts in all operations by the end of Grade 3. Students are also expected to develop number sense by understanding relationships between numbers within operations. <i>FASTT Math Next Generation</i> provides the most efficient, personalized path to fact fluency for every student; the program also extends beyond math fact fluency practice into more rigorous Standards.</p> <p><u>Fluency with Math Facts</u> <i>FASTT Math Next Generation</i> assesses each student’s initial fact fluency and provides 10-minute daily sessions of computer-based adaptive instruction in English and Spanish. The software provides practice for accuracy and speed in addition and subtraction facts within 0-24 and multiplication and division facts within 0-144. The program also extends beyond fact fluency to more rigorous practice aligned to State Standards, including inverse relationships, recognizing unknowns, multi-digit operations, associative and commutative properties, number composition, and fact families.</p> <p><u>Conceptual Understanding</u> <i>FASTT Math Next Generation</i> builds conceptual understanding of single-digit operations through quantity and mental math strategies using lessons from the Teacher’s Guide. The software develops math fact fluency—through expanding recall—in all four operations, laying foundations for higher-order mathematics with multi-digit whole numbers and arithmetic.</p> <p><u>Visual Representation</u> <i>FASTT Math Next Generation</i> utilizes arrays to provide visual representations of students’ non-fluent facts. The software introduces fact pairs, such as 3 x 7 and 7 x 3, simultaneously and uses visual models to support students in recognizing the pattern of the commutative property. The program also provides multimodal presentation of math facts—visual, auditory, and kinesthetic—laying the foundation for finding common factors and multiples.</p> <p><u>Expressions & Equations</u> <i>FASTT Math Next Generation</i> provides adaptive lessons and activities to develop automaticity, improving students’ ability to solve real-life and mathematical problems. The software creates efficient strategies for solving problems, expressions, and linear equations by developing rapid retrieval of math facts.</p>

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<p>Technology education programs</p>	<p><i>FASTT Math Next Generation</i> provides an individualized path for each student through differentiated scaffolded practice. After students take the Placement Assessment, they begin using the Instructional Software to learn their <i>Study Facts</i> and increase the speed at which they recall their <i>Focus</i> and <i>Fast Facts</i>. <i>Learn New Facts</i> and <i>Review</i> are instructional activities in which students engage throughout the program. Each activity follows a four-step process to help students create a memory association.</p> <p><u>Step 1—Fact Selection & Presentation</u></p> <p>The Software selects a fact pair, for example 4 x 6 and 6 x 4, from the student’s Fact Grid. The narrator reads the facts aloud and asks the student to repeat them. The student builds a memory association between the problem and the answer as a link between the visual and oral solution to the math fact is established.</p> <p><u>Step 2—Fact Model</u></p> <p>The Fact Model provides a visual model to help build a conceptual understanding of the fact’s solution. This helps the student understand what the fact represents numerically on a ten-grid, and how it relates to other facts.</p> <p><u>Step 3—Fact Typing</u></p> <p>The Software asks the student to type each presented pair of commutative facts and the answer from memory. The program automatically presents the fact pair again to refresh the student’s memory if he or she experiences challenges remembering the fact and answer.</p> <p><u>Step 4—Practice</u></p> <p>The fact pair is presented in the expanding recall model to solidify the memory relationship and develop the student’s quick recall of the facts. Students are required to type the answer from memory.</p> <p>During the second part of every lesson, the student plays a Fluency Game. These games provide an engaging platform to increase the speed at which the student recalls learned facts. Students are required to play at least one Fluency Game during each session. The program presents a set of problems, 60 by default, with emphasis on those facts that were most recently learned—<i>Focus Facts</i> and <i>Fast Facts</i>. The <i>STRETCH-To-Go</i> environment includes six extended learning games that help students to understand inverse relationships, recognized unknowns, and apply mathematical properties.</p>
<p>Activities for limited English proficient students that emphasize language skills and academic achievement</p>	<p><i>FASTT Math Next Generation</i> includes many support strategies for English-Language Learners. The 1.25-seconds monitored response time can be lengthened to allow more time to respond. The number of problems presented during instruction can be reduced for students who need more time to absorb new information. The audio function can be turned on or off. Students can listen repeatedly to any instructions they may have missed. Problems can be spoken aloud in English and Spanish.</p>

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<p>Programs that provide assistance to students who have been truant, suspended, or expelled, to allow the students to improve their academic achievement</p>	<p>Not only does <i>FASTT Math Next Generation</i> use technology to individualize pacing and target instruction, it also promotes optimal learning and affective experiences in school mathematics. The rationale for <i>FASTT Math Next Generation</i> incorporates the power of technology to effectively promote students’ automaticity of basic math facts. As students develop automaticity with basic facts, their working memory frees up, allowing them to perform more complex mathematics. As students become more capable mathematically, their beliefs about themselves as doers of mathematics improve, which in turn continues to improve student performance. Therefore, individual engagement with <i>FASTT Math Next Generation</i> provides an environment that meets each student at his or her level of need, providing an opportunity to improve each one’s mathematical performance and mathematical dispositions.</p> <p>In addition, <i>FASTT Math Next Generation</i> leverages the power of technology to provide a gaming environment. These games allow students multiple opportunities to think strategically and gain additional practice with their learned number facts. The program software also allows for the production of reports and graphics depicting a student’s progress as a function of effort. The ability to view how one is improving by investing time and thought promotes a growth mindset. Enabling students to develop an understanding that investing effort leads to learning and “getting better at math” is clearly a primary way to improve students’ overall experiences in school mathematics.</p>
<p>Ongoing staff training for implementing the academic support and enrichment services</p>	<p><u><i>FASTT Math Next Generation</i> Implementation Training</u></p> <p>This training examines how <i>FASTT Math Next Generation</i> teaches automaticity and fluency and provides teachers with all the tools to successfully get started with the program. Participants learn how to implement the <i>FASTT Math Next Generation</i> instructional model, use report data to monitor progress and individualize instruction, and integrate <i>FASTT Math Next Generation</i> into the existing mathematics curriculum.</p> <p><u><i>FASTT Math Next Generation</i> Interactive Webinar</u></p> <p>In this interactive webinar, teachers, coaches, and administrators learn how to get started with <i>FASTT Math Next Generation</i>, including understanding the program’s instructional method and underlying research, using the Teacher Dashboard to monitor progress, and using data to differentiate instruction.</p> <p><u>In-Classroom Support</u>—RECOMMENDED, at an additional cost</p> <p>Scholastic consultants provide teachers with individualized support and focused strategies side-by-side in the classroom. They build relationships with teachers to support on-model implementation, classroom management, program monitoring, and data-driven instruction. A year-long customized plan of in-classroom visits provides teachers with in-person, individualized support and focused strategies for the classroom. For the best results, Scholastic recommends monthly visits for all teachers.</p>

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<p>Programs that promote parental involvement</p>	<p>A Parent Letter, available in English and Spanish, explains the goal of the <i>FASTT Math Next Generation</i> program, steps children will be completing as they learn, and ways to reinforce their learning at home. <i>STRETCH-To-Go</i> games can be accessed at home or anywhere with Internet access. Teachers can share with parents the Student Fact Grid report, which displays the student’s fluency status with all facts in the operation. Teachers can print Award Certificates as students complete different levels of the fact grid. The certificates can be shared with parents and used as examples of student achievement. Also, customized worksheets can be generated that students can bring home as part of the homework that parents can support.</p>
<p>Periodic evaluation of the academic progress of children participating in the 21st CCLC program</p>	<p>Students begin all four <i>FASTT Math Next Generation</i> operations with a Placement Assessment, which consists of two parts—a Typing Assessment and a Fact Assessment. Together, these assessments create a baseline of a student’s fact fluency in each operation. The Software determines fluency by subtracting the student’s typing speed from the time it takes the student to input the answer. A fact is considered fluent if the student can provide the correct answer in 0.8 seconds or less.</p> <p>The Instructional Software also includes periodic assessments to continuously monitor student progress. The first part of a student’s daily lesson may be an assessment. The following two types of assessments are presented at different points determined by a student’s instructional time in the software and his or her fact stats.</p> <ul style="list-style-type: none"> ▪ Mastery Assessment—Used to determine if the student is able to respond fluently to <i>Focus Facts</i>. If so, the facts become <i>Fast Facts</i>; if not, the facts remain <i>Focus Facts</i> and are presented again in the next Mastery Assessment. ▪ Challenge Assessment—Used to determine if the student is able to respond fluently to facts in the next level, even though these were non-fluent after the Placement Assessment. This accounts for facts the student may have learned outside the software. <p>The <i>Scholastic Achievement Manager</i> (SAM) captures performance data each time students use <i>FASTT Math Next Generation</i>. SAM organizes progress and usage data in easy-to-access data-rich reports. Teachers are able to run reports to view data for individual students, groups, or an entire class. The reports enable teachers to monitor students’ progress, target instruction, and share results with administrators and families.</p> <p>The Teacher Dashboard pulls key data from SAM to track student performance on the Instructional Software and <i>STRETCH-To-Go</i>. The Dashboard allows teachers to access Data Snapshots that show the most crucial student data metrics for implementation and Notifications that help monitor program usage, such as average Instructional Software time. The Reports Scheduler allows teachers to schedule reports automatically from SAM, and <i>Daily Quick Tips</i> enhance the daily instruction and program implementation.</p>

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<p>Coordination of Federal, State, and Local services and programs</p>	<p><i>FASTT Math Next Generation</i> can be integrated with funds from state, local, private, and other sources. The federal funding programs for which it qualifies include:</p> <ul style="list-style-type: none"> ▪ Title IA—Improving Basic Programs ▪ Title I—School Improvement Grants (SIG) ▪ Title I—Supplemental Education Services (SES) ▪ Title III—English Language Acquisition ▪ IDEA, Part B ▪ IDEA, <i>Response to Intervention</i> ▪ 21st Century Community Learning Centers (21CCLC) ▪ Race to the Top—District (RTT-D) ▪ Investing In Innovation (i3)