Do The Math

Aligns to Title I, Part A

The purpose of *Title I, Part A – Improving Basic Programs* is to ensure that children in high-poverty schools meet challenging State academic content and student achievement standards. These schools must develop a comprehensive plan to improve teaching and learning. The following chart shows how ***Do The Math*** can support a *Title I* program. The criteria are drawn from the Federal *Title I Final Rules and Regulations* posted at:

http://www.ed.gov/policy/elsec/reg/title1/fedregister.html

Key Criteria for Title I, Part A Funding	🕮 ***Do The Math***
1. Provide opportunities for all students to meet the State's proficient and advanced levels of student academic achievement, particularly in the areas of math, reading/language arts, and science	*Do The Math*, created by Marilyn Burns along with a team of *Math Solutions* Master Classroom Teachers, gives students who have fallen behind a chance to catch up and keep up. Focusing on numbers and operations—the cornerstone of elementary math education—*Do The Math* helps students in grades 2-8 build a solid foundation in computation, number sense, and problem solving for immediate and long-term learning. The program addresses the diverse needs of all students. Incorporating research-based instructional strategies to specifically meet the needs of students who struggle with math, the program helps students to gain necessary conceptual understanding of addition, subtraction, multiplication, division, and fractions. *Do The Math* consists of 12 modules that target addition and subtraction, multiplication, division, and fractions. Each module includes a series of thirty, 30-minute step-by-step lessons. The proven instructional strategies include: ▪ Well organized, manageable lessons that help students build a solid foundation of understanding ▪ Explicit, intentional instruction based on teaching for understanding ▪ Multiple strategies used for developing concepts and skills ▪ Four-phase pedagogy built on gradual release that prepares students for individual success ▪ Student interaction that deepens the connections students make to the skills and strategies ▪ Motivating practice that provides students the opportunity to strengthen and extend their learning ▪ Vocabulary instruction that helps students develop effective communication and understanding about math ▪ Ongoing assessment that allows teachers to differentiate instruction

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2. Address the needs of all students in the school, particularly the needs of low-achieving students and those at risk of not meeting the State's student academic standards	*Do The Math* is an intervention program for Grades 2-8 that can be used with any core math curriculum. The program is intended to help struggling students catch up and keep up with grade-level math skills and standards by helping students develop number sense, computation, and problem solving skills. The twelve modules target Addition & Subtraction, Multiplication, Division, and Fractions. English-Language Learners *Do the Math* is designed to grant maximum access and success for English-Language Learners, with an emphasis on language development, the incorporation of visual representations and directions, and consistency across all instructional routines. ▪ The four-phase gradual release model prepares students for individual success and ensures that they are prepared to complete their work independently. Routines are will established so English-Language Learners can focus on the content and not the process of the assignment. ▪ Numerous structured opportunities for students to engage in meaningful conversations about math are embedded throughout the program to support intentional vocabulary and language development, while increasing access to content. Working in pairs allows for English-Language Learners to speak in their first language in order to understand the task at hand before practicing articulating their solution in English when they share with the larger group. ▪ "Built-in-Differentiation" notes on each planner page summarize for teachers some of the important key practices use din each lesson that support English-Language Learners. ▪ Visual tools, such as visual representations of mathematical concepts, visual directions in the student *WorkSpace*, visual representations of manipulatives, and the visual connections to mathematics in children's literature all support students who second language is English. ▪ Math vocabulary is explicitly taught using a consistent routine. Every lesson includes a sidebar that highlights the key math and academic vocabulary used in each lesson along with the Spanish translation of each word or phrase. Language Development boxes provide further explanation and additional support. *(Continued)*

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Address the needs of all students in the school, particularly the needs of low-achieving students and those at risk of not meeting the State's student academic standards Continued	▪ All communication to parents is available in Spanish through the *Community News* located on the *TeacherSpace* CD-ROM. Through this ongoing communication, parents are informed of the topics and concepts that have been presented in the classroom. The *Community News* also includes suggested activities for students to try at home <u>Students with disabilities</u> Because *Do The Math* was developed to meet a diverse range of student needs, the lessons include suggestions for differentiating based on student need. The struggling reader has vocabulary support and visual directions to insure that reading difficulties do not contribute to their struggle with math. Techniques for maintaining student engagement are integrated into lessons to keep students engaged. Visual and hands-on representations of math concepts support students who need support beyond abstract or auditory methods. Students who are still developing language skills benefit from the scripting provided for the teacher that avoids complex sentence structure, maintains consistent vocabulary use, and attends to language development opportunities. Created as an intervention for struggling students, *Do The Math* is also organized around lessons that engage students with each concept and skill in several ways, deepening their mathematics knowledge. Manipulative materials provide students with concrete experiences with abstract ideas. Games offer engaging situations where mathematical understandings and skills are reinforced. Children's literature provides a springboard for instruction. Contexts make abstract mathematical ideas accessible.
3. Close the achievement gap between high- and low-performing children, especially the achievement gaps between minority and nonminority students, and between disadvantaged children and their more advantaged peers.	In *Do The Math*, lessons engage students with concepts and skills in multiple ways using concrete, manipulative materials, games that reinforce and provide practice, selected children's literature that provides a context for mathematical concepts and skills, and visual representations to help students represent their thinking. The program includes processes and materials that scientifically-based research has shown to be effective in increasing academic achievement for all student populations. The gradual release pedagogy in *Do The Math* sets an expectation for student involvement and gives learners the direction and support needed to be successful. The program, which reflects *National Council of Mathematics* (NCTM) standards, teaches essential Numbers and Operations math skills that integrate with a core math curriculum. *(Continued)*

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Close the achievement gap between high- and low-performing children, especially the achievement gaps between minority and nonminority students, and between disadvantaged children and their more advantaged peers. Continued	Step-by-step lessons help students develop understanding, learn skills, see relationships, and make connections. Students develop the skills they need to compute with accuracy and efficiency, the number sense they need to reason, and the ability to apply their skills and reasoning to solve problems. Learning experiences link concepts and skills to their mathematical representations and language. A four-phase pedagogy built on gradual release prepares students for individual success. 1. Phase One—The teacher models and records the mathematical representation on the board. 2. Phase Two—The teacher models again, now eliciting responses from students, and again records on the board. As the teacher models, she guides students to respond to the math problem using the strategy and verifying using the program manipulatives. This phase allows students to explore the concepts using manipulatives in a "safe" environment as the teacher guides them to understanding. 3. Phase Three— The teacher represents a similar problem as students work in pairs to do the mathematics and then the teacher, once again, records on the board. As they work toward a solution, students explore the problem-solving methods and explain, as well as elaborate their methods to one another. 4. Phase Four—Students work independently, referring to the work represented on the board as examples; the teacher monitors and supports their work. During this phase, students are utilizing each of the 5E stages as they explore, engage, explain, elaborate, and evaluate their processes. Multiple strategies for developing concepts and skills support student learning. Lessons engage students with each concept and skill in several ways, deepening their mathematics knowledge. Manipulative materials provide students concrete experiences with abstract ideas. Games offer engaging situations where mathematical understandings and skills are reinforced. Children's literature provides a springboard for instruction. The gradual release process embedded in the instructional process of *Do The Math* allows students to work toward independently solving math problems while teachers monitor and support their learning.

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5. Use effective methods and instructional practices that are based on scientifically based research and that: ▪ Strengthen the core academic program ▪ Provide an enriched and accelerated curriculum ▪ Increase the amount and quality of learning time, such as providing an extended school year, before- and after-school programs, and summer programs and opportunities	The most recent National Assessment of Education Progress (NAEP) data indicates that two-thirds of students are scoring at or below basic as measured by the NAEP Mathematics test. Furthermore, the gap in performance between AYP subgroups continues and in some grade levels widens significantly. *Do The Math* is a research-based math intervention program designed to support students who are struggling with elementary arithmetic. The program was developed to address the growing national concern regarding mathematics performance as evidenced by the NAEP results. The National Mathematics Advisory Panel's Final Report (2008) states that to "prepare students for algebra, the curriculum must simultaneously develop conceptual understanding, computational fluency, and problem-solving skills." With a focus on Number and Operations, the cornerstone of elementary Math education and a critical foundation of Algebra, *Do The Math* supports students in building a strong foundation in computation, number sense, and problem solving. *Do The Math* is based on these eight proven instructional strategies: ▪ Scaffolded content ▪ Explicit instruction ▪ Multiple strategies ▪ Gradual release, ▪ Sudent interaction ▪ Meaningful practice ▪ Systematic vocabulary and language development ▪ Effective assessment and differentiation **Strengthen the core academic program** *Do The Math* covers foundational topics for algebra and as such is not grade-level specific. However, Grades Two through Eight are the grades where the foundations for Fluency with Whole Numbers and Fluency with Fractions should be established. The program targets four numeracy topics that are further scaffolded into twelve modules that are sequenced and paced to move from basic conceptual understanding to more complex calculations. This gives the program the flexibility to span multiple grades. Every module includes a series of thirty step-by-step lessons. ▪ The Addition and Subtraction Topic covers Addition with sums up to one hundred, Subtraction with numbers up to one hundred, and Numbers greater than one hundred. ▪ The Multiplication Topic covers Basic Concepts of Multiplication, Facts through twelve times twelve, and Factors greater than twelve. *(Continued)*

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Use effective methods and instructional practices that are based on scientifically based research, Continued	▪ The Division Topic covers Basic Concepts of Division, Facts through one hundred divided by ten, and Dividends to one thousand. ▪ The Fractions Topic covers Basic Concepts of Fractions, Equivalence and Comparison, and Addition and Subtraction of Fractions. Each of the twelve *Do The Math* modules follows a consistent structure. Lessons are carefully scaffolded and paced to give students a chance for optimal learning. Every fifth lesson assesses students to determine what they have learned. Teachers are provided with additional strategies for students still struggling as well as those ready for a challenge. An easy-to-use Objectives Tracker provides an ongoing record of each student's growth achievement. **Provide an enriched and accelerated curriculum** *Do the Math's* research-based instructional strategies and embedded assessments ensure that students receive appropriate instruction at the exact level of their need. *Do the Math* has a Beginning-of-Module Assessment for each of its twelve modules. Through a mix of multiple choice and open-ended questions, it yields results and information that help teachers determine which students are in need of more intense interventions. The Beginning-of-Module Assessment, administered prior to instruction, is given to students that the teacher has identified as needing instruction on that particular topic. The assessment will reveal what students know in regard to the topic content for that module. The first few questions on the assessment will inform whether the student has the prerequisite skills for that module. If not, the student will need additional support before beginning that module. Additional support may mean moving the student into another module. Each module also includes an End-of-Module Assessment with questions similar to the Beginning-of-Module Assessment so that the teacher can measure student growth. *Do the Math* also includes several periodic assessments that check student progress and help teachers adjust instruction accordingly. Progress monitoring in the form of a written formative assessment occurs after every fifth lesson so teachers can quickly identify and provide immediate support. During every fifth lesson, students independently complete a written assessment which mirrors what they have been working on in the previous four lessons. Teachers then use the results to select and implement the suggestions for differentiation included in the program and make decisions about targeting instruction according to each student's needs. *(Continued)*

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Use effective methods and instructional practices that are based on scientifically based research, Continued	Formative Assessment through daily observations is built into the program so students receive the proper attention and differentiation required to enable them to develop conceptual understanding and skills successfully. Supporting instruction boxes appear frequently to highlight opportunities for teachers to observe student understanding and provide additional support. **Increase the amount and quality of learning time** In *Do The Math* explicit instruction utilizes scaffolded content and is designed to support students' learning as they see visual models, connect those models and concepts to their mathematical representations, and learn appropriate mathematical and academic language. The program lessons engage students with concepts and skills using concrete manipulative materials, games that reinforce and provide practice, selected children's literature that provides a context for mathematical concepts and skills, and visual representations to help students represent their thinking. In *Do The Math* students experience number and quantity through many different models—concrete, pictorial, representational, and symbolic. The mathematics content is broken into small chunks that are sequenced to allow students to be successful. The instruction utilizes a gradual release model where the teacher uses a progression of diminishing support to guide the students to independence with abstract and composite thinking. When students voice their mathematical ideas and explain them to others they extend and deepen their understanding of the mathematics principles.
6. Provide high-quality and ongoing professional development that aligns with the State's academic standards	*Do the Math* offers a variety of professional development solutions: *Do The Math* Implementation Training This half-day training helps teachers to successfully get started using the program in their classrooms. They will learn how to effectively use the program, including: ▪ Navigating the program materials and exploring how they address current issues in math intervention ▪ Experiencing the pace of a *Do The Math* module with tips for implementing instructional strategies ▪ Assessing student progress and learning how to differentiate instruction ▪ Reviewing ongoing math professional development opportunities *(Continued)*

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Provide high-quality and ongoing professional development that aligns with the State's academic standards Continued	Embedded Professional Development The *Teacher Guide* provided for each module of the program provides step-by-step teaching instructions, clear models, modified scripting, and guidance for monitoring student progress. Supporting Instruction, Language Development, and Mathematical Background boxes at point-of-use provide professional information that helps prevent learning, and well as teaching stumbling blocks.
7. Involve parents in the planning, review, and improvement of the schoolwide program plan	*Do The Math* offers a *Community Newsletter*, available in English and Spanish that is sent home after every fifth lesson. Through this ongoing communication, parents are informed of the topics and concepts that have been presented in the classroom. The newsletter also includes suggested activities and practice games for students to try at home. In addition, teachers can share *WorkSpace* pages and assessment results with parents.
8. If appropriate, coordinate with other funding programs	***Do The Math*** can be integrated with funds from state, local, and other sources. The federal funding programs for which it qualifies include: ▪ Title IA—Supplemental Educational Services ▪ Title III—English Language Acquisition ▪ 21st Century Community Learning Centers ▪ IDEA, Part B ▪ IDEA, *Response to Intervention*