Helping Children Learn in the Primary and Elementary Years

MATH

A GUIDE TO THE MATH COMMON CORE STATE STANDARDS
FOR PARENTS AND STUDENTS

This brochure is a product of the Tennessee State Personnel Development Grant, and was researched and compiled by Dr. Reggie Curran through a partnership between TN SPDG and UT/Knoxville/CLEE.

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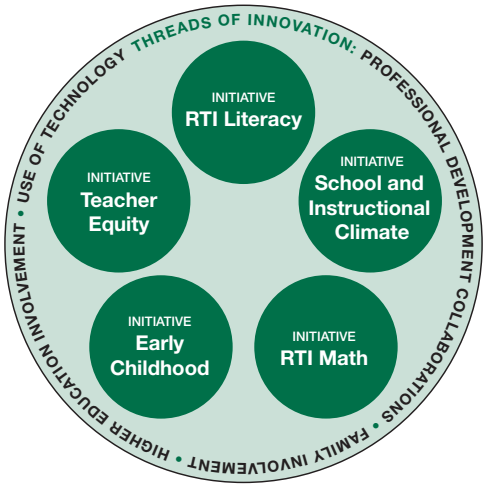
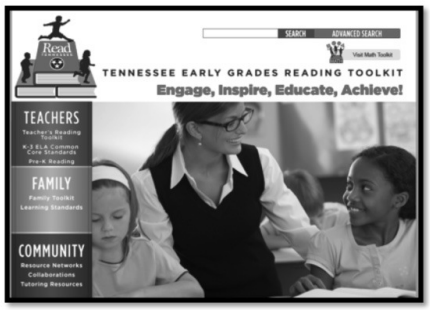


IDEAs that Work
U.S. Office of Special Education Programs

For more information about the Common Core State Standards and Child Development, check out these websites:

Tennessee Common Core at
www.TNCORE.org

Read Tennessee website at
www.Readtennessee.org



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Purpose of This Booklet

This booklet has two goals:

- **to help parents understand more about what their children are learning in school, and**
- **to help students know if they have mastered the skills their teachers expect them to know in each grade**

Teachers work from a set of standards that tell them what to teach. Each state has created its own standards, and those standards have not been the same across our country. However, most states have recently agreed to use the same set of standards — the Common Core State Standards. More information is included about the Common Core State Standards in the following pages.

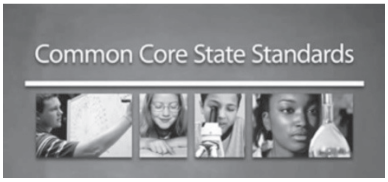
This booklet will explain what the Common Core State Standards are, and about the skills on which Tennessee teachers will focus math instruction while transitioning to the Common Core State Standards. You will find general information that will give you an overview of what the standards are and why states are using them.

At the end of each grade's lists of standards and explanations, you will find a box with an "I can do it!" checklist. These are short statements about the skills your children will be expected to have mastered *by the end of the year*. Ask your children to look at them to see if they feel they have mastered those skills, or if they need some extra help in specific areas.

We hope you will find this booklet helpful in your effort to be a partner in your child's education and development.

If you come across a math term and don't remember what is or what it means, check out the Math is Fun dictionary at
www.mathisfun.com/definitions

What are the Common Core State Standards?



Academic standards are statements that describe the goals of schooling — what children should know or be able to do at the end of the school year. For example, the second grade math standards state that by the end of the school year, a second grader should be able to count to 120 and understand what each digit in a three-digit number represents.

However, standards have not been the same across the United States. In the past, states have had their own sets of standards. This means that children in one state may be learning different things at different times (and in different years) than children in another state. Many states have recently agreed to use a common set of standards for learning that takes place in their classrooms; these are the Common Core State Standards (CCSS).

One major benefit of having common standards across states is that children are being required to learn the same information in the same years in each of those states, so that a child moving from one state to another will not be behind the children in the new location. A common set of standards ensures that all students, no matter where they live, are focused on graduating from high school prepared for postsecondary education and careers.

The Common Core State Standards for Math have two components: *Standards for Mathematical Practice* and *Standards for Mathematical Content*. The Practice Standards describe the kind of math teaching and learning that will produce the most successful learning and that will help students dig deeper and better understand math. The Content Standards outline the concepts and skills to be learned in each grade; teachers will balance procedural skills with understanding by finding find ways to engage students in good practices that will help them understand the math content as they grow in math maturity and expertise throughout the elementary, middle, and high school years.

The Common Core State Standards will provide students, teachers, and parents with a shared understanding of what students are learning. With students, parents, and teachers all on the same page and working together for shared goals, we can increase the likelihood that students will make progress each year and will graduate from school prepared to succeed and to build a strong future for themselves and the country.

Parents: In this booklet, you will find an overview of the standards for each grade, showing you what your children should be able to do by the end of the school year. At the end of the section, you will find a box with this "I can do it!" symbol. Discuss these items with your child to see if he/she is able to complete these tasks.

Students: Find the "I can do it!" box at the end of each section and check yourself to see if you can do all those things.

Overview of Goals for Standards for Mathematical Practice

The Standards for Mathematical Practice describe skills and behaviors that all students should be developing in their particular grades. These practices include important processes (ways of doing things) and proficiencies (how well we do things), including problem solving, reasoning and proof, communication, representation, and making connections. These practices will allow students to understand and use math with confidence. Following is what children will be working to be able to do with increasing ease:

Make sense of problems and persevere in solving them
- Find the meaning in problems
- Analyze, predict, and plan the path to solve a problem
- Verify answers
- Ask themselves the question: "Does this make sense?"

Reason abstractly and quantitatively
- Be able to translate the meaning of each math term in any equation
- Interpret results in the context (setting) of the situation

Construct arguments and evaluate the reasoning of others
- Understand and use information to build arguments
- Make and explore the truth of estimates and guesses
- Justify conclusions and respond to arguments of others

Model with mathematics
- Apply math to problems in everyday life
- Identify quantities (amounts, numbers) in a practical situation
- Present, show, or explain the problem and solution in an understandable way

Use appropriate tools strategically
- Consider the available tools when solving problems, and know which tool is most appropriate in the situation
- Be familiar with tools appropriate for their grade level or course (pencil and paper, concrete models, ruler, protractor, calculator, spreadsheet, computer programs, digital content on a website, and other technological tools)

Be precise
- Be able to communicate accurately with others
- Use clear definitions, state the meaning of symbols, and be careful when specifying units of measure and labeling axes (the "x" and "y" lines that cross at right angles to make a graph) in math figures
- Calculate accurately and efficiently

Look for and make use of structure
- Recognize patterns and structures
- Step back to find the big picture and be able to shift perspective
- See complicated things as single objects, or as being made up of several objects

Look for and identify ways to create shortcuts when doing problems
- When calculations are repeated, look for general methods, patterns, and shortcuts
- Be able to evaluate whether an answer makes sense

The major domains included in the math standards for Grades K-5 are listed below. In each grade, students build on what they learned previously to form a progression of increasing knowledge, skill, or sophistication.

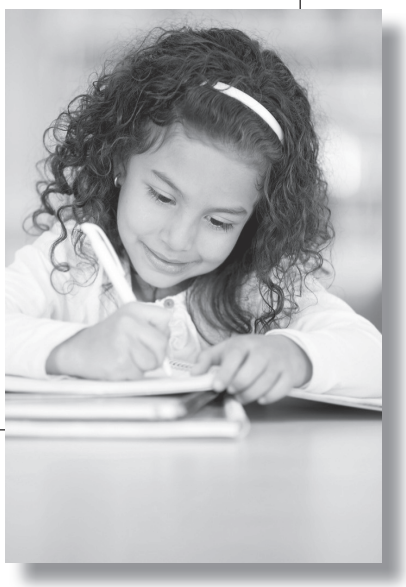
MAJOR DOMAINS FOR MATH STANDARDS	GRADE					
	KINDERGARTEN	1	2	3	4	5
Counting and Cardinality	✓					
Operations and Algebraic Thinking	✓	✓	✓	✓	✓	✓
Numbers and Operations – Base Ten	✓	✓	✓	✓	✓	✓
Numbers and Operations – Fractions				✓	✓	✓
Measurement and Data	✓	✓	✓	✓	✓	✓
Geometry	✓	✓	✓	✓	✓	✓

First Grade Math

Focus Clusters for First Grade – In first grade, teachers will focus instruction on these specific areas:

- Represent and solve problems involving addition and subtraction.
- Understand and apply properties of operations and the relationship between addition and subtraction.
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

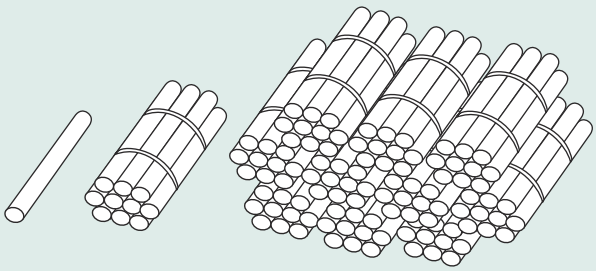
Skills that focus on these areas appear in the shaded box below. While these skills are priority areas, students will be learning all of the skills listed in the following sections.



For first graders, the math standards outline the skills that should be developing, so that a student can say, "I can … **(insert math goal)**," for example, "I can **count to 120**." Help your child develop these skills:

Numbers and Operations in Base Ten

- Count to 120, starting at any number less than 120, and read and write the numerals to 120.
- Understand the concept of base ten — a ten is made up of ten "ones" and a hundred is made up of 10 "tens."



- Understand that a two-digit number represents tens and ones. For the number **98**:
  - The last digit on the right is the number of units, or **"ones"** — **8**
  - The next digit to the left of the ones means how many "tens," or bundles of **ten "ones"** — **9**

- Add within 100 – one digit numbers and two digit numbers, and using place value.

- Find 10 more or 10 less than any number up to 100.
  For example, 33 + 10 = 43

	tens	ones
15	1	5
+16	1	6
	2	11
= 31	3	1

Algebra and Patterns

- Use addition and subtraction within 20 to solve word problems involving adding to, taking from, taking apart, and comparing, using symbols to represent unknown problems.

- Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, and use objects, drawings, and equations with a symbol to represent the problem.

- Add and subtract within 20; understand the relationship between addition and subtraction.

  If 2 + 6 = 8, then 8 - 6 = 2 and 8 – 2 = 6

- Understand the meaning of the equal sign (=) and determine if equations are true or false.
  Which of these equations is true and which are false?

  6 = 6 7 = 8 – 1 5 + 2 = 2 + 5 4 + 1 = 5 + 2

- Determine the unknown whole number in an addition or subtraction equation.

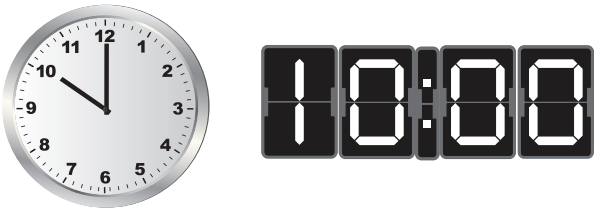
  8 + ? = 11 5 = ? – 3 6 = 6 + ? 10 = 20 - ?

Measurement and Data

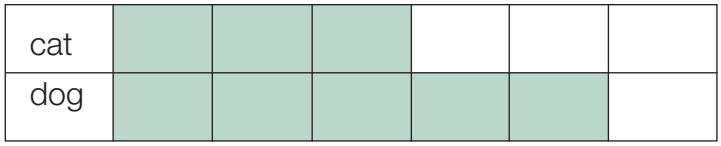
- Order three objects by length.

- Express the length of an object as a whole number of length units by laying multiple copies of a shorter object end to end.

- Tell and write time in hours and half hours using digital and analog clocks.



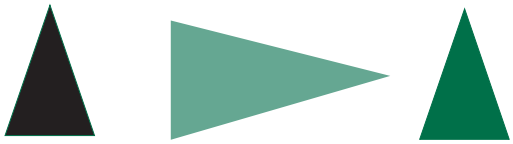
- Organize, represent, interpret, and discuss data with up to three categories.



Are there more dogs or cats?

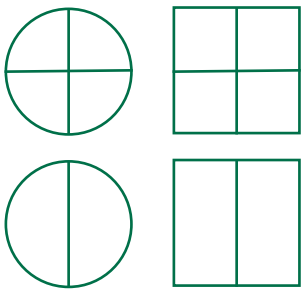
Geometry and Spatial Sense

- Distinguish between defining attributes (triangles are closed and three-sided) versus non-defining attributes (color, orientation, overall size).



- Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three dimensional shapes (cubes, right rectangle prisms, right circular cones, and right circular cylinders), and create new shapes by combining other shapes.

- Partition circles and squares into two and four equal parts, and describe the shares using halves and fourths.



First Grade Student Self-Check List

Students: You have been working on learning these skills this year. Are you able to do these things? Check the box next to the skill if you can do it.

☐	I can solve addition and subtraction word problems within 20.
☐	I understand the relationship between addition and subtraction.
☐ ☐	I can apply the properties of operations: • Commutative property of addition (it does not matter which order the numbers are in for addition): If you know 8 + 3 = 11, then you know 3 + 8 = 11. • Associative property of addition (it does not matter if you regroup the numbers in addition): To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12.
☐	I can add and subtract within 20.
☐	I can count to 120, starting at any number.
☐	I understand the meaning of the equal sign.
☐	I understand place value: ones, tens.
☐	I can use place value to add and subtract within 100.
☐	I can measure lengths and tell the measurement in units.
☐	I can tell and write time in analog and digital time.
☐	I relate time to events: before/after, shorter/longer, etc.
☐	I can build and talk about a graph.