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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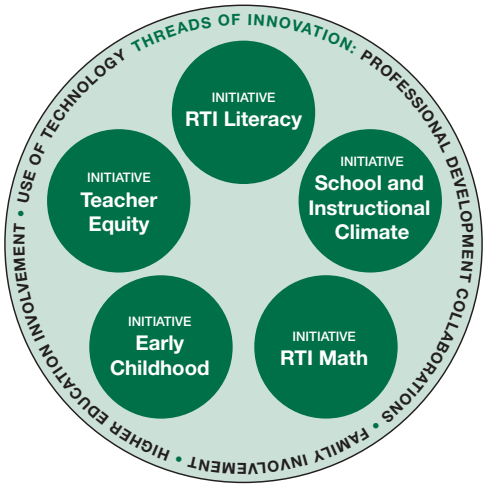
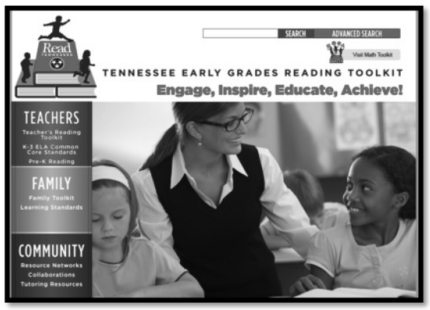


IDEAs that Work
U.S. Office of Special Education Programs

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



This project is supported by the U.S. Department of Education, Office of Special Education Programs (OSEP). Opinions expressed herein are those of the authors and do not necessarily represent the position of the U.S. Department of Education.

UT PUBLICATION NO.: R01-1704-113-002-13

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.

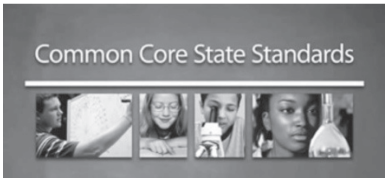
This booklet will explain what the Common Core State Standards are, and about the skills on which Tennessee teachers will focus math instruction while transitioning to the Common Core State Standards. You will find general information that will give you an overview of what the standards are and why states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

Second Grade Math

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

- Represent and solve problems involving addition and subtraction.
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.
- Relate addition and subtraction to length.

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 second 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 1000**." Help your child develop these skills:

Numbers and Operations

- Understand place value: that 100 can be thought of as a bundle of ten tens and that the three digits of a three-digit number represent amounts of hundreds, tens, and ones.

For example, **706** =

hundreds	tens	ones
7	**0**	**6**

and **327** =

hundreds	tens	ones
3	**2**	**7**

- Count to 1000, by 1s (1, 2, 3…), 5s (5, 10, 15…), 10s (10, 20, 30…) and 100s (100, 200, 300…).
- Read and write to 1000 using base-ten numerals (the decimal number system that we use every day has 10 digits [0,1,2,3,4,5,6,7,8,9] and so it is Base-10), number names, (ten, twenty, thirty), and expanded form (123 is 100 + 20+ 3)

- Compare two three-digit numbers using **>** *(more than)* 123 **>** 120; **<** *(less than)* 608 **<** 680, and **=** *(is equal to)* 414 **=** 200 + 214

- Use place value understanding and properties of operations to add and subtract.
  - Fluently (quickly and easily) add and subtract within 100
  - Add up to four two-digit numbers
  - Add and subtract up to 1000, using concrete models or drawings
  - Mentally add 10 or 100 to any given number from 100 to 900, and mentally subtract 10 or 100
  - Understand and explain why subtraction and addition work, using place value and properties of operations

Algebra and Patterns

- Use addition and subtraction within 100 to solve one- and two-step word problems that add to, take from, put together, take apart, and compare.
  John has 33 marbles, and Jim has 3 more than John. How many marbles does Jim have? (X = 33 + 3)

- Fluently add and subtract within 20 mentally. By the end of the year, know from memory all sums of two one-digit numbers. (**1 +** 1, 2, 3, 4, 5, 6, 7, 8, 9; **2 +** 1, 2, 3….; **up to 9 + 1**, 2, 3…)

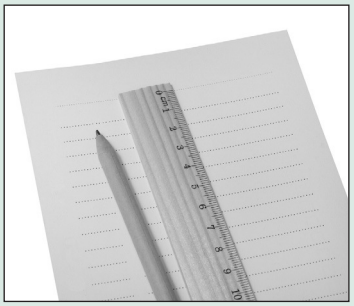
- Determine whether groups of numbers have an odd or even number of items. Count items by **2s** (2, 4, 6…)

- Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and 5 columns; write an equation to express the total as a sum of addends.

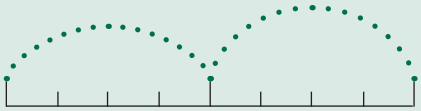
■	■	■	■	■	5
■	■	■	■	■	5
■	■	■	■	■	5
■	■				2

Equation is
5 + 5 + 5 + 2 = 17

Measurement and Data

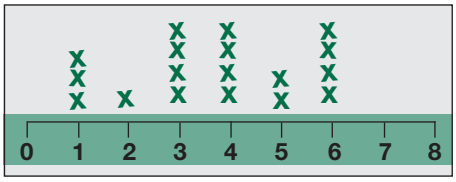


- Measure and estimate lengths by using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
- Estimate lengths using units of inches, feet, centimeters, and meters.
- Measure two or more items to find the difference in inches, feet, yards, meters.
- Use addition and subtraction within 100 to solve word problems involving lengths given in the same unit. **Megan is 54 inches tall and Kate is 48 inches. Who is taller and by how much?**
- Represent numbers and lengths on a number line.



- Tell and write time to the nearest five minutes, using both analog and digital time.

- Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies using $ and ¢. **(If you have 2 dimes and 3 pennies, how many cents do you have?)**
- Generate measurement data by measuring several items and make a line plot using whole number units on the horizontal scale.



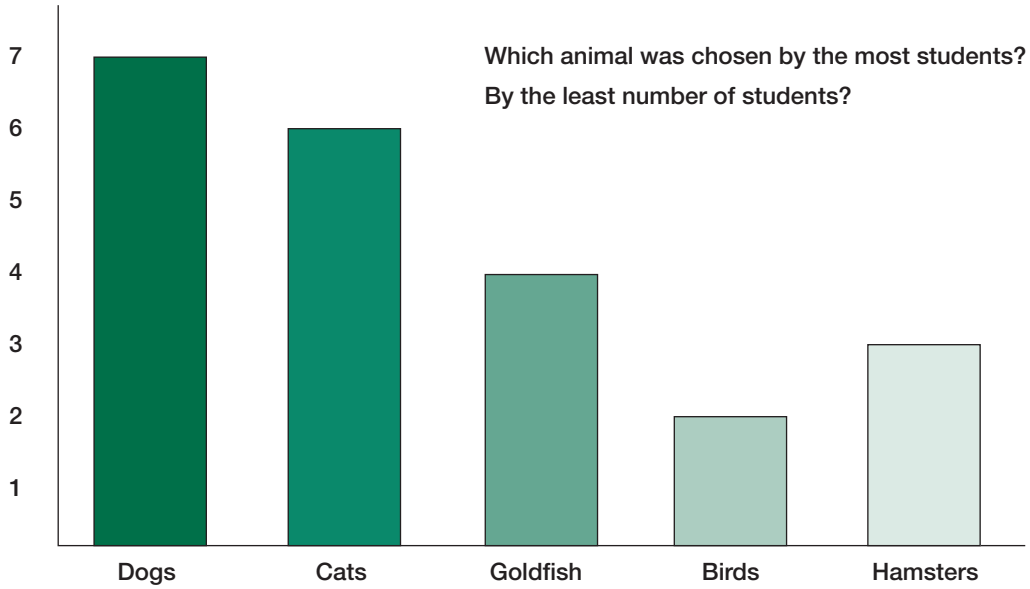
■ Draw a picture graph and a bar graph using a data set with up to four categories.

Favorite Desserts	
Fudge cake	
Cookies	
Banana split	
Double fudge brownies	

KEY:  = 1 person

How many students chose each of the desserts?

Which dessert was chosen most often?

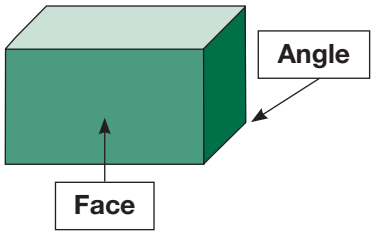


Which animal was chosen by the most students?

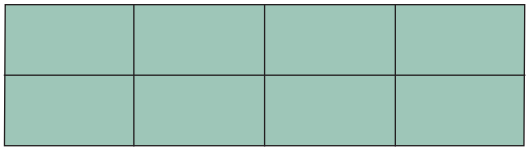
By the least number of students?

Geometry and Spatial Sense

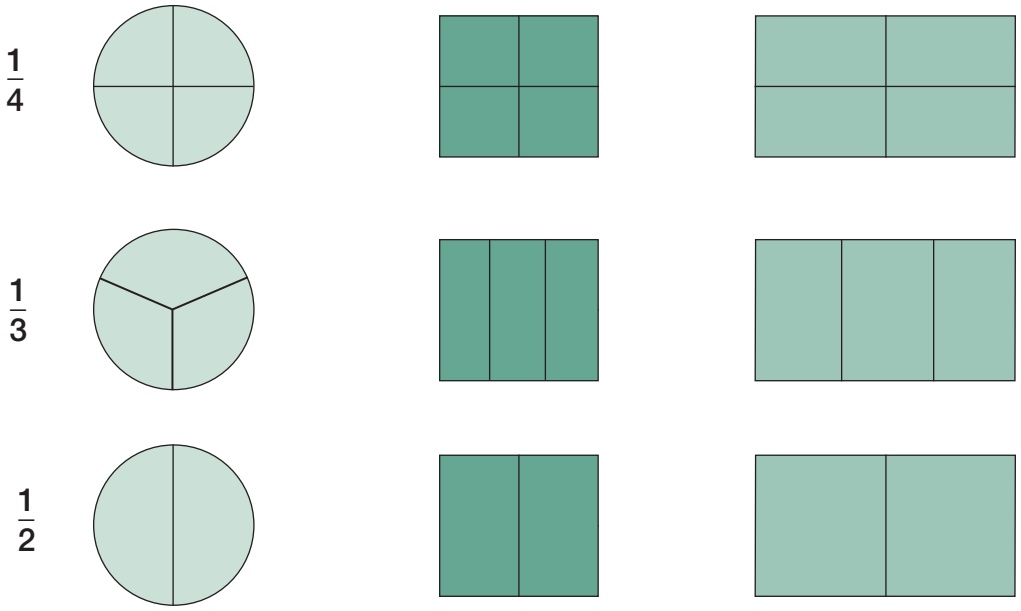
■ Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.



- Partition a rectangle into rows and columns of same size squares and count to find the number of squares.



- Partition circles, squares, and rectangles into two, three or four equal shares and describe the shares using the words halves, thirds, fourths, half of, a third of, a quarter of, etc.



Second 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.

☐	Solve addition and subtraction word problems within 100.
☐	Fluently add and subtract within 20.
☐	Know all sums of two one-digit numbers.
☐	Work with equal groups and repeated addition to understand multiplication.
☐	Work with equal groups and repeated subtraction to understand division.
☐	Understand place value: ones, tens, and hundreds.
☐	Use place value to add and subtract within 1000.
☐	Make reasonable estimates using place value knowledge.
☐	Measure, estimate, and compare lengths in standard units.
☐	Represent whole number lengths on a number line.
☐	Work with time and money.
☐	Know relationships of time (minutes in an hour, days in a month, etc.).
☐	Solve word problems using combinations of dollar bills and coins.
☐	Collect data, build a graph, and answer questions about the data presented.
☐	Recognize shapes: triangles, quadrilaterals, pentagons, hexagons, and cubes.
☐	Draw shapes by the size of the angles or by the number of equal faces.