

Second Grade Math

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

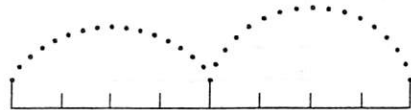
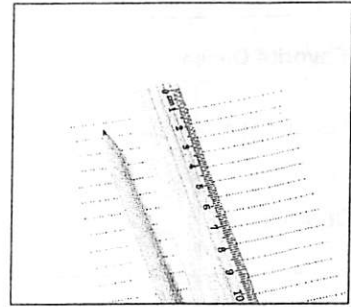
- Use addition and subtraction within 100 to solve one- and two-step word problems that add to, take from, put together, take apart, and compare.
John has 33 marbles, and Jim has 3 more than John. How many marbles does Jim have? ($X = 33 + 3$)
- Fluently add and subtract within 20 mentally. By the end of the year, know from memory all sums of two one-digit numbers. ($1 + 1, 2, 3, 4, 5, 6, 7, 8, 9$; $2 + 1, 2, 3, \dots$; up to $9 + 1, 2, 3, \dots$)
- 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

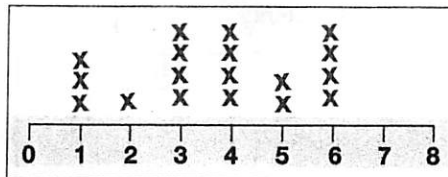
- Measure and estimate lengths by using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
- Estimate lengths using units of inches, feet, centimeters, and meters.
- Measure two or more items to find the difference in inches, feet, yards, meters.
- Use addition and subtraction 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.







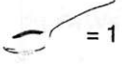
- Tell and write time to the nearest five minutes, using both analog and digital time.

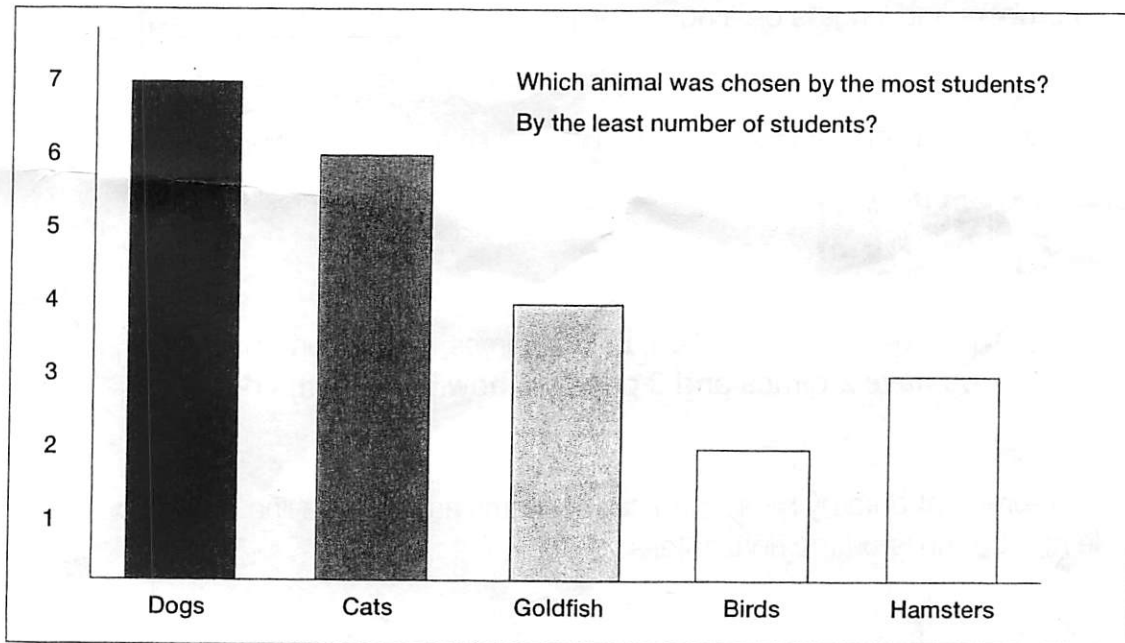


- Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies using \$ and ¢. **(If you have 2 dimes and 3 pennies, how many cents do you have?)**
- Generate measurement data by measuring several items and make a line plot using whole number units on the horizontal scale.



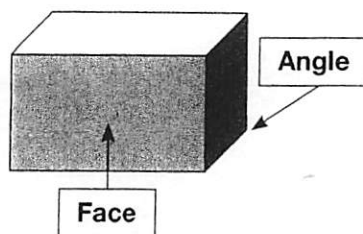
■ Draw a picture graph and a bar graph using a data set with up to four categories.

Favorite Desserts	
Fudge cake	
Cookies	
Banana split	
Double fudge brownies	
<p>KEY:  = 1 person</p> <p>How many students chose each of the desserts? Which dessert was chosen most often?</p>	

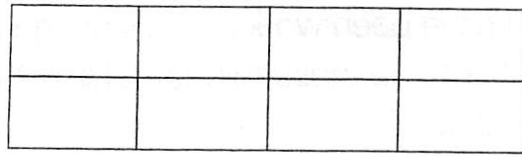


Geometry and Spatial Sense

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

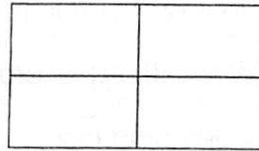
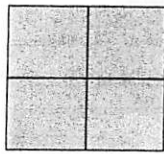
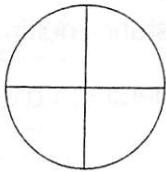


- Partition a rectangle into rows and columns of same size squares and count to find the number of squares.

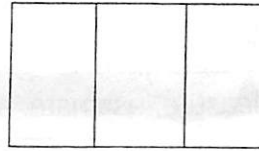
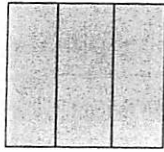
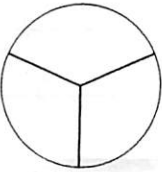


- Partition circles, squares, and rectangles into two, three or four equal shares and describe the shares using the words halves, thirds, fourths, half of, a third of, a quarter of, etc.

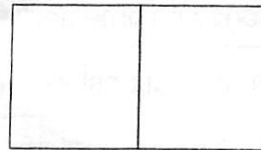
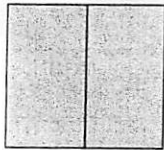
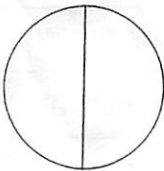
$\frac{1}{4}$



$\frac{1}{3}$



$\frac{1}{2}$



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.