

<b>Whole Number Arithmetic Comparison</b>	<a href="http://www.corestandards.org/the-standards/mathematics">http://www.corestandards.org/the-standards/mathematics</a>	<a href="http://www.cde.ca.gov/be/st/ss/documents/mathstandards.pdf">http://www.cde.ca.gov/be/st/ss/documents/mathstandards.pdf</a>	<a href="http://www.moe.gov.sg/education/syllabuses/sciences/files/maths-primary-2007.pdf">http://www.moe.gov.sg/education/syllabuses/sciences/files/maths-primary-2007.pdf</a>		
	<b>Common Core</b>	<b>California</b>	<b>Singapore</b>	<b>Ontario</b>	<b>WNCP</b>
<b>Grade 1</b>	Add/subtract within 20, demonstrating <b>fluency within 10.</b>	<b>Addition facts to 20 and corresponding subtraction facts and commit them to memory.</b>	<b>Building up addition bonds up to 9+9 and committing to memory.</b>	Solve..problems involving addition and subtraction of whole numbers to 20 [using various strategies].	1.N.9 Demonstrate an understanding of addition of numbers with answers to 20 and corresponding subtraction facts [using various strategies]
	Add within 100 [using various strategies].	Solve addition/subtraction with 1- and 2-digit numbers.  Find the sum of three 1-digit numbers.	Addition/subtraction within 100; 2-digit and ones, 2-digit and tens, two 2 - digits.  Addition /subtraction within 100 <b>using formal algorithms.</b>	Solve problems involving the addition and subtraction of single-digit whole numbers, using a variety of mental strategies.	1.N.10 Describe and use mental math strategies <b>(memorization not intended)</b> ...to determine addition/subtraction facts to 18.
<b>Grade 2</b>	Fluently add and subtract within 20 using mental strategies. <b>By the end of Grade 2 know from memory all sums of two 1-digit numbers.</b>		Mental math: 3- digit and ones, 3- digit and tens, 3-digit and hundreds.		2.N.10 Apply mental math strategies...to develop recall of addition facts to 18 and related subtraction facts.

Grade 2 cont'd	<u>Common Core</u>	<u>California</u>	<u>Singapore</u>	<u>Ontario</u>	<u>WNCP</u>
	<p>Fluently add/subtract within 100 using strategies...</p> <p>Add up to four 2-digit numbers using strategies...</p> <p>Add and subtract within 1000 using strategies...</p>	<p>Count, read, write, determine place value, order and compare whole numbers up to 1000.</p> <p>Find the sum or difference of two whole numbers up to 3 digits long.</p> <p>Use mental math to find the sum / difference of 2 whole numbers up to 3 digits long</p>	<p><b>Addition/subtraction of numbers up to 3 digits. (Standard algorithms taught.)</b></p>	<p>Solve problems involving addition/subtraction of 2-digit numbers using...student-generated algorithms and <b>standard algorithms.</b></p>	<p>2.N.1-2.N.7 Determine place value, order, represent numbers up to 100.</p> <p>2.N.10 Demonstrate an understanding of addition (limited to 1- and 2-digit numerals) with answers to 100 and the corresponding subtraction [using various strategies].</p>
		<p>Use repeated addition, arrays, counting multiples to do multiplication; repeated subtraction, equal sharing...to do division.</p> <p><b>Know multiplication tables of 2s, 5s, 10s (to "times 10") and commit them to memory..</b></p>	<p>Multiplication/division within the multiplication tables.</p> <p>Building up <b>multiplication tables of 2,3,4,5,10 and committing them to memory.</b></p>		<p>No mention of multiplication / division.</p>

Grade 3	<u>Common Core</u>	<u>California</u>	<u>Singapore</u>	<u>Ontario</u>	<u>WNCP</u>
	Fluently <b>add and subtract within 1000 using strategies and algorithms...</b>	Count, read, write, compare, order, identify place value, round numbers up to 10,000.  Find sum / difference of two whole numbers between 0 and 10,000.	<b>Addition/subtraction of numbers up to 4 digits. [Standard algorithms used.]</b>	Add and subtract <b>3-digit numbers</b> using... student-generated algorithms and <b>standard algorithms.</b>	3.N.1-3.N.4 Determine place value, order, represent numbers, etc., up to 100.  3.N.6-3.N.7 Describe and apply mental math strategies for adding/subtracting two 2-digit numerals.  3.N.9 Demonstrate an understanding of addition and subtraction of numbers with answers to 1000 (limited to 1- 2- and 3-digit numerals) with answers to 1000 [using various strategies].  <b>3.N.10 Determine addition facts and related subtraction facts ( to 18) (at Grade 3!!)</b>
	<b>By the end of grade 3 know from memory all products of two 1-digit numbers.</b>	<b>Memorize to automaticity the multiplication table for numbers between 1 and 10.</b>	Building up the <b>multiplication tables of 6,7,8,9</b> and committing to memory.	Multiply to $7 \times 7$ and divide to $49 \div 7$ using mental math strategies.	3.N.11 Demonstrate an understanding of multiplication to $5 \times 5$ [using various strategies].

Grade 3 cont'd	<u>Common Core</u>	<u>California</u>	<u>Singapore</u>	<u>Ontario</u>	<u>WNCP</u>
<b>Grade 4</b>	Fluently <b>add and subtract multi-digit whole numbers using the standard algorithm.</b>	<b>Demonstrate an understanding of, and the ability to use standard algorithms for the addition and subtraction of multidigit numbers.</b>  Read, write, compare, round whole numbers in the millions.	Read, write, compare, round, etc., whole numbers up to 10,000	Divide 2-digit whole numbers by 1-digit whole numbers using a variety of tools and student-generated algorithms.	Demonstrate an understanding of addition of numbers with answers to 10,000 and their corresponding subtractions (limited to 3- and 4-digit numerals) using various strategies.
	Multiply a whole number of up to four digits by a 1-digit, and multiply two 2-digit numbers using strategies...	<b>Demonstrate an understanding of, and the ability to use, standard algorithms for multiplying a multidigit number by a 1-digit number ...</b>	<b>Multiplication of 4-digit by 1-digit ; Multiplication of 3-digit by 2-digit. [Standard algorithms used.]</b>	Multiply to $9 \times 9$ and divide to $81 \div 9$ using a variety of mental strategies.	Describe and apply mental math strategies...to develop recall of basic multiplication facts to $9 \times 9$ and related division facts.

<b>Grade 4 cont'd</b>	<b><u>Common Core</u></b>	<b><u>California</u></b>	<b><u>Singapore</u></b>	<b><u>Ontario</u></b>	<b><u>WNCP</u></b>
	Find whole-digit number quotients and remainders with up to four-digit dividends and 1-digit divisors...	Read, write, compare, round whole numbers in the millions.	<b>Division of 4-digit by 1-digit. [Long division used.]</b>	<b>Multiply 2-digit whole numbers by 1-digit whole numbers</b> using...student-generated algorithms and <b>standard algorithms.</b>	Demonstrate an understanding of multiplication (2- or 3-digit by 1-digit) using various strategies.
		Order and compare whole numbers and decimals to two decimal places.	Factors, gcds, lcms.	Solve problems involving the addition and subtraction <b>of 4-digit numbers</b> using student-generated algorithms and <b>standard algorithms.</b>	Demonstrate an understanding of division (1-digit divisor and up to 2-digit dividend) using various strategies.
<b>Grade 5</b>			<b>Whole number arithmetic mastered for multi-digit numbers.</b>		5.N.3 Determine multiplication facts (to 81) and related division fact. (Pg. 101). <i>ONLY mandatory recalls are multiples of 0, 1, 2, 3, 5 and squares up to 9x9.</i>
	<b>Fluently multiply multi-digit whole numbers using the standard algorithm.</b>	Add, subtract, multiply, divide with decimals; add with negative integers; subtract positive integers from <b>negative integers...</b>		<b>Multiply 2-digit whole numbers by 2-digit whole numbers</b> using...student-generated algorithms and <b>standard algorithms.</b>	5.N.5 Demonstrate an understanding of multiplication (2-digit by 2-digit)

<b>Grade 5 cont'd</b>	<b><u>Common Core</u></b>	<b><u>California</u></b>	<b><u>Singapore</u></b>	<b><u>Ontario</u></b>	<b><u>WNCP</u></b>
	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors using strategies...	Demonstrate proficiency with division, including division with positive decimals and <b>long division with multidigit divisors.</b>	<b>Whole number arithmetic mastered for multi-digit numbers.</b>	<b>Divide 3-digit whole numbers by 1-digit whole numbers</b> using... student-generated algorithms and <b>standard algorithms.</b>	5.N.6 Demonstrate an understanding of division (3-digit by 1-digit)
<b>Grade 6</b>	<b>Fluently divide multi-digit numbers using the standard algorithm.</b>	<b>Whole number arithmetic mastered for multi-digit numbers.</b>		Solve problems involving the <b>multiplication and division of whole numbers (4-digit by 2-digit)</b> using a variety of tools and strategies (eg. estimation, algorithms).	Move on from whole number arithmetic (multi-digit not required, whole number arithmetic probably not mastered).
	<b>Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</b>				

**Links:**

Common Core State Standards for Mathematics: <http://www.corestandards.org/the-standards/mathematics>

Mathematics Content Standards for California Public Schools: <http://www.cde.ca.gov/be/st/ss/documents/mathstandards.pdf>

Singapore Mathematics Syllabus Primary:

<http://www.moe.gov.sg/education/syllabuses/sciences/files/maths-primary-2007.pdf>

