Standard 1: Number and Computation Benchmark 1: Number Sense

Organizer	Indicator lead in phrase/wording	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	Fifth Grade	Sixth Grade	Seventh Grade	Eighth Grade	Ninth and Tenth Grade
Equivalent Representations	**knows, explains, and represents/uses equivalent representations for …**	K.1…1-to-1 match with numbers 0 through 20 (identifies, states, writes) using concrete objects	K.1...numbers from 0 through 100 using concrete objects	K.1...numbers from 0 through 1,000 using concrete objects	K.1...numbers from 0 through 10,000, fractions (halves, fourths, thirds, eighths, tenths, sixteenths) and decimals through tenths	K.1...numbers from 0 through 100,000, fractions ((halves, fourths, thirds, eighths, tenths, twelfths, sixteenths, hundredths and mixed numbers) and decimals that are monetary	▲K.1…numbers from 0 through 1,000,000 positive fractions and decimals that are monetary amounts	K.1...rational numbers (including percents and rational number bases)	K.1…rational numbers and simple algebraic expressions	K.1…rational numbers and simple algebraic expressions	K.1…real numbers and algebraic expressions
	solves and/or generates real-world problems with equivalent representations to/of …	A.1…compare and order from 0 through 10	A.1…compare and order from 0 through 50	A.1...compare and order 0 through 1,000 and mixed coins to $1.00; add and subtract 0 through 100, and equivalent values of coins to $1.00 without mixing coins	A.1...compare and order 0 through 5,000; add and subtract 0 through 1,000	A.1…compare and order 0 through 100,000, add/subtract 0 through 10,000, decimals that are monetary amounts and multiply (2 by 1)	A.1 & A.3…compare and order 0 through 1,000,000, positive fractions and greater than or equal to zero through hundredths place, and integers; add/subtract 0 through 100,000, decimals that are monetary amounts, multiply	A.1…integers, positive fractions, and decimals	▲A.1…rationals, simple algebraic expressions, and fraction and decimal approximations of pi	A.1…rationals and simple algebraic expressions	A.1…reals and simple algebraic expressions
	knows, explains, and/or uses equivalent representations of/to …			K.3…add and subtract numbers 0 through 100	▲K.3…add and subtract numbers 0 through 1,000 and multiply using basic facts 1-5 and 10s, and add/subtract money		K.4…percents and decimals for one whole, one-half, one-fourth, three-fourths, and one tenth through nine tenths	▲K.4…numerical relationships between percents, decimals, and fractions 0 - 1 K.5 … same simple algebraic expression with coefficients of one			
Coins	**identifies, recognizes, states, and/or counts …**	K.5 … value of pennies and dimes using money models	K.5 & K.6…value of each coin and type of currency ($1, $5, $10) using money models and a like group of coins (pennies, nickels, dimes)	K.5 & K.6…total value (to $1) of a mixed group of coins and a like group of currency (to $100)	▲K.4…total value of mixed coins and bills ($50 or less) A.3 … amount of change owed (to $100)						

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Compare and Order	**compares, orders, and/or explains …**	K.2…numbers 0 through 20 using concrete objects	K.2...numbers 0 through 100 and fractions with like denominators (halves and fourths) using concrete objects	K.2…numbers 0 through 1,000 and fractions with like denominators (halves, fourths, thirds, eighths) using concrete objects	▲K.2...numbers 0 through 10,000, fractions with like denominators (halves, fourths, thirds, eighths, tenths, sixteenths), and decimals (tenths)	K.2...numbers 0 through 100,000, fractions including mixed numbers (halves, fourths, thirds, eighths, tenths, sixteenths, hundredths), and decimals that are monetary amounts	K.2...integers, fractions including mixed numbers, and decimals K.3 … numerical relationships between whole numbers, fractions, and decimals	▲K.2...integers, fractions including mixed numbers, and decimals (thousandths) . K.3 … relative magnitude between whole numbers, fractions, and decimals	K.2...rationals and the irrational number pi . K.3 … relative magnitude between rational numbers and between rational numbers the irrational number pi	K.2...rationals, the irrational number pi, and algebraic expressions . K.3 … relative magnitude between rational numbers, the irrational number pi, and algebraic expressions	K.2...real numbers and/or algebraic expressions and the relative magnitude between them
	determines the reasonableness of …		A.2...values between 0 through 50		A.2...real-world solutions to problems involving 0 through 1,000, fractions, and decimals that are monetary amounts	A.2...real-world solutions to problems involving 0 through 10,000, fractions, and decimals that are monetary amounts	A.2...real-world solutions to problems involving 0 through 100,000, fractions (including mixed numbers), and decimals	A.2...real-world solutions to problems involving integers, fractions, and decimals (thousandths)	A.2...real-world solutions to problems involving rational numbers, the irrational number pi, and simple algebraic expressions	A.2...real-world solutions to problems involving rational numbers, the irrational number pi, and simple algebraic expressions	A.2...real-world solutions to problems involving real numbers and algebraic expressions
Numerical Recognition	**recognizes, identifies, and uses …**	K.3…a whole, a half, and parts of a whole . K.4 … positions as first and last	K.3 & K.4...a whole, a half, a fourth, and equal parts of a whole (halves, fourths) and ordinal numbers first (1st) through tenth (10th)	K.4...ordinal positions from first (1st) through twentieth (20th)			K.5...integers in given real-world problems			K.4...irrational numbers	
	knows and/or explains what happens to the products/quotients when …		A.3… demonstrates that smaller whole numbers are within larger whole numbers using whole numbers from 0 to 30						K.4...a whole number is multiplied or divided by a rational number greater than zero and less than one, greater than one, or zero	▲K.5...a positive number is multiplied or divided by a rational number greater than zero and less than one, greater than one, or zero	K.3...a real number is multiplied or divided by a rational number greater than zero and less than one, greater than one, or zero
	explains and/or determines the absolute value of								K.5…rational numbers	K.6…real numbers	

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Place Value	**reads, writes, identifies, and models...**	K.1 … whole numbers 0 - 20 in numerical form	K.1 & K.4...whole numbers 0 - 100 in numerical form and words	K.1…whole numbers 0 - 1,000 in numerical form, 0 - 100 in words, 0 - 1,000 in numerical form when presented in word form	K.1 ... numbers using numerals and words from tenths place through ten thousands place	▲K.1 ... numbers using numerals, words, and expanded notation from hundredths place through one-hundred thousands place					
	represents, identifies, models, reads, writes, groups, and solves…	K.2...whole numbers from 0 through 20 using place value models	K.2...whole numbers from 0 through 100 using various groupings and place value models (place value mats, hundred charts, or base ten blocks) emphasizing ones, tens, and hundreds	K.2...whole numbers from 0 through 1,000 using various groupings and place value models emphasizing 1s, 10s, and 100s; explains the groups; and states the value of the digit in ones place, tens place, and hundreds place	K.2...numbers using expanded form from tenths place through ten thousands place	K.3...the place value of various digits from hundredths place through one hundred thousands place					
	identifies…	K.4...objects by 5s and by 10s groups	K.5...the place value of the digits in whole numbers from 0 through 100	K.4...the place value of the digits in whole numbers from 0 through 1,000	K.4...the place value of various digits from tenths to one hundred thousands place						
	solves…	A.1...real-world problems with whole numbers from 0 through 20 using place value models			K.7...division with whole numbers from 0 through 99,999 into groups of 10,000s; 1,000s; 100s; 10s, and 1s using base ten models						
	Counts…	K.3…. whole numbers from 0 through 20, whole numbers from 10 to 0 backwards, subsets of whole numbers from 0 through 20	K.3. counts subsets of whole numbers from 0 through 100 both forwards and backwards	K.3. counts subsets of whole numbers from 0 through 1,000 forwards and backwards							
	Counts…	A.2. counts forwards and backwards from a specific whole number using a number line from 0 through 10									

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Number Systems and their Properties	**classifies, knows, explains, and/or illustrates...**				K.3...various subsets of numbers as whole numbers, fractions (including mixed numbers), or decimals	K.2...various subsets of numbers as whole numbers, fractions (including mixed numbers), or decimals	K.1...subsets of numbers as integers, whole number, fractions (including mixed numbers), or decimals	K.1...subsets of the rational number system as counting numbers, whole numbers, integers, fractions (including mixed numbers), or decimals	K.1…the relationships between natural (counting) numbers, whole numbers, integers, and rational numbers using mathematical models	K.1...the relationship between the subsets of the real number system [natural (counting) numbers, whole numbers, integers, rational numbers, irrational numbers] using mathematical models	K.1...the relationship between the subsets of the real number system [natural (counting) numbers, whole numbers, integers, rational numbers, irrational numbers] using mathematical models
	identifies or classifies…		K.6…any whole number 0-30 as even or odd	K.5… any whole number from 0-100 as even or odd	K.5...any whole number through 1,000 as even or odd	K.4...any whole number as even or odd	K.2...prime and composite numbers from 0 through 50	K.2...prime and composite numbers and explains their meaning	K.2...a given rational number as a member of various subsets of the rational number system	▲K.2...all the subsets of the real number system [natural (counting) numbers, whole numbers, integers, rational numbers, irrational numbers] to which a given number belongs	K.2...all the subsets of the real number system [natural (counting) numbers, whole numbers, integers, rational numbers, irrational numbers] to which a given number belongs

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Number Systems and their Properties	**uses, names, and/or describes…**	K.5(uses)...the concept of the zero property of addition (additive identity) with whole numbers from 0 through 20 and demonstrates its meaning using concrete objects	K.7(uses)...the concepts of these properties with whole numbers from 0 through 100 and demonstrates their meaning using concrete objects: commutative property of addition and identity property for addition	K.6(uses)...the concepts of these properties with whole numbers from 0 through 100 and demonstrates their meaning including the use of concrete objects: commutative property of addition, Identity property for addition (zero), associative property of addition, and symmetric property applied to basic addition and subtraction facts	K.6(uses)...the concepts of these properties with whole numbers from 0 through 100 and demonstrates their meaning including the use of concrete objects: commutative properties of addition and multiplication, identity properties for addition (zero) and multiplication (one), associative property of addition, symmetric property applied to addition and multiplication, and zero property of multiplication	▲(a-d)K.5(uses) ...the concepts of these properties with the whole number system and demonstrates their meaning including the use of concrete objects: commutative properties of addition and multiplication, identity properties for addition and multiplication, associative properties of addition and multiplication, symmetric property applied to addition and multiplication, and zero property of multiplication	K.3(uses)...the concepts of these properties with whole numbers, integers, fractions greater than or equal to zero (including mixed numbers), and decimals greater than or equal to zero and demonstrates their meaning including the use of concrete objects: commutative properties of addition and multiplication, associative properties of addition and multiplication, identity properties for addition and multiplication, symmetric property, distributive property, zero property of multiplication, and substitution property	K.3(uses & describes)...these properties with the rational number system and demonstrates their meaning including the use of concrete objects: commutative and associative properties of addition and multiplication, identity properties for addition and multiplication, symmetric property, zero property of multiplication, distributive property, substitution property, addition and multiplication property of equality, and additive inverse property	K.3(names, uses, & describes) & K.4(uses & describes)...these properties with the rational number system and demonstrates their meaning including the use of concrete objects: commutative and associative properties of addition and multiplication, distributive property, substitution property, identity properties for addition and multiplication, symmetric property, zero property of multiplication, addition and multiplication properties of equality, and additive and multiplicative inverse properties	K.3(names, uses, & describes)...these properties with the rational number system and demonstrates their meaning including the use of concrete objects: commutative, associative, distributive, and substitution properties, identity properties for addition and multiplication, inverse properties of addition and multiplication, symmetric property, addition and multiplication properties of equalities, addition property of inequalities, and zero product property	▲K.3(names, uses, & describes) & K.4...these properties with the real number system and demonstrates their meaning including the use of concrete objects: commutative, associative, distributive, substitution properties, identity properties for addition and multiplication, inverse properties of addition and multiplication, symmetric property, addition and multiplication properties of equality and inequalities, and zero product property, transitive property, and reflexive property

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Number Systems and their Properties	**solves and/or generates…**		A.1...real-world problems with whole numbers from 0 through 50 using place value models and the concepts of these properties to explain reasoning: commutative property of addition and zero property for addition	A.1...real-world problems with whole numbers from 0 through 100 using place value models and the concepts of these properties to explain reasoning: commutative property of addition and zero property of addition	A.1...real-world problems with whole numbers from 0 through 100 using place value models, money, and the concepts of these properties to explain reasoning: commutative property of addition, zero property of addition, associative property of addition	A.1...real-world problems with whole numbers from 0 through 10,000 using place value models; money; and the concepts of these properties to explain reasoning: commutative properties of addition and multiplication, zero property of addition, identity property for multiplication, associative properties of addition and multiplication, and zero property of multiplication	A.1...real-world problems with whole numbers from 0 through 100,000 and decimals through hundredths using place value models; money; and the concepts of these properties to explain reasoning: commutative and associative properties of addition and multiplication, identity properties for addition and multiplication, symmetric property, zero property of multiplication, and distributive property	A.1...real-world problems with rational numbers using the concepts of these properties to explain reasoning: commutative and associative properties for addition and multiplication, identity properties for addition and multiplication, symmetric property, distributive property, substitution property, addition and multiplication property of equality, and additive inverse property	A.1...real-world problems with rational numbers and the irrational number pi using the concepts of these properties to explain reasoning: commutative and associative properties of addition and multiplication, distributive property, substitution property, symmetric property, identity properties for addition and multiplication, zero property of multiplication, addition and multiplication properties of equality, and additive and multiplicative inverse properties	▲(ab)A.1...real-world problems with rational numbers using the concepts of these properties to explain reasoning: commutative, associative, distributive, and substitution properties, identity and inverse properties of addition and multiplication, symmetric property, addition and multiplication properties of equality, and zero product property	A.1...real-world problems with real numbers using the concepts of these properties to explain reasoning: commutative, associative, distributive, and substitution properties, identity and inverse properties of addition and multiplication, symmetric property, addition and multiplication properties of equality, and zero product property

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Number Systems and their Properties	**performs…**			A.2...various computational procedures with whole numbers from 0 through 100 using these properties and explains how they were used: commutative property of addition and zero property of addition	A.2...various computational procedures with whole numbers from 0 through 100 using the concepts of these properties and explains how they were used: commutative property of multiplication, identity property (one) for multiplication without computing, and associative property of addition	A.2...various computational procedures with whole numbers from 0 through 10,000 using the concepts of the following properties; extends the properties to fractions, mixed numbers, and decimals through hundredths place; and explains how the properties were used: commutative property of addition and multiplication, identity property for multiplication without computing, and associative property of addition	A.2....various computational procedures with whole numbers from 0 through 100,000 using the concepts of these properties; extends these properties to fractions greater than or equal to zero (including mixed numbers) and decimals greater than or equal to zero through hundredths place; and explains how the properties were used: commutative and associative properties of addition and multiplication, identity properties for addition and multiplication, symmetric property, zero property of multiplication, and distributive property				

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Number Systems and their Properties	**recognizes and/or explains**						K.5...the need for integers	K.4...the need for integers			
	recognizes…						K.4...Roman Numerals that are used for dates, on clock faces, and in outlines	K.5...that the irrational number pi can be represented by an approximate rational value	K.5...that the irrational number pi can be represented by approximate rational values		
	states…					A.3...the reason for using whole numbers, fractions, mixed numbers, or decimals when solving a given real-world problem	A.3...the reason for using integers, whole numbers, fractions (including mixed numbers), or decimals when solving a given real-world problem				
	analyzes, and/or evaluates…							A.2...the advantages and disadvantages of using integers, whole numbers, fractions (including mixed numbers), decimals, or the irrational number pi and its rational approximations in solving a given real-world problem	A.2…the advantages and disadvantages of using integers, whole numbers, fractions (including mixed numbers), decimals, or the irrational number pi and its rational approximations in solving a given real-world problem	A.2...the advantages and disadvantages of using integers, whole numbers, fractions (including mixed numbers), or decimals in solving a given real-world problem	A.2...the advantages and disadvantages of using integers, whole numbers, fractions (including mixed numbers), decimals or irrational numbers and their rational approximations in solving a given real-world problem

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Estimation	**determines or estimates…**	K.1...if a group of up to 20 concrete objects has more, less, or about the same number of concrete objects as a second set of the same kind of objects	K.1...whole number quantities from 0 through 100 using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology	K.1...whole number quantities from 0 through 1,000 and monetary amounts through $50 using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology	K.1...whole numbers quantities from 0 through 1,000; fractions (halves, fourths); and monetary amounts through $500 using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology	K.1...whole number quantities from 0 through 10,000; fractions (halves, fourths, thirds); and monetary amounts through $1,000 using various computational methods including mental math, paper and pencil, concrete materials, and appropriate technology	K.1...whole numbers quantities from 0 through 100,000; fractions greater than or equal to zero; decimals greater than or equal to zero through hundredths place; and monetary amounts to $10,000 using various computational methods including mental math, paper and pencil, concrete materials, and appropriate technology	K.1...quantities with combinations of rational numbers and/or the irrational number pi using various computational methods including mental math, paper and pencil, concrete objects, and/or appropriate technology	K.1...quantities with combinations of rational numbers and/or the irrational number pi using various computational methods including mental math, paper and pencil, concrete objects, and/or appropriate technology	K.1...real number quantities using various computational methods including mental math, paper and pencil, concrete objects, and/or appropriate technology	K.1...real number quantities using various computational methods including mental math, paper and pencil, concrete objects, and/or appropriate technology
	compares or adjusts…	A.1...two randomly arranged groups of 10 concrete objects or less and states the comparison using the terms: more, less, about the same	A.1...original whole number estimate of a real-world problem using whole numbers from 0 through 50 based on additional information	A.1...original whole number estimate of a real-world problem using numbers from 0 through 1,000 based on additional information	A.1...original whole number estimate of a real-world problem using numbers from 0 through 1,000 based on additional information	A.1...original whole number estimates of a real-world problem using numbers from 0 through 10,000 based on additional information	A.1...original whole number estimates of a real-world problem using numbers from 0 through 100,000 based on additional information	A.1...original rational number estimate of a real-world problem based on additional information	A.1...original rational number estimate of a real-world problem based on additional information	A.1...original rational number estimate of a real-world problem based on additional information	▲A.1...original rational number estimate of a real-world problem based on additional information
	uses various estimation strategies and/or explains…			K.2...to estimate whole number quantities from 0 through 1,000	K.2...to estimate whole number quantities from 0 through 1,000 and explains the process used	K.2…to estimate whole number quantities from 0 through 10,000; fractions; and monetary amounts through $1,000	▲K.2…to estimate whole number quantities from 0 through 100,000; fractions greater than zero; decimals greater than zero through hundredths place; and monetary amounts to $10,000	K.2...to estimate rational number quantities or the irrational number pi	K.2...to estimate rational number quantities or the irrational number pi	K.2…to estimate real number quantities and simple algebraic expressions	K.2...to estimate real number quantities and algebraic expressions

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Estimation	**estimates to check...**		K.2...whether or not results of whole number quantities from 0 through 100 are reasonable	A.2...whether or not the result of a real-world problem using whole numbers from 0 through 1,000 and monetary amounts through $50 is reasonable and makes predictions based on the information	A.2...whether or not the result of a real-world problem using whole numbers from 0 through 1,000 and monetary amounts through $500 is reasonable and makes predictions based on the information	A.2...whether or not the result of a real-world problem using whole numbers from 0 through 10,000, fractions, and monetary amounts is reasonable and makes predictions based on the information	A.2...whether or not the result of a real-world problem using whole numbers from 0 through 100,000; fractions greater than zero; decimals greater zero to tenths place; and monetary amounts to $10,000 is reasonable and makes predictions based on the information	▲A.2...whether or not the result of a real-world problem using rational numbers and/or the irrational number pi is reasonable and makes predictions based on the information	A.2...whether or not the result of a real-world problem using rational numbers, the irrational number pi, and/or simple algebraic expressions is reasonable and makes predictions based on the information	A.2...whether or not the result of a real-world problem using rational numbers and/or simple algebraic expressions is reasonable and makes predictions based on the information	A.2...whether or not the result of a real-world problem using real numbers and/or algebraic expressions is reasonable and makes predictions based on the information
	recognizes and explains…				K.3...the difference between an exact and an approximate answer	K.3...the difference between an exact and an approximate answer	K.3...the difference between an exact and an approximate answer	K.3...the difference between an exact and an approximate answer	K.3...the difference between an exact and approximate answer		
	selects or determines…			A.3...a reasonable magnitude from three given quantities, a one-digit numeral, a two-digit numeral, and a three-digit numeral based on a familiar problem situation and explains the reasonableness of the selection	A.3...a reasonable magnitude from three given quantities based on a familiar problem situation and explains the reasonableness of the results	A.3...a reasonable magnitude from three given quantities based on a familiar problem situation and explains the reasonableness of selection	A.3...a reasonable magnitude from given quantities based on a real-world problem using whole numbers from 0 through 100,000 and explains the reasonableness of selection	A.3...a reasonable magnitude from given quantities based on a real-world problem and explains the reasonableness of the selection	A.3...a reasonable range for the estimation of a quantity given a real-world problem and explains the reasonableness of the range	A.3...a reasonable range for the estimation of a quantity given a real-world problem and explains the reasonableness of the range	
	selects, explains, or determines…					K.4...the appropriate type of estimate (overestimate, underestimate, or range of estimates)	K.4...the appropriateness of an estimation strategy used and whether the estimate is greater than or less than the exact answer	K.4...the appropriateness of an estimation strategy used and whether the estimate is greater than or less than the exact answer and its potential impact on the result	K.4...the appropriateness of an estimation strategy used and whether the estimate is greater than or less than the exact answer and its potential impact on the result		

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Estimation	**determines…**				A.4...if a real-world problem with whole numbers from 0 through 1,000 calls for an exact or approximate answer and performs the appropriate computation using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology	A.4...if a real-world problem calls for an exact or approximate answer and performs the appropriate computation using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology	▲A.4...if a real-world problem calls for an exact or approximate answer using whole numbers from 0 through 100,000 and performs the appropriate computation using various computational methods including mental math, paper and pencil, concrete materials, and appropriate technology	A.4...if a real-world problem calls for an exact or approximate answer and performs the appropriate computation using various computational methods including mental math, paper and pencil, concrete objects, or appropriate technology	A.4...if a real-world problem calls for an exact or approximate answer and performs the appropriate computation using various computational methods including mental math, paper and pencil, concrete objects, and/or appropriate technology	A.4...if a real-world problem calls for an exact or approximate answer and performs the appropriate computation using various computational methods including mental mathematics, paper and pencil, concrete objects, and/or appropriate technology	A.3...if a real-world problem calls for an exact or approximate answer and performs the appropriate computation using various computational strategies including mental math, paper and pencil, concrete objects, and/or appropriate technology
	knows and explains…								K.5...why the fraction (22/7) or decimal (3.14) representation of the irrational number pi is an approximate value	K.3 & K.4...why a decimal representation of the irrational number pi is an approximate value and between which two consecutive integers an irrational number lies	K.3 & K.4...why a decimal representation of the irrational number is an approximate value and between which two consecutive integers an irrational number lies
	explains…									A.5...the impact of estimation on the result of a real-world problem (underestimate, overestimate, range of estimates)	A.4...the impact of estimation on the result of a real-world problem (underestimate, overestimate, range of estimates)

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Computation	**adds, subtracts, or computes…**	K.1...using whole numbers from 0 through 10 and various mathematical models	K.1...with efficiency and accuracy using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology	K.1...with efficiency and accuracy using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology	K.1...with efficiency and accuracy using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology	K.1...with efficiency and accuracy using various computational methods including mental math, paper and pencil, concrete materials, and appropriate technology	K.1...with efficiency and accuracy using various computational methods including mental math, paper and pencil, concrete materials, and appropriate technology	K.1...with efficiency and accuracy using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology	K.1...with efficiency and accuracy using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology	K.1...with efficiency and accuracy using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology	K.1...with efficiency and accuracy using various computational methods including mental math, paper and pencil, concrete objects, and appropriate technology
	uses…	K.2...repeated addition (multiplication) with whole numbers to find the sum when given the number of groups and given the same number of concrete objects in each group (five or less)	K.4...repeated addition (multiplication) with whole numbers to find the sum when given the number of groups and given the same number of concrete objects in each group (ten or less)	K.4...repeated addition (multiplication) with whole numbers to find the sum when given the number of groups and given the same number of concrete objects in each group (twenty or less)							
	uses…	K.3...repeated subtraction (division) with whole numbers when given the total number of concrete objects in each group to find the number of groups	K. 5...repeated subtraction (division) with whole numbers when given the total number of concrete objects in each group to find the number of groups	K.5...repeated subtraction (division) with whole numbers when given the total number of concrete objects in each group to find the number of groups							
	states and uses…		K.2...with efficiency and accuracy basic addition facts with sums from 0 through 10 and corresponding subtraction facts	K.2 & A.2...with efficiency and accuracy basic addition facts with sums from 0 through 20 and corresponding subtraction facts and generates a family of basic addition and subtraction facts given one fact	K.2...with efficiency and accuracy the multiplication facts through the 5s and the multiplication facts of the 10s and corresponding division facts	K.2...with efficiency and accuracy multiplication facts from 1 x 1 through 12 x 12 and corresponding division facts					

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Computation	**reads and writes…**		K.8...horizontally and vertically the same addition expression	K.9...horizontally and vertically the same addition or subtraction expression	K.8...horizontally, vertically, and with different operational symbols the same addition, subtraction, multiplication, or division expression	K.5...horizontally, vertically, and with different operational symbols the same addition, subtraction, multiplication, or division expression	K.3...horizontally, vertically, and with different operational symbols the same addition, subtraction, multiplication, or division expression				
	shows or explains…		K.7...that addition and subtraction are inverse operations using concrete objects		K.6...the relationship between addition and subtraction	▲K.6...the relationship between these operations with the basic fact families including the use of mathematical models for addition and subtraction, addition and multiplication, multiplication and division, and subtraction and division					
	identifies recognizes, describes, and/or uses…			K.8...basic addition and subtraction fact families	▲K.7...multiplication and division fact families through the 5s and the multiplication and division fact families of the 10s	K.4...multiplication and division fact families		K.3...different representations to express the same computational procedures	K.3...different ways to express computational procedures		
	generates…				A.2...a family of multiplication and division facts through the 5s	A.2...a family of multiplication and division facts given one equation/fact					
	skip counts…		K.3...by 2s, 5s, and 10s through 50	K.3...by 2s, 5s, and 10s through 100 and skip counts by 3s through 36	K.3...by 2s, 3s, 4s, 5s, and 10s						
	measures…			K.6...out (divides) a total amount through 100 concrete objects into equal groups	K.5...out (divides) a total amount through 100 concrete objects into equal groups						

Organizer	Indicator lead in phrase/wording	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	Fifth Grade	Sixth Grade	Seventh Grade	Eighth Grade	Ninth and Tenth Grade
Computation	**performs and explains…**		K.6… computational procedures with addition of whole numbers with sums through 99 and subtraction of two-digit whole numbers without regrouping using concrete objects	K.7… computational procedures to add or subtract three-digit whole numbers with and without regrouping including the use of concrete objects, adds and subtracts monetary amounts through 99¢ using cent notation and money models	K.4... computational procedures to add or subtract whole numbers from 0 through 10,000, multiplies whole numbers when one factor is 5 or less and the other factor is a multiple of 10 through 1,000, and adds and subtracts monetary amounts using dollar and cents notation through $500.00	K.3... computational procedures to add or subtract whole numbers from 0 through 100,000, multiplies through a three-digit whole number by a two-digit whole number, multiplies whole dollar monetary amounts by a one- or two-digit whole number, multiplies monetary amounts less than $100.00 by whole numbers less than ten, divides through a two-digit whole number by a one-digit whole number with a one-digit whole number quotient, adds and subtracts fractions greater than or equal to zero with like denominators, and figures correct change through $20.00	K.2… computational procedures to divide whole numbers, add, subtract, multiply decimals, add and subtract fractions, and multiply and divide by 10; 100; 1,000	▲K.2... computational procedures to divide whole numbers, add, subtract, multiply, and divide decimals, multiply and divide decimals by 10, 100, 1,000, 0.1, 0.01, 0.001, add integers, add, subtract, and multiply fractions, basic order of operations with whole numbers, add, subtracts multiplies, and divides rational numbers using concrete objects, find the root of perfect whole number squares, uses basic order of operations with whole number, and add, subtract, multiply, and divide rational numbers	▲K.2... computational procedures to add, subtract, multiply, and divide rational numbers, multiply and divide decimals by 10, 100, 1,000, .1, .01, .001, use order of operations using whole numbers, simplify positive rational numbers raised to positive whole number powers, find percentages of rational numbers, and combine like terms of a first degree algebraic expression	▲K.2... computational procedures with rational numbers to add, subtract, multiply, and divide integers, order of operations, multiplication and division to find a percent of a number, percent of increase and decrease, percent one number is of another number, and a number when a percent of the number is given, add of polynomials, and simplify algebraic expressions in one variable by combining like terms or using the distributive property	K.2... computational procedures with rational numbers to add, subtract, multiply, and divide using the order of operations, multiplication and division to find a percent of a number, percent of increase and decrease, percent one number is of another number, and a number when a percent of the number is given, manipulation of variable quantities within an equation or inequality, simplification of radical expressions, simplification or evaluation of real numbers and algebraic monomial expressions raised to a whole number power, algebraic binomial expressions squared or cubed, simplification of products and quotients of real number and algebraic monomial expressions using the properties of exponents, matrix addition, and scalar-matrix multiplication

Organizer	Indicator lead in phrase/wording	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	Fifth Grade	Sixth Grade	Seventh Grade	Eighth Grade	Ninth and Tenth Grade
Computation	**generates and/or solves…**	A.1...one-step real-world addition or subtraction problems with whole numbers from 0 through 10 using concrete objects in various groupings and explains reasoning	A.1...one-step real-world addition or subtraction problems with various groupings of two-digit whole numbers without regrouping	A.1...one-step real-world addition or subtraction problems with various groupings of two-digit whole numbers with regrouping and monetary amounts to 99¢ with regrouping	▲A.1...one-step real-world addition or subtraction problems with whole numbers from 0 through 10,000 and monetary amounts using dollar and cents notation through $500.00	▲A.1...one- and two-step real-world problems with one or two operations using these computational procedures to add and subtract whole numbers from 0 through 10,000 and when used as monetary amounts, multiply through a two-digit whole number by a two-digit whole number, multiply whole dollar monetary amounts by a one- or two-digit whole number, multiply monetary amounts less than $100 by whole numbers less than ten, and figure correct change through $20.00	▲A.1...one- and two-step real-world problems using these computational procedures to add and subtract whole numbers from 0 through 100,000, multiply through a four-digit whole number by a two-digit whole number, multiply monetary amounts up to $1,000 by a one- or two-digit whole number, divide whole numbers through a 2-digit divisor and a 4-digit dividend with the remainder as a whole number or a fraction, add and subtract decimals from thousands place through hundredths place when used as monetary amounts, and multiply and divide by 10, 100, and 1,000 and single digit multiples of each	▲A.1...one- and two-step real-world problems with rational numbers using computational procedures to divide with whole numbers, add, subtract, multiply, and divide decimals through hundredths place, and add, subtract, multiply, and divide fractions	A.1...one- and two-step real-world problems using computational procedures to add, subtract, multiply, and divide rational numbers with a special emphasis on fractions and expressing answers in simplest form, and add, subtract, multiply, and divide rational numbers with a special emphasis on integers, first degree algebraic expressions in one variable, percentages of rational numbers, and approximation of the irrational number pi	▲A.1...one- and two-step real-world problems using computational procedures with rational numbers, the irrational number pi as an approximation, and applications of percents	▲A.1...multi-step real-world problems with real numbers and algebraic expressions using computational procedures for applications from business, chemistry, and physics that involve addition, subtraction, multiplication, division, squares, and square roots when the formulae are given as part of the problem and variables are defined, volume and surface area given the measurement formulas of rectangular solids and cylinders, probabilities, application of percents, and simple exponential growth and decay, and economics
	finds, identifies, and/or explains...					K.7...factors and multiples of whole numbers from 1 through 100	▲K.4...the greatest common factor and least common multiple of two or more whole numbers through the basic multiplication facts from 1 x 1 through 12 x 12	K.4...the prime factorization of whole numbers K.5... finds prime factors, greatest common factor, multiples, and the least common multiple	K.4...prime factors, greatest common factor, multiples, and the least common multiple	K.3...factors and common factors of simple monomial expressions	K.3...prime factors, greatest common factor, multiples, and the least common multiple of algebraic expressions
	finds…							K.6...a whole number percent (between 0 and 100) of a whole number	▲K.5...percentages of rational numbers		