Grades K-6 Operations & Algebraic Thinking and Expressions & Equations Coherence Card Sort

Grades K-6 Operations & Algebraic Thinking and Expressions & Equations Standards	Grades K-6 Operations & Algebraic Thinking and Expressions & Equations Standards
Represent addition and subtraction with objects, fingers, mental images, drawings, sounds, acting out situations, verbal explanations, expressions or equations.	Solve addition and subtraction word problems and add and subtract within 10 by using objects or drawings to represent the problem.
Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions.	Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, by using objects, drawings, and equations with a symbol for one unknown number to represent the problem.
Fluently add and subtract within 5.	For any number from 1 to 9, find the number that makes 10 when added to the given number by using objects or drawings, and record the answer with a drawing or equation.

Grades K-6 Operations & Algebraic Thinking and Expressions & Equations Coherence Card Sort

Understand subtraction as an unknown-addend problem.	Relate counting to addition and subtraction.
Decompose numbers less than or equal to 10. a. Decompose numbers into two groups in more than one way by using objects or drawings and record each decomposition by a drawing or equation. b. Use objects or drawings to demonstrate equality as the balancing of quantities.	Apply properties of operations as strategies to add and subtract.
Add and subtract within 20. a. Fluently add and subtract within 10. b. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making 10; decomposing a number leading to a ten; using the relationship between addition and subtraction; and creating equivalent but easier or known sums.	Understand the meaning of the equal sign and determine if equations involving addition and subtraction are true or false.

Grades K-6 Operations & Algebraic Thinking and Expressions & Equations Coherence Card Sort

Determine the unknown whole number in an addition or subtraction equation relating three whole numbers.	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions by using drawings and equations with a symbol for the unknown number to represent the problem.
Fluently add and subtract within 20 using mental strategies.	Determine whether a group of objects (up to 20) has an odd or even number of members; write an equation to express an even number as a sum of two equal addends.
Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.	Interpret and demonstrate products of whole numbers.

Grades K-6 Operations & Algebraic Thinking and Expressions & Equations Coherence Card Sort

Determine the unknown whole number in a multiplication or division equation relating three whole numbers.	Apply properties of operations as strategies to multiply and divide.
Interpret and demonstrate whole-number quotients of whole numbers, where objects are partitioned into equal shares.	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays and measurement quantities, by using drawings and equations with a symbol for the unknown number to represent the problem.
Understand division as an unknown-factor problem.	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations.

Grades K-6 Operations & Algebraic Thinking and Expressions & Equations Coherence Card Sort

Use various strategies to solve two-step word problems using the four operations (involving only whole numbers with whole number answers). Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations.
Solve multistep problems. a. Perform operations in the conventional order when there are no parentheses to specify a particular order. b. Solve multistep word problems posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	Find factors and multiples of numbers in the range 1-100. a. Find all factor pairs for a given whole number. b. Recognize that a whole number is a multiple of each of its factors. c. Determine whether a given whole number is a multiple of a given one-digit number. d. Determine whether a given whole number is prime or composite.
Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations.	Multiply or divide to solve word problems involving multiplicative comparisons, by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

Grades K-6 Operations & Algebraic Thinking and Expressions & Equations Coherence Card Sort

Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern not explicit in the rule itself.	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions that include symbols.
Write simple expressions with numbers and interpret numerical expressions without evaluating them.	Generate numerical patterns for situations. a. Generate a rule for growing patterns, identifying the relationship between corresponding terms (x, y). b. Generate patterns using one or two given rules (x, y). c. Use tables, ordered pairs, and graphs to represent the relationship between the quantities.
Apply the properties of operations to generate equivalent expressions.	Identify when two expressions are equivalent, when the two expressions name the same number regardless of which value is substituted into them.

Grades K-6 Operations & Algebraic Thinking and Expressions & Equations Coherence Card Sort

Write and evaluate numerical expressions involving whole-number exponents.	Write an inequality of the form $x > c$, $x < c$, $x \geq c$, or $x \leq c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of these forms have infinitely many solutions; represent solutions of such inequalities on vertical and horizontal number lines.
Write, read and evaluate expressions in which letters stand for numbers. a. Write expressions that record operations with numbers and with letters standing for numbers. b. Identify parts of an expression using mathematical terms (sums, term, product, factor, quotient, coefficient); view one or more parts of an expression in a single entity. c. Evaluate expressions for specific values of their variables, including values that are non-negative rational numbers. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).	Use variables to represent two quantities in a real-world problem that change in relationship to one another; a. Appropriately recognize one quantity as the dependent variable and the other as the independent variable. b. Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. c. Analyze the relationship between the dependent and independent variables using graphs and tables and relate these to the equation.

Grades K-6 Operations & Algebraic Thinking and Expressions & Equations Coherence Card Sort

Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.	