

Operations and Algebraic Thinking: Grade 1

Stage 1 Desired Results

ESTABLISHED GOALS:

Competencies:

- **Students will demonstrate the ability to solve arithmetic problems by utilizing effective strategies and applying properties of operations to whole numbers.**
- **Students will demonstrate the ability to model operations by utilizing objects, drawings, and equations.**

Content Standards:

- 1.OA.1 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, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
- 1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
- 1.OA.3 Apply properties of operations as strategies to add and subtract. (*commutative property of addition and associative property of addition.*)
- 1.OA.4 Understand subtraction as an unknown-addend problem. *For example, subtract 10 - 8 by finding the number that makes 10 when added to 8.*
- 1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
- C1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten; decomposing a number leading to a 10; using the relationship between addition and subtraction; and creating equivalent but easier or known sums.
- 1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.*
- 1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = _ - 3$, $6 + 6 = _$.*
- MP1 Make sense of problems and persevere in solving them.
- MP2 Reason abstractly and quantitatively.

Transfer

Students will be able to independently use their learning to know when and how to add or subtract to answer everyday questions.

Meaning

ENDURING UNDERSTANDINGS

Students will understand that...

- mathematical operations of addition and subtraction are used in solving problems in which a new value is produced from one or more values.
- algebraic thinking involves choosing, combining, and applying effective strategies for answering quantitative questions.

ESSENTIAL QUESTIONS

- ***How do you decide what to do?***

Acquisition

Students will know...

- that addition and subtraction can be modeled using objects, drawings, and equations.
- a variety of addition and subtraction strategies.
- that a subtraction equation can be rewritten as an addition equation (inverse operation).
- that when adding three numbers in any order, the sum does not change.
- that counting and adding/subtracting are related.

vocabulary:

addition, add, subtraction, subtract, equation, sum, commutative property, associative property, addend, count on, count back, make ten, equal sign, true equation, false equation, ten-frame, facts, number sentence, number model, turn-around facts, doubles, fact families, near doubles, doubles+1, count up, difference, digit, equal

Students will be skilled at...

- adding and subtracting within 20 to solve word problems.
- understanding and applying the properties of operations to add and subtract (commutative and associative properties).
- adding and subtracting within 10 fluently, within 20 flexibly.
- solving word problems with up to three whole numbers using objects, drawings, and equations.
- adding three whole numbers whose sum is less than or equal to 20.
- comparing the value of both sides of an equation and determining whether the equation is true or false.
- determining the unknown value in an addition or subtraction equation when two out of three of the numbers in the equation are given.
- rewriting a subtraction equation as an addition equation with a missing addend (number).

• MP4 Model with mathematics. • MP6 Attend to precision. • MP7 Look for and make use of structure. • MP8 Look for and express regularity in repeated reasoning.		
Content Area Literacy Standards		21st Century Skills
not applicable		• <i>solve problems</i> • <i>communicate clearly</i> • <i>reason effectively</i>

Stage 2 - Evidence

Evaluative Criteria	Assessment Evidence
	PERFORMANCE TASK(S):
	OTHER EVIDENCE:

Stage 3 – Learning Plan

Summary of Key Learning Events and Instruction

Language Arts Integration	Mathematics Integration
• 1.OA.1 Use	not applicable
Technology Integration	District Materials
• 1.OA.1 Use	