Grade 1 Unit 2: More Strategies for Addition and Subtraction and Understanding Data

Content Area: **Math**
Course(s): **Math Grade 1**
Time Period: **MP2**
Length: **45**
Status: **Published**

NJSLS Math

1.OA.A.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.A.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.B.3	Apply properties of operations as strategies to add and subtract.
1.OA.C.5	Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
1.OA.C.6	Add and subtract within 20, demonstrating accuracy and efficiency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).
1.OA.D.7	Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false.
1.OA.D.8	Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers.
1.NBT.A.1	Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.
1.NBT.B.2.a	10 can be thought of as a bundle of ten ones — called a “ten.”
1.NBT.B.2.c	The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
1.DL.A.1	Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Unit Focus

- Work with addition and subtraction equations.
- Represent and interpret data.
- Extend the counting sequence.

Standards for Math Practice

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.K-12.8	Look for and express regularity in repeated reasoning.

Critical Knowledge & Skills

NJSLS Math	Suggested Math Practices	Critical Knowledge and Skills
1.OA.D.8 (**M**) Determine the unknown whole number in an addition or subtraction equation relating to 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 = ?.	MP.2 Reason abstractly and quantitatively. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concepts: • Models and the relationship between addition and subtraction can be used to solve equations with an unknown part. Students will be able to: • Determine the unknown number that makes an equation true. • Solve addition or subtraction equations by finding the missing whole number. Learning Goal 1: • Solve addition and subtraction equations by finding the missing whole number in any position.
1.OA.C.5 (**M**) Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	MP.2 Reason abstractly and quantitatively. MP.7 Look for and make use of	Concepts: • Counting can be used to add and subtract.

	structure.	Students will be able to: • Count on to add. • Relate counting on to addition. • Count back to subtract. • Relate counting back to subtraction. Learning Goal 2: • Count on to add and count backwards to subtract to solve addition and subtraction problems.

1.OA.C.6 (**M**) Add and subtract within 20, demonstrating accuracy and efficiency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 - 4 = 13 - 3 - 1 = 10 - 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 - 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 +7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).	MP.2 Reason abstractly and quantitatively.
	MP.7 Look for and make use of structure.
	MP.8 Look for and express regularity in repeated reasoning.
		Concepts:
		• Different strategies can be used to add and subtract.
		Students will be able to:
		• Add and subtract within 20, using the following strategies:
		  ○ counting on
		  ○ making ten
		  ○ composing numbers
		  ○ decomposing numbers leading to a ten
		  ○ relationship between addition and subtraction
		  ○ creating equivalent but easier or known sums
		• Fluently add or subtract whole numbers within 20.

		Learning Goal 3: • Add and subtract whole numbers within 20 using various strategies: counting on, making ten, composing, decomposing, relationship between addition and subtraction, creating equivalent but easier or known sums, etc.
1.OA.D.7 (**M**) 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.	MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concepts: • True and false statements. • Both the left and right side of the equal sign may contain expressions (e.g. 5 + 2 = 1 + 4). Students will be able to: • Determine if an addition equation is true or false. • Determine if a subtraction equation is true or false. Learning Goal 4: • Find the missing numbers in equations to make them true.

1.OA.B.3 (**M**) Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition). To add 2 + 6 + 4 the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition). (Clarification: Students need not use formal terms for these properties.)	MP.2 Reason abstractly and quantitatively. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	Concepts: • Knowing 4 + 3 means that 3 + 4 is also known (commutative property). • When adding, the numbers need not be added in any particular order. Students will be able to: • Recognize and apply the commutative property and the associative property in simple addition and subtraction problems. Learning Goal 5: • Use different strategies based on properties of operations to solve addition and subtraction problems within 20 accurately.
1.OA.A.2 (**M**) 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.  Climate Change Example: Given a number of light bulb stickers, students may determine how many total stickers they and two partners have. With support, students may ask and answer questions about how turning off lights and unplugging electronics saves electricity. Students may then, with their partners, determine who saves the most electricity based on the number of light bulb stickers each has.	MP. 1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.8 Look for and express	Concepts: • Numbers can be grouped in different ways to solve word problems with three addends. Students will be able to: • Solve word problems by adding three whole numbers with a sum of 20 or less. • Represent the problems using objects, drawings, and equations with a symbol for the unknown number. Learning Goal 6: • Solve addition word problems with three whole numbers with sums less

	regularity in repeated reasoning.	than or equal to 20.
1.OA.A.1 (**M**) 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.  Climate Change Example: Given a number of light bulb stickers, students may determine how many total stickers they and a partner have. With support, students may ask and answer questions about how turning off lights and unplugging electronics saves electricity. Students may then determine, with their partner, who saves more electricity based on the number of light bulb stickers each has.	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.8 Look for and express regularity in repeated reasoning.	Concepts: • No new concepts introduced Students will be able to: • Add, using objects and drawings, to solve word problems involving situations of adding to and putting together. • Subtract, using objects and drawings, to solve world problems involving situations of taking from and taking apart and comparing with unknowns in all positions. • Represent a word problem using objects, drawings, or equations using a symbol for the unknown. Learning Goal 7: • Use addition and subtraction to solve problems, including word problems involving situations of adding to, taking from, putting together, taking apart, and comparing with unknowns in all positions.

1.DL.A.1 (**S**) Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
 	
 Climate Change Example: Students may ask and answer questions about objects that may be reused, objects that may be recycled, and objects that must be placed in the trash. Students may organize used objects into those categories, and ask and answer questions about the total number of objects, how many are in each category, and how many more or fewer are in one category than in another.
	MP.2 Reason abstractly and quantitatively.
	
	MP.3 Construct viable arguments and critique the reasoning of others.
	
	MP.4 Model with mathematics.
	
	MP.5 Use appropriate tools strategically.
	
	MP.6 Attend to precision.
		Concepts:
		• Tally charts are useful for recording and organizing some kinds of data.
		• A picture graph uses pictures to show and organize data.
		• Some problems can be solved by making, reading, and analyzing a tally chart or picture graph.
		
		Students will be able to:
		• Group data into up to three categories.
		• Represent data with objects, drawings, or numerals, in up to three categories.
		• Ask and answer questions about:
		  ○ The total number of data points.
		  ○ The number of data points in each category.
		  ○ How many more or less are in one category than in another.
		
		Learning Goal 8:
		• Organize, represent, and interpret data with up to three categories, compare the number of data points among the categories, and find the total number of data points.

1.NBT.B.2c (**M**) Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).	MP.2 Reason abstractly and quantitatively. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	Concepts: • Two digits represent the amounts of tens and ones. • The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). Students will be able to: • Compose tens to make numbers up to 90. • Decompose numbers up to 90, into tens. • Identify the value of the number in the tens or ones place. Learning Goal 9: • Compose and decompose numbers to 90 into tens, identifying the value of the number in the tens and ones place.
1.NBT.B.2a (**M**) Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones — called a “ten.”	MP.2 Reason abstractly and quantitatively. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	Concepts: • The number 10 can be represented as a bundle of ten ones called a “ten”. Students will be able to: • Recognize the special case of 10 being a group of 10 ones. Learning Goal 10: • Count to 120 by 10’s.
1.NBT.A.1 (**M**) Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number	MP.2 Reason abstractly and quantitatively.	Concepts: • Number names and the

of objects with a written numeral.	MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	count sequence up to 120. Students will be able to: • Count orally by ones up to 120. • Count up to 120 beginning at any number less than 120. • Read numerals up to 120. • Write numerals up to 120. • Represent a number of objects up to 120 with a written number. Learning Goal 11: • Count to 120 orally, read and write numerals, and write numerals to represent the number of objects (up to 120).

School/District Formative Assessment Plan

- Topic 4-1 through Topic 4-9 Quick Check (found in Savvas Realize).
- Topic 5-1 through Topic 5-7 Quick Check (found in Savvas Realize).
- Topic 6-1 through Topic 6-5 Quick Check (found in Savvas Realize).

School/District Summative Assessment Plan

- Topic 4 Assessment
- Topic 5 Assessment
- Topic 6 Assessment

Benchmark & Alternative Assessments

- STAR Renaissance
- Performance Tasks (found in Savvas Realize)

Focus Mathematical Concepts

Pre-requisite skills

- Count by ones to 100 (K.CC.A.1).
- Write numbers 0 through 20 (K.CC.A.3).
- Represent the number of objects with a written number from 0 through 20 (K.CC.A.3).
- Count out the correct number of objects when given a number up to 20 (K.CC.B.5).
- Compose and record numbers from 11 to 19 into a ten and some further ones (e.g. using objects or drawings) (K.NBT.A.1).
- Decompose and record numbers 11 to 19 into a ten and some further ones (e.g. using objects or drawings) (K.NBT.A.1).
- The numbers 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones (K.NBT.A.1).
- Classify objects into given categories (K.DL.A.1).
- Count the number of objects in a category and sort the categories of objects by their count (K.DL.A.1).

Common Misconceptions

- A common misconception is that the commutative property applies to subtraction. After students have discovered and applied the commutative property for addition, ask them to investigate whether this property works for subtraction. Have students share and discuss their reasoning and guide them to conclude that the commutative property does not apply to subtraction.
- Many students think that the equals sign means that an operation must be performed on the numbers on the left and the result of this operation is written on the right. They think that the equal sign is like an arrow that means “becomes” and one number cannot be alone on the left. Students often ignore the equal sign in equations that are written in a nontraditional way. For instance, students find the incorrect value for the unknown in the equation $9 = \Delta - 5$ by thinking $9 – 5 = 4$. It is important to provide equations with a single number on the left as in $18 = 10 + 8$. Showing pairs of equations such as $11 = 7 + 4$ and $7 + 4 = 11$ gives students experiences with the meaning of the equal sign as is the same as and equations with one number to the left.

Required Fluencies for Grade 1

- 1.OA.C.6 Add and subtract within 10.

District/School Tasks

- Pick A Project (found in Savvas Realize)
- Performance Tasks (found in Savvas Realize)

District/School Primary, Supplemental, & Intervention Resources

- Envisions by Savvas
- STAR Renaissance
- Freckle Math
- Connecting Math Concepts
- Corrective Math

Instructional Best Practices/Open Educational Resources

Illustrative Mathematics

Desmos

Numeracy Tasks

Building Thinking Classrooms Tasks

Open Middle Math Tasks

Resources from Dr. Eric Milou

Career Readiness, Life Literacies, and Key Skills

9.1.2.CAP.1	Make a list of different types of jobs and describe the skills associated with each job.
9.1.2.CR.1	Recognize ways to volunteer in the classroom, school and community.
9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
9.4.2.IML.2	Represent data in a visual format to tell a story about the data (e.g., 2.MD.D.10).

Computer Science and Design Thinking

8.1.2.DA.1	Collect and present data, including climate change data, in various visual formats.
8.1.2.DA.2	Store, copy, search, retrieve, modify, and delete data using a computing device.
8.1.2.DA.3	Identify and describe patterns in data visualizations.
8.1.2.DA.4	Make predictions based on data using charts or graphs.

Interdisciplinary Connections

1-ESS1-2	Make observations at different times of year to relate the amount of daylight to the time of year.
W.WR.1.5	With prompting and support, generate questions through shared research about a topic and determine possible sources to obtain information on that topic.
W.SE.1.6	With guidance and support from adults, gather and select information from multiple sources to answer a question or write about a topic.