Grade 1 Unit 1: Strategies for Addition and Subtraction

Content Area: **Math**
Course(s): **Math Grade 1**
Time Period: **MP1**
Length: **45**
Status: **Published**

Unit Focus

- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Understand and apply properties of operations and the relationship between addition and subtraction.

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.B.3	Apply properties of operations as strategies to add and subtract.
1.OA.B.4	Understand subtraction as an unknown-addend problem.
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.

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.

Critical Knowledge & Skills

NJSLS Math	Suggested Math Practices	Critical Knowledge and Skills
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: • Adding to, taking from, putting together, taking apart, and comparing are all strategies for solving addition and subtraction problems. • Symbols (unknowns) can be in any position. 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 1: • 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.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: • The meaning of the equal sign. • The expression can be on the right side of the equal sign (e.g. 7 = 8 – 1). 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 2: • Determine if addition and subtraction equations are true or false by comparing the values on both sides of the equal sign.
1.OA.B.4 (**M**) Understand subtraction as an unknown-addend problem. For example, subtract 10 - 8 by finding the number that makes 10 when added to 8.	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: • Subtraction can be represented as an unknown addend problem. • Finding 9 minus 3 solving ? + 3 = 9 or 3 + ? = 9 (fact family). Students will be able to: • Represent subtraction as an unknown addend problem. • Solve subtraction problems using unknown addends. Learning Goal 3: • Solve subtraction problems by representing subtraction as an unknown addend problem and finding the unknown addend.

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 structure.	Concepts: • Counting can be used to add and subtract. 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 4: • 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 5: • 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.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 6: • Use different strategies based on properties of operations to solve addition and subtraction problems within 20 accurately.

School/District Formative Assessment Plan

- Topic 1-1 through Topic 1-9 Quick Check (found in Savvas Realize)

- Topic 2-1 through Topic 2-9 Quick Check (found in Savvas Realize)
- Topic 3-1 through Topic 3-9 Quick Check (found in Savvas Realize)

School/District Summative Assessment Plan

- Topic 1 Assessment
- Topic 2 Assessment
- Topic 3 Assessment

Benchmark & Alternative Assessments

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

Focus Mathematical Concepts

Pre-requisite skills

- Represent addition and subtraction word problems within 10 using objects or drawings (K.OA.A.2).
- Solve addition and subtraction word problems within 10 (K.OA.A.2).
- Find the number that makes 10 when added to a given number from 1 to 9 (K.OA.A.4).
- Record the numbers that make 10 with a drawing or equation (K.OA.A.4).
- Decompose numbers less than or equal to 10 in pairs e.g. by using objects or drawings (K.OA.A.3).
- Record the decomposition of numbers less than or equal to 10 in pairs with a drawing or equation (K.OA.A.3).
- Decompose numbers less than or equal to 10 in pairs in more than one way e.g. by using objects or drawings and record the decompositions with a drawing or equation (K.OA.A.3).
- Represent addition and subtraction within 5 with accuracy and efficiency (K.OA.A.5).

Common Misconceptions

- Many children misunderstand the meaning of the equal sign. The equal sign means “is the same as” but most primary students believe the equal sign tells you that the “answer is coming up” to the right of the equal sign. This misconception is over-generalized by only seeing examples of number sentences with an operation to the left of the equal sign and the answer on the right. First graders need to see equations written multiple ways, for example 5 + 7 = 12 and 12 = 5 + 7.

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.