Grade 1 Unit 3: Place Value and Two Digit Addition and Subtraction Strategies

Content Area: **Math**
Course(s): **Math Grade 1**
Time Period: **MP3**
Length: **45**
Status: **Published**

NJSLS Math

MATH.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).
MATH.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.
MATH.1.NBT.B.2.a	10 can be thought of as a bundle of ten ones — called a “ten.”
MATH.1.NBT.B.2.b	The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
MATH.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).
MATH.1.NBT.B.3	Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.
MATH.1.NBT.C.5	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
MATH.1.NBT.C.6	Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Unit Focus

- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

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.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 1: • Count to 120 by 10's.
1.NBT.B.2b (**M**) Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine 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 amounts of tens and ones. Students will be able to: • Compose numbers to 20. • Decompose numbers to 20. • Identify the value of the number in the tens or ones place. Learning Goal 2: • Compose and decompose numbers to 20 to identify the value of the number in the tens and ones place.

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: • 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 3: • Compose and decompose numbers to 90 into tens, identifying the value of the number in the tens and ones place.
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 of objects with a written numeral.	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: • Number names and the 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 4:

		• Count to 120 orally, read and write numerals, and write numerals to represent the number of objects (up to 120).
1.NBT.C.5 (**M**) Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.	MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.7 Look for and make use of structure.	Concepts: • No new concept(s) introduced Students will be able to: • Given a two-digit number, find 10 more than the number without counting. • Given a two-digit number, find 10 less than the number without counting. • Explain, given a two-digit number, how to find 10 more or ten less than the number without counting. Learning Goal 5: • Explain, given a two-digit number, how to find 10 more or ten less than the number without having to count.
1.NBT.B.3 (**M**) Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.	MP.2 Reason abstractly and quantitatively. MP.6 Attend to precision.	Concepts: • Use place value understanding to compare two digit numbers. • Comparing numbers using symbols.

	MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	Students will be able to: • Use the meaning of tens and ones digits to compare 2 two-digit numbers using >, =, and < symbols. Learning Goal 6: • Use the meaning of tens and ones digits to record comparisons of 2 two-digit numbers using >, =, and < symbols.
1.NBT.C.4 (**M**) Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g., base ten blocks) or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.	MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	Concepts: • In adding two-digit numbers, add tens with tens and ones with ones. • In adding two-digit numbers, sometimes it is necessary to compose a ten. Students will be able to: • Use concrete models and drawings with a strategy based on place value to add a two-digit number and a one-digit number. • Use concrete models and drawings with properties of operations to add a two-digit number and a one-digit number. • Use concrete models and drawings with a strategy based on place value to add a two-digit number and a multiple of 10. • Use concrete models and drawings with properties of operations to add a two-digit number and a

		multiple of 10. • Explain or show how the model relates to the strategy. Learning Goal 7: • Add a 2-digit and a 1-digit number using concrete models and drawings with a place value strategy or properties of operations; explain or show how the model relates to the strategy (sums within 100).
1.NBT.C.6 (**M**) Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	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.7 Look for and make use of structure.	Concepts: • No new concepts introduced Students will be able to: • Use concrete models and drawings with a strategy based on place value to subtract a multiple of 10 from a multiple of 10 (both within the range 10-90). • Use concrete models and drawings with properties of operations to subtract a multiple of 10 from a multiple of 10 (both within the range 10-90). • Explain or show how the model relates to the strategy. Learning Goal 8: • Subtract a multiple of 10 from a multiple of 10 (both within the range 10-90) using concrete models and drawings with a place value strategy or properties of operations. Explain or

		show how the model relates to the strategy (sums within 100).

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 9:
		• 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.

School/District Formative Assessment Plan

- Topic 7-1 through Topic 7-7 Quick Check (found in Savvas Realize).
- Topic 8-1 through Topic 8-7 Quick Check (found in Savvas Realize).
- Topic 9-1 through Topic 9-6 Quick Check (found in Savvas Realize).
- Topic 10-1 through Topic 10-9 Quick Check (found in Savvas Realize).

School/District Summative Assessment Plan

- Topic 7 Assessment
- Topic 8 Assessment
- Topic 9 Assessment
- Topic 10 Assessment

Focus Mathematical Concepts

Pre-requisite skills

- Equal means the same amount (K.CC.C.6).
- Identify when the number of objects is equal to, greater than, or less than the number of objects in another group by matching or counting the number of objects in both groups (K.CC.C.6).
- Compare two written numbers between 1 and 10 (K.CC.C.7).

Common Misconceptions

- Students ignore the need for regrouping when subtracting with numbers 0 to 20 and think that they should always subtract a smaller number from a larger number. For example, students solve 15 – 7 by subtracting 5 from 7 and 0 (0 tens) from 1 to get 12 as the incorrect answer. Students need to relate their understanding of place-value concepts and grouping in tens and ones to their steps for subtraction. They need to show these relationships for each step using mathematical drawings, ten-frames or base-ten blocks so they can understand an efficient strategy for multi-digit subtraction.
- Often when students learn to use an aid (Pac Man, bird, alligator, etc.) for knowing which comparison sign (<, >, =) to use, the students don't associate the real meaning and name with the sign. The use of the learning aids must be accompanied by the connection to the names: < Less Than, > Greater Than,

and = Equal To. More importantly, students need to begin to develop the understanding of what it means for one number to be greater than another. In Grade 1, it means that this number has more tens, or the same number of tens, but with more ones, making it greater. Additionally, the symbols are shortcuts for writing down this relationship. Finally, students need to begin to understand that both inequality symbols (<, >) can create true statements about any two numbers where one is greater/smaller than the other, (15 < 28 and 28 >15).

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 and Supplementary Resources

- Envisions by Savvas
- STAR Renaissance

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 Awareness, Exploration, Preparation, and Training

WRK.9.1.2.CAP.1	Make a list of different types of jobs and describe the skills associated with each job.

Life Literacies & Key Skills

TECH.9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
TECH.9.4.2.IML.2	Represent data in a visual format to tell a story about the data (e.g., 2.MD.D.10).

Interdisciplinary Connections

SCI.1-LS1-2	Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.
ELA.RL.CR.1.1	Ask and answer questions about key details in a literary text (e.g., who, what, where, when, why, how).
ELA.RL.CI.1.2	Determine central message and retell a sequence of events in literary texts (e.g., who, what, where, when, why, how).