Grade 2 Unit 3: Place Value Strategies for Addition and Subtraction

Content Area: **Math**
Course(s): **Math Grade 2**
Time Period: **MP3**
Length: **45**
Status: **Published**

NJSLS Math

2.OA.A.1	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, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
2.OA.B.2	With accuracy and efficiency, add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
2.NBT.A.1	Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
2.NBT.A.2	Count within 1000; skip-count by 5s, 10s, and 100s.
2.NBT.A.3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
2.NBT.A.4	Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.
2.NBT.B.5	With accuracy and efficiency, add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
2.NBT.B.7	Add and subtract within 1000, 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. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
2.NBT.B.8	Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
2.NBT.B.9	Explain why addition and subtraction strategies work, using place value and the properties of operations.
2.M.C.7	Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
2.M.C.8	Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.

Unit Focus

- Work with time and money.
- 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
2.M.C.8 (**S**) Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.8 Look for and express regularity in repeated reasoning.	Concepts: • Know the value of dollar bills, quarters, dimes, nickels, and pennies. Students will be able to: • Identify dollar bills, quarters, dimes, nickels, and pennies. • Using dollar bills, quarters, dimes, nickels, and pennies, count to determine the total amount of money. • Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies. Learning Goal 1: • Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using the $ and ¢ symbols

		appropriately.
2.NBT.A.2 (**M**) Count within 1000; skip-count by 5s, 10s, and 100s.	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: • No new concepts introduced Students will be able to: • Count within 1000 by ones. • Count within 1000 by fives, tens, and hundreds beginning at any multiple of 5, 10, or 100. Learning Goal 2: • Orally count within 1000 including skip-counting by 5s, 10s, and 100s
2.OA.A.1 (**M**) 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, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.  Climate Change Example: Students may solve two-step word problems involving a climate change related issue in their school, such as food waste, recycling, reusing and/or reducing the consumption of goods. They may add and subtract within 100 while using drawing or equations to represent the climate change related issue.	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: • Count on and put together to add to solve one- and two-step word problems. • Take from or take apart to subtract to solve one- and two-step word problems. • Use drawings and equations to represent the problem. Learning Goal 3: • Add and subtract within 100 to solve 1- and 2-step word problems with unknowns in any position.
2.M.C.7 (**S**) Tell and write time from analog and digital clocks to	MP.5 Use appropriate tools	Concepts:

the nearest five minutes, using a.m. and p.m.	strategically. MP.6 Attend to precision.	• No new concepts introduced Students will be able to: • Use analog and digital clocks, tell time to the nearest five minutes using a.m. and p.m. • Use analog and digital clocks, write time to the nearest five minutes using a.m. and p.m. Learning Goal 4: • Tell and write time using analog and digital clocks to the nearest five minutes using a.m. and p.m.
2.NBT.A.1 (**M**) Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens — called a "hundred." b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 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: • 100 can be thought of as a bundle of ten tens — called a hundred. • The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones). Students will be able to: • Represent 100 as a bundle of ten tens. • Represent the number of hundreds, tens, and ones in a 3-digit number. Learning Goal 5: • Represent a 3-digit number as specific amounts of hundreds, tens, and ones. Learning Goal 6:

		• Identify ten tens as 100 and represent two hundred, three hundred, … nine hundred with 2, 3, …, 9 hundred bundles (with zero tens and zero ones).
2.NBT.A.3 (**M**) Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	MP.2 Reason abstractly and quantitatively. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concepts: • Expanded form Students will be able to: • Read numbers to 1000 written using base-ten numerals. • Read number names to 1000. • Read numbers to 1000 written in expanded form. • Write numbers to 1000 using base-ten numerals, number names, and expanded form. Learning Goal 7: • Read numbers to 1000 using base-ten numerals, number names, and expanded form.
2.NBT.B.8 (**M**) Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	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: • Place value Students will be able to: • Mentally add 10 or 100 from any given number between 100 and 900. • Mentally subtract 10 or 100 from any given number between 100 and 900.

		Learning Goal 8: • Mentally add or subtract 10 or 100 from any given number between 100 and 900.
2.NBT.B.4 (**M**) Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	MP.2 Reason abstractly and quantitatively. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	Concepts: • Place value Students will be able to: • Use the number of the hundreds, tens and/or ones digits to compare two three-digit numbers. • Write the results of the comparison using >, =, or <. Learning Goal 9: • Use symbols >, =, < to record the results of comparing two 3-digit numbers by decomposing the number into a number (100s, 10s, and 1s).
2.NBT.B.9 (**M**) Explain why addition and subtraction strategies work, using place value and the properties of operations. (Clarification: Explanations should be supported by drawings or objects.)	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	Concepts: • No new concepts introduced Students will be able to: • Explain, using objects and drawings, why addition and subtraction strategies based on place value work. • Explain, using objects and drawings, why addition and subtraction strategies based on properties of operations work.

	structure. MP.8 Look for and express regularity in repeated reasoning.	Learning Goal 10: • After applying addition and subtraction strategies based on place value and the properties of operations, explain why these strategies work using drawings or objects [for example, 37 + 12 equals 30 + 7 + 10 + 2 (place value) which equals 30 + 10 + 7 + 2 (property of operations)].
2.NBT.B.7 (**M**) Add and subtract within 1000, 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. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	Concepts: • Value of digits • Generate methods for adding and subtracting two 3-digit numbers. Students will be able to: • Add or subtract 3-digit numbers. • Add hundreds, tens, and ones. • Solve word problems with groups of hundreds, tens, and ones. Learning Goal 11: • Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
2.OA.B.2 (**M**) With accuracy and efficiency, add and subtract within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers.	MP.2 Reason abstractly and quantitatively. MP.7 Look for and make use of	Concepts: • No new concepts introduced. Students will be able to:

	structure MP.8 Look for and express regularity in repeated reasoning.	• Add within 20 using mental strategies with accuracy and efficiency. • Subtract within 20 using mental strategies with accuracy and efficiency. Learning Goal 12: • Fluently add and subtract within 20 using mental strategies.
2.NBT.B.5 (**M**) With accuracy and efficiency, add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	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: • No new concepts introduced Students will be able to: • With accuracy and efficiency, add and subtract within 100 using strategies based on place value. • With accuracy and efficiency, add and subtract within 100 using strategies based on properties of operations. • With accuracy and efficiency, add and subtract within 100 using strategies based on the relationship between addition and subtraction. Learning Goal 13: • Use a variety of strategies (place value, properties of operation, and/or the relationship between addition and subtraction) to add and subtract within 100.

School/District Formative Assessment Plan

- Topic 8-1 through 8-8 Quick Check (found in Savvas Realize)
- Topic 9-1 through 9-10 Quick Check (found in Savvas Realize)
- Topic 10-1 through 10-7 Quick Check (found in Savvas Realize)
- Topic 11-1 through 11-6 Quick Check (found in Savvas Realize)

School/District Summative Assessment Plan

- Topic 8 Assessment
- Topic 9 Assessment
- Topic 10 Assessment
- Topic 11 Assessment

Benchmark & Alternative Assessments

- STAR Renaissance
- Performance Tasks (in Savvas Realize)

Focus Mathematical Concepts

Pre-requisite skills

- Add a two-digit number and a one-digit number within 100 using concrete models (e.g., base ten) or drawings (1.NBT.C.4).
- Add a two-digit number and a one-digit number within 100 using strategies based on place value or properties of operations (1.NBT.C.4).
- Add a two-digit number and a multiple of 10, within 100, using concrete models (e.g., base ten blocks) or drawings (1.NBT.C.4).
- Add a two-digit number and a multiple of 10, within 100, using strategies based on place value or properties of operations (1.NBT.C.4).

- Count to 120 (1.NBT.A.1).
- Represent objects with a written number in sets within 120 objects (1.NBT.A.1).
- Represent a word problem using objects, drawings, or equations using a symbol for the unknown (1.OA.A.1).
- Solve addition and subtraction word problems within 20 involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions (1.OA.A.1).
- Subtract multiples of 10 from multiples of 10 using concrete models or drawings (multiples of 10 less than or equal to 90) (1.NBT.C.6).
- Subtract multiples of 10 from multiples of 10 using strategies based on place value or properties of operations (multiples of 10 less than or equal to 90) (1.NBT.C.6).
- Explain the reasoning used when subtracting multiples of 10 from multiples of 10 (multiples of 10 less than or equal to 90) (1.NBT.C.6).
- Tell and write time to the hour using analog and digital clocks (1.M.B.3).
- Tell and write time to the half-hour using analog and digital clocks (1.M.B.3).
- 10 can be thought of as a bundle of ten ones called a “ten” (1.NBT.B.2).
- The numbers 11 to 19 are made up of one ten and one, two, three, four, five, six, seven, eight, or nine ones (1.NBT.B.2).
- In a two-digit number, one digit represents the amount of tens and the other digit represents the amount of ones (1.NBT.B.2).
- The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 are made up of some tens and 0 ones (1.NBT.B.2).
- Compare two two-digit numbers using the meanings of the tens and ones digits (1.NBT.B.3).
- Compare two numbers using the symbols <, >, and = (1.NBT.B.3).

Common Misconceptions

- Locate the starting point on the instrument where zero should be indicated.
- Students confuse the hour and the minute hands.
- Students think the value of the coin is related to the size of the coin.

Number Fluency

- 2.OA.B.2 Add and subtract within 20 using mental strategies; Know single digit sums from memory.
- 2.NBT.B.5 Add and subtract within 100.

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).

Life Literacies & Key Skills

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).

Interdisciplinary Connections

RI.CR.2.1	Ask and answer questions to demonstrate understanding of key details in an informational text, referring explicitly to the text as the basis for the answers.
2-ESS1-1	Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
RI.IT.2.3	Describe the connection between a series of historical events, scientific ideas or concepts, or steps in a sequence within a text.
2-ESS2-2	Develop a model to represent the shapes and kinds of land and bodies of water in an area.
W.WR.2.5	Generate questions about a topic and locate related information from a reference source to obtain information on that topic through shared and independent research.
SL.II.2.2	Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
SL.UM.2.5	Use multimedia; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.