

Unit 2: Number and Operations in Base Ten (Grade 2)

Content Area: **Mathematics**
Course(s): **Mathematics - Grade 2**
Time Period: **December**
Length: **12 Weeks**
Status: **Published**

Unit Overview

Identify place value up to 1,000; compare, add and subtract 3 digit numbers with or without regrouping. Use logical reasoning to solve problems.

By the end of January, administer the Link It! G2 Math NJSLs Form B online.

Transfer

Students will be able to independently use their learning to...

- Apply their knowledge of place value to compare numbers
- Use mental math to add 10 or 100
- Add and subtract three-digit numbers.
- Predict answers using reasoning and logic

For more information, read the following article by Grant Wiggins.

http://www.authenticeducation.org/ae_bigideas/article.lasso?artid=60

Meaning

Understandings

Students will understand that...

- * Place value will be used to compare numbers and correctly read and write numbers
- * Related facts (fact families), and making 10 or 100 are multiple strategies that can be used to solve addition and subtraction problems.
- * Numbers can be broken apart to end with zero to aid in mentally adding and subtracting larger numbers.
- * Number in the ones place, tens place and hundreds place may need to be regrouped when adding and subtracting larger numbers.
- * Logical reasoning can help solve word problems.
- * Addition can be utilized to check subtraction of larger numbers.

Essential Questions

Students will keep considering...

- * How can I use place value?
- * How can I add three-digit numbers?
- * How can I subtract three-digit numbers?

Application of Knowledge and Skill

Students will know...

Students will know...

- * Addition and Subtraction Properties

- * Place value up to 1,000
- * Read and Write Numbers
- * Use Reasoning to Solve
- * Compare Numbers to 1,000
- * Skip Counting 5, 10, 100
- * Mental Math
- * Make a Hundred, Take Apart a Hundred to Add and Subtract
- * Add & Subtract Three-Digit Numbers with and without Regrouping

Students will be skilled at...

Students will be skilled at...

- * Utilizing Place Value to Compare Numbers.
- * Recognizing number patterns.
- * Solve larger addition and subtraction problems with and without regrouping.
- * Utilizing Logical Reasoning to Solve Word Problems and Make Educated Guesses.

Academic Vocabulary

Chapter 5:
hundreds
place value
digit
expanded form
thousand
compare
greater than
less than
equal to

Chapter 6:
review words

Chapter 7:
review words

Please Review the Following Vocabulary Terms

ones

tens

sum

regroup

difference

Learning Goal 1

Students will understand place value up to 1,000 [2.NBT.1](#)

Daily Targets - Apply Place Value Concepts: Chapter 5

SWBAT:

- * Relate hundreds, tens and ones (**Chapter 5 / Lesson 1**) (**DOK 3**)
- * Read, write and model numbers to 999 (**Chapter 5 / Lesson 2**) (**DOK 1**)
- * Identify and use words, models and expanded form to represent numbers to 999 (**Chapter 5 / Lesson 3**) (**DOK 2**)
- * Use logical reasoning to solve problems (**Chapter 5 / Lesson 4**) (**DOK 3**)
- * Read and write numbers to 1,000 (**Chapter 5 / Lesson 5**) (**DOK 1**)
- * Find counting patterns (**Chapter 5 / Lesson 6**) (**DOK 3**)
- * Compare three-digit numbers using $<$, $>$, and $=$ (**Chapter 5 / Lesson 7**) (**DOK 2**)

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

MA.K-12.2

Reason abstractly and quantitatively.

MA.K-12.3

Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another.

Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

MA.2.NBT

Number and Operations in Base Ten

MA.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:

MA.K-12.7

Look for and make use of structure.

MA.2.NBT.A.1a

100 can be thought of as a bundle of ten tens — called a “hundred.”

MA.2.NBT.A.1b

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).
MA.2.NBT.A.2	Count within 1000; skip-count by 5s, 10s, and 100s.
MA.2.NBT.A.3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
MA.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.
MA.2.NBT.B	Use place value understanding and properties of operations to add and subtract.

Learning Goal 2

Students will use place value understanding and properties of operations to add and subtract three digit numbers. [MA.2.2.NBT.B](#)

Daily Targets - Add Three Digit Numbers: CHAPTER 6

SWBAT:

- * Make a hundred to add a three-digit number (Chapter 6 /Lesson 1) DOK 3
- * Add numbers in the hundreds (Chapter 6 /Lesson 2) DOK 2
- * Add 10 or 100 mentally (Chapter 6 /Lesson 3) DOK 1
- * Regroup the ones to add three-digit numbers (Chapter 6 /Lesson 4) DOK 2
- * Regroup tens to add three-digit numbers (Chapter 6 /Lesson 5) DOK 2
- * Add three-digit numbers with regrouping (Chapter 6 /Lesson 6) DOK 2
- * Given a three-digit addition problem written horizontally, rewrite it vertically before adding (Chapter 6 /Lesson 7) DOK 1
- * Use the guess, check and revise strategy to solve problems (Chapter 6 /Lesson 8) DOK 3

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can

explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

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.
MA.2.NBT.B	Use place value understanding and properties of operations to add and subtract.
MA.2.NBT.B.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
MA.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.
MA.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.
MA.2.NBT.B.9	Explain why addition and subtraction strategies work, using place value and the properties of operations.

Daily Targets - Subtract Three-Digit Numbers: CHAPTER 7

SWBAT:

- * Make a hundred to subtract a three-digit number (**Chapter 7/Lesson 1**) **DOK 3**
- * Subtract numbers in the hundreds (**Chapter 7/ Lesson 2**) **DOK 2**
- * Mentally subtract numbers by 10 or 100 (**Chapter 7/Lesson 3**) **DOK 1**
- * Regroup tens to subtract three-digit numbers (**Chapter 7/ Lesson 4**) **DOK 2**
- * Regroup hundreds to subtract three-digit numbers (**Chapter 7/ Lesson 5**) **DOK 2**
- * Subtract three digit-numbers (**Chapter 7/ Lesson 6**) **DOK 2**
- * Rewrite horizontal three-digit subtraction as vertical three-digit subtraction (**Chapter 7/ Lesson 7**) **DOK 1**
- * Use the write a number sentence strategy to solve problems (**Chapter 7/ Lesson 8**) **DOK 3**
- * Subtract from numbers ending in zero (**Chapter 7/ Lesson 9**) **DOK 2**

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.
MA.2.NBT.B	Use place value understanding and properties of operations to add and subtract.
MA.2.NBT.B.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
MA.2.NBT.B.6	Add up to four two-digit numbers using strategies based on place value and properties of operations.
MA.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.
MA.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.
MA.2.NBT.B.9	Explain why addition and subtraction strategies work, using place value and the properties of operations.

Formative Assessment and Performance Opportunities

- * "Am I Ready?"
- * End of Lesson "On My Own" and "Homework" activities
- * Journal Writing Activity
- * Exit Slips
- * Chapter Quizzes
- * S.T. Math
 - The Number Line
 - Skip Counting
 - Counting with Groups
 - Operations on the Number Line
 - Place Value Concepts
 - Comparing Three-Digit Numbers
 - Adding and Subtracting Tens and Hundreds
 - Using Place Value to Add and Subtract
 - Counting to 1,000

- Place Value Bundles - Ten and Hundred
- Composing Tens and Hundreds
- Three-Digit Number Words
- Addition and Subtraction Within 100

* Teacher Observation / Anecdotal Notes

* Student Interview

* LinkIt342

Performance Task Chapter 5: **Spinner Winner** DOK 2, DOK 3 Use place value to write and compare three-digit numbers to assist Sebi while he plays with a spinner (Rubric in TM pg. 342PT2)

Performance Task Chapter 6: **Recording Miles** DOK 2, DOK 3 Use addition of three0digit numbers to find how much members of a running club ran during the month of April. (Rubric in TM pg. 404PT2)

Performance Task Chapter 7: **Making Way for the Library** DOK 2, DOK 3 Use subtraction of three0digit numbers, use place value charts and base ten blocks, to consider the result of removing certain amounts of dirt from a library site (Rubric: TM 472PT2)

Chapter Projects Available in Student Book:

Chapter Projects Available in Student Text

Chapter 5 Project: Write a story using number patterns (pg. 286)

Chapter 6 Project: Develop a Math Game (pg. 344)

Chapter 7 Project: Math Poster for Subtraction (pg. 406)

Summative Assessment

* Benchmark Assessment #1 Mid-January- Using the My Math benchmark assessment to evaluate effectiveness of new math program

* Chapter Tests (Chapters 5, 6 and 7) - Forms 1, 2, & 3 - Written or On-line Assessment

Additional Resources Available for Assessment Purposes:

* Vocabulary Test

* Oral Assessment

* Listening Assessment

* Timed Drills

* Weekly practice

21st Century Life and Careers and Technology

CRP.K-12.CRP1	Act as a responsible and contributing citizen and employee.
CRP.K-12.CRP1.1	Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP4.1	Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP8.1	Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.
CRP.K-12.CRP12.1	Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.
CAEP.9.2.4.A	Career Awareness
CAEP.9.2.4.A.2	Identify various life roles and civic and work - related activities in the school, home, and community.

CAEP.9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.
TECH.8.1.2.D	Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
TECH.8.1.2.D.CS1	Advocate and practice safe, legal, and responsible use of information and technology.

Accommodations and Modifications

- *Utilize manipulatives during instruction to teach and demonstrate concepts
- *Give students manipulatives to model all problems (connecting cubes, ten frames with counters, base ten blocks, sectioned whiteboard, graph paper with columns and rows)
- *Give students number organizational tool to solve basic facts (hundreds chart, place value chart, place value mat)
- *Provide reference tool for vocabulary (notebook, flashcards, or foldable)
- * Small Group Instruction
- *A slower pace of verbal instruction
- *Various representations of directions
- *Visual and digital display as well as explanation of domain specific and academic vocabulary
- *Verbal communication of not only concept but also language goals (ELL)
- *Written and verbal examples given of these goals
- *Concepts evaluated for age level as well as cultural appropriateness based on the students background (ELL)
- *Allow higher level learners to assist in teaching concepts that they have mastered previously
- * Enrichment pages from notebook
- *Use TAG manipulative kits
- *Provide addition/subtraction problems into the thousands period
- *Provide place value problems into the thousands period
- *Use Logic Puzzles (Pictures represent number values)
- *Add in base 12 for measurement (ft. 6 inches + 1 ft 8 inches= $6+8= 12+2$ 3 ft. 2 inches)

Unit Resources

- * McGraw-Hill "My Math" Grade 2 Text

- * Chapters 5, 6 and 7

- * McGraw-Hill "My Math" Website - www.connected.mcgraw-hill.com

- * Virtual Manipulatives
- * Virtual Games (Sail Through Math, Fact Dash, etc.)
- * Math At Home - Practice Math
- * Grouping By Tens
- * Math Songs (Addition Boogie, Meet My Fact Family, We Are a Family, Take It Away, The Number Line, Jumping to Add, etc.)
- * Real World Problem Solving Library:
 - * Baseball's Hero
 - * Fossil's Over Time
 - * Geese on the Go
 - * Lady Liberty
 - * Moving Along

- * BrainPop Jr. - www.brainpopjr.com

- * Math Fact Cafe - www.mathfactcafe.com

- * STmath

- * Student Center: online games and digital support resources for school and home

- * STEM app-download from home and practice www.mheonline.com

- * My Math Trade Books to improve interdisciplinary connections

* Fun Brain - www.funbrain.com

* Cool Math 4 Kids - www.coolmath4kids.com

* AAA Math - www.aaamath.com

*<https://www.illustrativemathematics.org/>

*<http://achievethecore.org/coherence-map/>

Interdisciplinary Connections

Baseball's Hero allows students to read about Jackie Robinson's career in MLB and use two-digit addition to answer questions about baseball and Mr. Robinson's accomplishments. (2.NBT.5)

Fossils Over Time answers student questions about fossils and dinosaurs while giving them experiences with measurements and tally charts. (2.NBT.4)

Geese on the Go overviews the migration of Canada Geese and information about Canada geese families, including migration routes, distances, and durations. (2.NBT.2)

Lady Liberty allows students to explore the Statue of Liberty, discovering her history and use her dimensions to solve problems. Students can also use their mapping skills to explore the area near the statue. (2.NBT.7)

Moving Along has students follow the experiences of a family moving from Oklahoma to California in 1950 along Route 66, providing experience with time and distance and reading maps. (2.NBT.3)

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MA.2.NBT.A.3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
MA.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.
MA.2.NBT.B.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
MA.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.

SOC.6.1.4.B.1	Compare and contrast information that can be found on different types of maps and determine how the information may be useful.
SOC.6.1.4.D.17	Explain the role of historical symbols, monuments, and holidays and how they affect the American identity.
SOC.6.1.4.D.CS4	The study of American folklore and popular historical figures enables Americans with diverse cultural backgrounds to feel connected to a national heritage.
2-ESS1-1.6	Constructing Explanations and Designing Solutions
2-ESS1-1.6.1	Make observations from several sources to construct an evidence-based account for natural phenomena.
2-ESS1-1.ESS1.C.1	Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.
2-LS4-1	Make observations of plants and animals to compare the diversity of life in different habitats.
2-LS4-1.LS4.D.1	There are many different kinds of living things in any area, and they exist in different places on land and in water.