03. Place Value

Content Area: **Math**
Course(s):
Time Period: **Full Year**
Length: **4 weeks**
Status: **Published**

General Overview, Course Description or Course Philosophy

In this unit, students will focus on the following place value skills and concepts:

- building 3-digit numbers
- expanded form
- comparing 3-digit numbers
- making exchanges
- using base-10 blocks to add and subtract

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

Enduring Understandings:

- Number sense develops through experience.
- Patterns provide insights into potential relationships.
- Place value relationships can help simplify mathematical operations and equations.
- The location of digits in a number determines the value of the number.
- To compare two numbers, one must compare the digits in each place, starting with the largest place.
- Understanding place value can lead to number sense and efficient strategies for computing with numbers.
- Place value is used to compare numbers.

Essential Questions:

- Why is place value important?
- How do I use place value to enhance my addition and subtraction skills and build my number sense?
- How does a digit's position affect its value?
- How can you use patterns on a hundreds chart to add or subtract two-digit numbers?
- In what ways can items be grouped to make exchanges for unit(s) of higher value?
- How do you compare numbers?

CONTENT AREA STANDARDS

2.OA

A. Represent and solve problems involving addition and subtraction

B. Add and subtract within 20

C. Work with equal groups of objects to gain foundations for multiplication

2.NBT

A. Understand place value

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

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.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.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.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.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.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.

RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

LA.W.2.5	With guidance and support from adults and peers, focus on a topic and strengthen writing as needed through self-reflection, revising and editing.
LA.SL.2.1	Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
PFL.9.1.2. FI.1	Differentiate the various forms of money and how they are used (e.g., coins, bills, checks, debit and credit cards).
TECH.9.4.2.CI.1	Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).

STUDENT LEARNING TARGETS

- I can use objects or pictures to model the number 100
- I can explain the value of 100

- I can use objects or pictures to model or represent the numbers 100, 200, 300, 400, 500, 600, 700, 800, and 900
- I can explain the value of 100, 200, 300, 400, 500, 600, 700, 800, and 900
- I can write numbers to 1000 using:
    - Base-ten numerals (e.g., 4 hundreds, 5 tens, 6 ones is written in standard form as 456)
    - Number names (e.g., 456 is written as four hundred fifty six)
    - Expanded form (e.g., 456 is written in expanded notation as 400 + 50 + 6)

- I can read numbers to 1000 using:
    - Base-ten numerals (e.g., 4 hundreds, 5 tens, 6 ones is stated in standard form as 456)
    - Number names (e.g., 456 is stated as four hundred fifty six)
    - Expanded form (e.g., 456 is stated in expanded notation as 400 + 50 + 6)

- I can identify the value of each digit in a three-digit number
- I can represent three-digit numbers using models, number lines, base-ten blocks, etc.
- I can compare the size of two three-digit numbers
- I can explain comparisons using place value (the meaning of the hundreds, tens, and ones digits)
- I can explain what the symbols >, <, and = mean
- I can use >, <, and = symbols to record the results of comparisons between three digit numbers
- I can identify the value of each digit in a two or three-digit number
- I can use mental strategies (e.g., number patterns, counting on, mental images of blocks, number lines, etc.) to add 10 or 100 to a given number
- I can explain how to mentally find 10 or 100 more than a given number without counting to quickly solve a problem
- I can identify the value of each digit in a two or three-digit number
- I can use mental strategies (e.g., number patterns, counting back, mental images of blocks, number lines, etc.) to subtract 10 or 100 from a given number
- I can explain how to mentally find 10 or 100 less than a given number without counting to quickly solve a problem
- I can illustrate addition within 100 using pictures or other visual representation
- I can describe how to combine two 2-digit numbers using strategies based on:
    - Place value
    - Properties of operations
    - The relationship between addition and subtraction
    - Decomposing and composing numbers

- I can add numbers fluently with:
    - Accuracy (correct answer)
    - Efficiency (a reasonable number of steps and amount of time)
    - Flexibility (using various strategies)

- I can illustrate subtraction within 100 using pictures or other visual representation
- I can describe how to subtract two 2-digit numbers using strategies based on:
    - Place value
    - Properties of operations
    - The relationship between addition and subtraction
    - Decomposing and composing numbers

- I can subtract numbers fluently with:
    - Accuracy (correct answer)
    - Efficiency (a reasonable number of steps and amount of time)

- Flexibility (using various strategies)

Declarative Knowledge

Students will understand that:

- 100 can be thought of as a bundle of ten tens, called a "hundred."
- three digits of a three-digit number represent amounts of hundreds, tens, and ones.
- 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, nine hundred (0 ones).
- place value is used to compare 3-digit numbers
- there are many ways to represent numbers up to 1000
- the <, >, = are used to record comparisons of 3-digit numbers

Procedural Knowledge

Students will be able to:

- Write numbers to 1000 using base-ten numerals number names, and expanded form.
- Read numbers to 1000 using base-ten numerals, number names, and expanded form.
- Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits.
- Write a >, =, and < symbol to record the results of comparisons between three-digit numbers.
- Add fluently within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- Subtract fluently within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

RESOURCES (Instructional, Supplemental, Intervention Materials)

Core Instructional Materials:

- Everyday Math Grade 2 Unit 4 Resources
  - Math Masters
  - Student Journal Volume 1
  - ConnectED

Supplemental Materials:

- IXL
- Illustrative Math Tasks
- EM Games

- Calendar Math

Lessons:

- 4-4
- 2-1
- 1-3
- 4-5
- (Independent) Problem Solving Task 4a
- 4-6
- 4-7

Calendar Math: money skills, reinforcement of fact fluency

Supplemental Resources:

- Memory Base 10
- Illustrative Math- Digits 2-5-7 https://tasks.illustrativemathematics.org/content-standards/2/NBT/A/4/tasks/396
- Illustrative Math- Using Pictures to Explain Number Comparisons https://tasks.illustrativemathematics.org/content-standards/2/NBT/A/4/tasks/1237
- Illustrative Math- Looking at Numbers Every Which Way https://tasks.illustrativemathematics.org/content-standards/2/NBT/A/3/tasks/1236
- Illustrative Math- Bundling and Unbundling: https://tasks.illustrativemathematics.org/content-standards/2/NBT/A/1/tasks/144
- Illustrative Math- Counting Stamps: https://tasks.illustrativemathematics.org/content-standards/2/NBT/A/1/tasks/574

EVIDENCE OF LEARNING

Refer to the 'Formative, Summative, and Benchmark Assessments' sections.

Alternate Assessments

- Portfolios
- Verbal Assessment (instead of written)
- Multiple choice

Formative Assessments

- Journal Pages
- Self-Assessments/Student Friendly Scales
- White board responses
- Exit/Entrance Tickets
- Math Talks
- Open Response

Summative Assessments

- End of Unit Assessment
- Fact Fluency Assessments
- End of Unit Self Assessment

Benchmark Assessments

- EDM BOY Assessment
- IXL Screener / Diagnostic Snapshot BOY
- IXL Diagnostic Snapshot MOY
- IXL Diagnostic Snapshot EOY

INTERDISCIPLINARY CONNECTIONS

Money and place value (dimes and pennies)- Lesson 1-3 & 2-1

Writing- Lesson 4-7

- Career Readiness: Utilize Critical Thinking to Make Sense of Problems and Persevere in Solving Them
- Technology/Multimedia: Educational Tech Application
- Financial/Economic/Business/Entrepreneurial Literacy
- Science & Health: Social Emotional Learning
- English/Language Arts: Information Writing
- Social Studies: Current Events

LA.W.2.5	With guidance and support from adults and peers, focus on a topic and strengthen writing as needed through self-reflection, revising and editing.
PFL.9.1.2. FI.1	Differentiate the various forms of money and how they are used (e.g., coins, bills, checks, debit and credit cards).

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

- simplify written directions
- visuals
- manipulatives
- graphic organizers
- sentence starters
- wait time
- additional time for tasks
- verbal responses
- illustrations
- colored number grids

See link to Accommodations & Modifications document in course folder.