Unit 3: Numbers to 1,000

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Unit 3: Numbers to 1,000

Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Mathematics: Grade 2

Unit 3: Numbers to 1,000

Belleville Board of Education

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Unit Overview

Unit 3 will cover three topics including (T9) Numbers to 1,000, (T10) Add within 1,000 Using Models and Strategies, and (T11) Subtract within 1,000 Using Models and Strategies.

Enduring Understandings

Topic 9 focuses on:

- Numbers can be used to tell how many. The number system is based on groups of ten. Whenever there are 10 in one place value, you move to the next greater place value.
- The number system is based on groups of ten. Whenever there are 10 in one place value, you move to the next greater place value. Place value blocks and drawings can be used to model and write three-digit numbers.
- The position of a digit in a number tells its value. It takes 10 of a number in one place value to make a number in the next greater place value.
- There are three common ways to write numbers- standard form, word form, and expanded form. Each way involves using place value to tell the value of each digit.
- Numbers can be named in many ways. Recalling and using facts about equal amounts (such as 100 is equal to 10 tens, and 10 is equal to 10 ones) can help you name numbers in different ways.
- Place-value patterns can help you mentally count by 1s and 10s from a given number.
- Place-value patterns and number lines can be used to help you skip count by 5s, 10s, and 100s.
- Place-value strategies can be used to compare numbers. The symbols >, =, and < can be used to show how the numbers are related.
- Number lines go on forever in both directions. For every number, there is another number that is greater than it, and another number that is less than it. A number line can be used to help you find numbers that are greater than or less than a given number.
- Good math thinkers look for patterns in math to help solve problems.

Topic 10 focuses on:

- Place-value patterns and basic facts can be used to help you mentally add 10 or 100 to any given three-digit number.
- Three-digit numbers can be broken apart using hundreds, tens, and ones, and added in different ways. You can represent how you break apart and add numbers with hops or jumps on an open number line.
- Three-digit numbers can be broken apart using hundreds, ten, and ones, and added in different ways. You can change the numbers to make it easier to add mentally, without changing the sum.
- When adding three-digit numbers, you can add the hundreds, the tens, and the ones separately, and then add the partial sums to find the total sum. Partial sums addition provides a bridge between mental addition and the standard algorithm.
- The standard addition algorithm for three-digit numbers breaks the calculation into simpler calculations using place value, starting with the ones, then the tens, and then the hundreds. Answers to the simpler calculations are used to find the final sum.
- Addition algorithms and addition strategies can be used to add two (or more) three-digit numbers, the sum is the same no matter which strategy you use. You can use place value and properties of operations to explain why the strategies work.
- Good math thinkers look for things that repeat in a problem. They use what they learn from one problem to help them solve other problems.

Topic 11 focuses on:

- Place-value patterns and basic facts can be used to help you mentally subtract 10 or 100, from any given three-digit number.
- Three-digit numbers can be broken apart using hundreds, tens, and ones to subtract in different ways. You can represent how you break apart and subtract numbers with hops or jumps on an open number line.
- Three-digit numbers can be broken apart using hundreds, tens, and ones to subtract in different ways. You can represent how you break apart and subtract numbers with hops or jumps on an open number line. You can count back or add up to subtract.
- Three-digit numbers can be broken apart using hundreds, tens, and ones, and subtracted in different ways. You can change the numbers to make it easier to subtract mentally, without changing the difference.
- The standard subtraction algorithm for three-digit numbers breaks the calculation into simpler calculations using place value, starting with the ones, then the tens, and then the hundreds. Answers to the simpler calculations are used to find the final difference.
- The standard subtraction algorithm and subtraction strategies can be used to subtract with 3-digit numbers, the difference is the same no matter which strategy you use. You can use place value and properties of operations to explain why the strategies work.
- Good math thinkers know what the problem is about. They have a plan to solve it. They keep trying if they get stuck.

Essential Questions

(T9): Numbers to 1,000

- How can you count, read, and show numbers to 1,000?

(T10): Add within 1,000 Using Models and Strategies

- What are strategies for adding numbers to 1,000?

(T11): Subtract within 1,000 Using Models and Strategies

- What are strategies for subtracting numbers to 1,000?

Exit Skills

Topic 9: Understand place value extended to 1,000

Topics 10 and 11 Cluster: Learn why addition and subtraction strategies work using place value and properties of operations

New Jersey Student Learning Standards (NJSLS)

The Math Practices, as put forth by the National Council of Teachers of Mathematics (NCTM), are connected within all lessons:

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.6 - Attend to precision.

MP.7 - Look for and make use of structure.

MP.8 - Look for and express regularity in repeated reasoning.

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.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.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.

Interdisciplinary Connections

Math and Science Projects / STEM Connections embedded within TE, EnVision Math e.g. pg. 503

Topic 9: Breaking Apart and Putting Together

- Have students estimate first, and then count the number of pieces shown in the model.
- Ask students to think of other models they could make using the same pieces used in the model shown on Student's Edition, p. 503.
- Extension-Have students make a model of a house using building blocks. Then, ask them to count the number of blocks they used and write that number in standard, expanded, and word form.

Topic 10: Building up to 1,000

- Discuss with students how it takes a lot of planning to build a tall building.
- Ask students if they would like to try to build a tall building.
- Extension-Have students do research to find out the height and loation of the 3 tallest buildings in the world.

Topic 11: Making Models

- Discuss with students how bees move pollen from one flower to another.
- Ask students if they know why moving pollen from one place to another helps plants grow fruit and vegetables.
- Extension-Have students do research to learn about how bees benefit from moving pollen from one flower to another.

LA.W.2.8	Recall information from experiences or gather information from provided sources to answer a question.
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.

LA.SL.2.1.A	Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
LA.SL.2.1.B	Build on others' talk in conversations by linking their explicit comments to the remarks of others.
LA.SL.2.1.C	Ask for clarification and further explanation as needed about the topics and texts under discussion.
LA.SL.2.3	Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.

Learning Objectives

After completing Unit 3, students will be able to:

Topic 9:

- Understand place value and count by hundreds to 1,000.
- Use place-value blocks and drawings to model and write 3-digit numbers.
- Tell the value of a digit by where it is placed in a number.
- Read and write 3-digit numbers in expanded form, standard form, and word form.
- Make and name a number in different ways to show the same value.
- Use place-value patterns to mentally count by 1s and 10s from a given number.
- Skip count by 5s, 10s, and 100s using a number line.
- Compare numbers using place value.
- Compare and write a three-digit number that is greater than or less than another three-digit number.
- Look for patterns to help when solving problems.

Topic 10:

- Add 10 or 100 mentally using place value.
- Use an open number line to add 3-digit numbers.
- Add 3-digit numbers using mental math.
- Add 3-digit numbers using partial sums.
- Use models to add 3-digit numbers.
- Use different addition strategies and explain why they work.
- Think about and check my work as I solve a problem.

Topic 11:

- Subtract 10 or 100 mentally using place-value strategies.
- Use an open number line to count back to subtract 3-digit numbers.
- Use an open number line to add up to subtract 3-digit numbers.
- Use mental math to subtract.
- Use models to subtract 3-digit numbers.
- Explain why subtraction strategies work using models, place value, and mental math.

- Solve problems that take more than one step.

Suggested Activities & Best Practices

- Consider Extension Activity e.g. Topic 9-1, pg. 503N

- Further suggested activities embedded within each Topic

Assessment Evidence - Checking for Understanding (CFU)

- Common Formative Assessments (Formative)
- Common Summative Assessments (Summative)
- District Benchmark (Benchmark)
- Do Now
- EnVision Performance Task (Alternative)
- Exit Tickets
- Higher-order Questioning / Rich Discussion
- Journals
- KWL Chart
- Learning Center Activities
- Quick Check (enVisionmath)
- Quick Write
- Quizzes (Formative)
- Rubrics
- Surveys
- Teacher Observation Checklist
- Think-Pair-Share
- Turn-and-Talk / Share-out
- Unit Assessments (Summative)
- WIK / WINK

Primary Resources & Materials

EnVision Math Teacher Edition

PearsonRealize.com

Ancillary Resources

New Jersey Student Learning Standards for Mathematics

NJSLS Mathematics Crosswalk

IXL Learning

NCTM Illuminations

Prodigy Game

Technology Infusion



Alignment to 21st Century Skills & Technology

Mastery and infusion of **21st Century Skills & Technology** and their Alignment to the core content areas is essential to student learning. The core content areas include:

- English Language Arts;
- Mathematics;
- Science and Scientific Inquiry (Next Generation);
- Social Studies, including American History, World History, Geography, Government and Civics, and Economics;
- World languages;
- Technology;

- Visual and Performing Arts.

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.CRP4.1	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.CRP6.1	Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.
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.CRP11.1	Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.
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.A.CS1	Understand and use technology systems.
TECH.8.1.2.A.CS2	Select and use applications effectively and productively.
TECH.8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.
TECH.8.2.2.A.1	Define products produced as a result of technology or of nature.
TECH.8.2.2.A.2	Describe how designed products and systems are useful at school, home and work.

21st Century Skills/Interdisciplinary Themes

- Communication and Collaboration
- Creativity and Innovation
- Critical thinking and Problem Solving
- ICT (Information, Communications and Technology) Literacy
- Information Literacy

- Life and Career Skills
- Media Literacy

21st Century Skills

- Civic Literacy
- Environmental Literacy
- Financial, Economic, Business and Entrepreneurial Literacy
- Global Awareness
- Health Literacy

Differentiation

- Use the "Quick Check" feature on Pearson Realize (embedded in each Unit) to help determine the strategy for differentiating instruction; the "Assess and Differentiate" page will prescribe the differentiated instructional activity

Differentiations:

- Small group instruction
- Small group assignments
- Extra time to complete assignments
- Pairing oral instruction with visuals
- Repeat directions
- Use manipulatives
- Center-based instruction
- Token economy
- Study guides
- Teacher reads assessments aloud
- Scheduled breaks
- Rephrase written directions
- Multisensory approaches
- Additional time
- Preview vocabulary
- Preview content & concepts
- Story guides
- Behavior management plan
- Highlight text
- Student(s) work with assigned partner
- Visual presentation
- Assistive technology
- Auditory presentations
- Large print edition
- Dictation to scribe

Hi-Prep Differentiations:

- Alternative formative and summative assessments
- Choice boards
- Games and tournaments
- Group investigations
- Guided Reading
- Independent research and projects
- Interest groups
- Learning contracts
- Leveled rubrics
- Literature circles
- Multiple intelligence options
- Multiple texts
- Personal agendas
- Project-based learning
- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products
- Varying organizers for instructions

Lo-Prep Differentiations

- Choice of books or activities
- Cubing activities
- Exploration by interest
- Flexible grouping
- Goal-setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Reading buddies
- Varied journal prompts
- Varied supplemental materials

Special Education Learning (IEP's & 504's)

- Consider Intervention Activity and/or Reteach e.g. Topic 9-1, pg. 515A

- Use suggestions under Technology Center section in Pearson Realize to target students with disabilities

- Use the Pacer Center Action Information Sheet for research-based ideas on accommodations and modifications

- Allow for open-note/open-book assessments
- Check classwork frequently for understanding
- Conduct preview of content, concepts, and vocabulary
- Consider behavior management plan
- Implement accommodations/modifications as dictated in the student's IEP/504 plan
- Modified test content/format
- Modified written assignments
- Multi-sensory presentation
- Pre-annotate text
- Preferential seating
- Promote pair work
- Provide extended time on various assignments
- Provide printed/online copies of lesson notes
- Secure attention before providing instruction/directions
- Use assistive technology

English Language Learning (ELL)

- Use Teaching Tool 48 as a graphic organizer to help students connect a visual to the vocabulary term

- Use Teaching Tool 49 to connect students' understanding of vocabulary terms with actual meanings

- Use suggestions under English Language Learners section in Pearson Realize to target beginning, intermediate, and advanced learners e.g. Topic 9-1, pg. 511A

- Use suggestions under Technology Center section in Pearson Realize to target ELLs

- Allow for multiple student revisions
- Allow for open-note / open-book assessments
- Allow multiple forms of student products (projects, models, slide-shows, etc.) to demonstrate student learning
- Ask and give information using key words
- Demonstrate listening comprehension by responding to questions
- Develop basic sight vocabulary
- Differentiate assessments to reflect selected objectives
- Express ideas in single words
- Leverage computer spell checker
- Modify reading assignments to correlate with lexile level

- Peer tutoring / Peer note-taking
- Speak using content area vocabulary in context
- Teacher-created Study Guide
- Use prior experiences to understanding meanings
- Use videos, illustrations, pictures, and drawings to explain or clarify

At Risk

- Decrease the amount of work represented or required by assigning the "Do You Understand?" and the "Do You Know How?" sections of each lesson

- Use suggestions under Technology Center section in Pearson Realize to target at-risk students

- Use suggestions under Intervention Activity e.g. Topic 9-1, Error Intervention, pg. 512

- Allow for multiple student revisions
- Allow for open-note / open-book assessments
- Allow multiple forms of student products (projects, models, slide-shows, etc.) to demonstrate student learning
- Allow students to select from given assignment choices
- Differentiate assessments to reflect selected objectives
- Mark students' correct and acceptable work, not the mistakes
- Peer tutoring / Peer note-taking
- Promote student collaboration on in-class / outside class assignments
- Reduce lengthy outside reading assignments
- Teach key aspects of a topic - eliminate non-essential information
- Teacher-created Study Guide
- Use authentic assessments with real-life problem-solving
- Use videos, illustrations, pictures, and drawings to explain or clarify

Talented and Gifted Learning (T&G)

- Use suggestions under Extension for Early Finishers section in Pearson Realize to target advanced learners

- Use suggestions under Advanced Activity Centers to target advanced learners e.g. Topic 9-1, pg. 515A

- Administer Unit Assessment to determine level of proficiency
- Allow gifted children to create and publish a class newspaper to distribute
- Allow students to work at a faster pace
- Complete activities aligned with above grade-level text using Benchmark results
- Consider parental input about the education of their gifted children
- Create a blog or social media page about a topic of interest
- Create a plan to solve an issue presented in the class or in a text

- Debate issues with research to support arguments
- Involve students in academic contests
- Promote advanced problem-solving
- Remember that gifted children may not excel in all areas
- Set individual goals
- Utilize exploratory connections to higher-grade concepts
- Utilize project-based learning for greater depth of knowledge