Unit 2: Understanding Addition and Subtraction

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Unit 2: Understanding Addition and Subtraction

Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Mathematics: Kindergarten

Unit 2: Understanding Addition and Subtraction

Belleville Board of Education

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Unit Overview

Unit 2 will cover three topics including (T6) Understanding Addition, (T7) Understanding Subtraction, and (T8) More Addition and Subtraction.

Enduring Understandings

Topic 6 focuses on:

- Addition can be shown in different ways, such as with objects, fingers, mental images, drawings, sounds, acting out situations, verbal explanations, expressions, or equations.
- Adding one or more objects to an existing group is one interpretation of addition.
- Putting together parts to make a hole is one interpretation of addition.
- Adding groups can be shown in an addition expression that uses the plus sign (+).
- Adding parts together to make a whole is one interpretation of addition. Equations using + and = can be used to show parts of a whole.
- Objects, drawing,counting and equations can be used to help solve addition/subtraction problems involving adding or putting together, or subtraction and taking away.
- Patterns can be used to solve addition problems.
- Good math thinkers use math they know to show and solve problems.

Topic 7 focuses on:

- Subtraction can be shown in different ways, such as with objects, fingers, mental images, drawings, sounds, acting out situations, verbal explanations, expressions, or equations.
- Separating parts from a whole is one interpretation of subtraction.
- Taking parts from a whole is one interpretation of subtraction.
- Take apart and take away subtraction situations can be shown in a subtraction expression that uses the

minus sign (-).
- Subtraction equations using - and = can be used to show subtraction situations.
- Objects, words, drawings, counting, and equations can be used to help solve subtraction problems involving taking from.
- Patterns can be used to help solve subtraction problems.
- Good math thinkers know how to pick the right tools to solve math problems & how to think about words and numbers to solve problems.

Topic 8 focuses on:

- Numbers can be broken apart in many ways. An addition equation caqn show how a number is broken into two parts.
- Addition and subtraction facts have an inverse relationship. Equations using +, -, and = can be used to show parts of a whole.
- Good math thinkers know how to think about words and numbers to solve problems.
- Addition and subtraction facts can be solved using different strategies.
- Numbers can be broken apart in many ways. An addtion equation can show how a number is broken into two parts.
- Objects, drawings, counting, and equations can be used to help solve addition problems involving unknown addends.
- For any number from 1-9, there is another number to make 10.

Essential Questions

(T6): What type of situations involve addition?

(T7): How can representing taking apart and taking from in different ways help learn about subtraction?

(T8): How can decomposing numbers in more than one way help learn about addition and subtraction?

Exit Skills

Topics 6, 7, and 8 Cluster:

- Represent addition and subtraction equations through drawings

- Recognize the symbols for addition and subtraction

- Construct addition and subtraction equations using materials and manipulatives

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.K.CC.A.2	Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
MA.K.OA.A.1	Represent addition and subtraction up to 10 with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
MA.K.OA.A.2	Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
MA.K.OA.A.3	Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).
MA.K.OA.A.4	For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
MA.K.OA.A.5	Demonstrate fluency for addition and subtraction within 5.

Interdisciplinary Connections

LA.W.K.2	Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
LA.W.K.8	With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
LA.RF.K.1.A	Follow words from left to right, top to bottom, and page by page.
LA.SL.K.1	Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
LA.SL.K.1.A	Follow agreed-upon norms for discussions (e.g., listening to others with care and taking turns speaking about the topics and texts under discussion).

LA.SL.K.1.B	Continue a conversation through multiple exchanges.
LA.SL.K.3	Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
LA.SL.K.5	Add drawings or other visual displays to descriptions as desired to provide additional detail.

Learning Objectives

After completing Unit 2, students will be able to:

Topic 6:

- Show numbers in many ways.
- Repeat addition as adding to a number.
- Represent addition as putting two or more numbers together.
- Write an equation to show addition.
- Use the plus and equal sign in an equation.
- Solve addition problems.
- Use equations to represent and explain addition.
- Use patterns to add numbers together.
- Model adding numbers together by drawing counting or writing equations.

Topic 7:

- Show numbers in many ways.
- Take apart a number and tell the parts.
- Represent subtraction as taking apart a number.
- Separate numbers.
- Separate more numbers.
- Use the minus sign in an equation.
- Find the difference of two numbers.
- Find patterns in subtraction equations.
- Use tools to subtract numbers.

Topic 8:

- Write the parts to show the numbers up to 5.
- Solve related addition and subtraction equations.
- Reason about numbers and operations.
- Write addition and subtraction equations within 5 and remember them.
- Write equations to show the parts of 6 and 7.
- Write equations to show the parts of 8 and 9.
- Write equations to show the parts of 10.
- Write addition equations to solve a word problem.
- Find number partners for 10.
- Find a missing part to make 10.

Suggested Activities & Best Practices

- "Tower Fun" Building Center Activity, Pearson Realize, pg. 281M

- "Sitting Down to Eat" Strategic Read Aloud, Pearson Realize, pg. 281M

- "Joining Trains" Writing Center Activity, Pearson Realize, pg. 281M

Assessment Evidence - Checking for Understanding (CFU)

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

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.
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.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)

- "Tambourines," Music Center, Pearson Realize, 281M

- "Follow the Leader," Movement Center, Pearson Realize, 281M

- 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. 287A

- 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

- 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. "Baby Animals" 291A

- 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