

Unit 3 Understanding Place Value and Comparing Numbers

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Title Section

Department of Curriculum and Instruction



Belleville Public Schools

Curriculum Guide

Mathematics: Grade 1

Unit 3: Understanding Place Value and Comparing Numbers

Belleville Board of Education

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Unit Overview

Unit 3 focuses on understanding and identify place value in order to build a foundation for adding tens and ones and comparing two numbers.

- Topics 8 and 9 will prepare students for 2-digit addition and subtraction.
- Develop a concept of tens and ones (a key foundation of the base-10 number system)
- Students will use their understanding of place value to compare 2-digit numbers.

(Reference topics 8 and 9 in the teacher's edition)

NJSLS

MA.1.1.NBT.B.2

Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:

MA.1.1.NBT.B.2a

10 can be thought of as a bundle of ten ones — called a “ten.”

MA.1.1.NBT.B.2b

The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six,

	seven, eight, or nine ones.
MA.1.1.NBT.B.2c	The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
MA.1.1.NBT.B.3	Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.
MA.1.1.NBT.C.5	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

Exit Skills

By the end of Grade 1 Mathematics, students in the Belleville Public Schools will be able to:

- **Develop an understanding of addition, subtraction, and strategies for addition and subtraction within 20:**

Students develop strategies for adding and subtracting whole numbers. They use a variety of methods, including discrete objects, to model add-on, take from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.

- **Develop an understanding of whole number relationships and place value, including grouping in tens and ones:**

Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.

- **Develop an understanding of linear measurement and measuring lengths as iterating length units:**

Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.

- **Reason about attributes of, and composing and decomposing geometric shapes:**

Students compose and decompose plane or solid figures to build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

Enduring Understanding

Topic 8:

- Numbers can be used to tell how many.
- When there are only tens, counting by 10s can be used to find how many there are in all.
- In a standard numeral, the tens are written to the left of the ones.

Topic 9:

- 1 more, 1 less, 10 more, 10 less express a relationship between 2 numbers.
- Numbers can be represented on a hundred chart.
- For 2 two-digit numbers, the number with more tens is the greater number. If the 2 numbers have an equal number of tens, then the number with more ones is greater.
- For any two-digit number shown on a number line, the numbers to its left are less than that number and the numbers to its right are greater than that number.

Essential Questions

- **How can you count and add using tens and ones?**
- **What are ways to compare numbers to 120?**

Learning Objectives

After completing Unit 3, students will be able to:

Topic 8:

- **Read and write** numbers 11 to 19.
- **Show** groups of 10 with connecting cubes.
- **Group** tens to solve problems.
- **Count** tens and ones to find a two-digit number.

Topic 9:

- **Find** numbers that are more or less than a given number.
- **Use** a hundred chart to find 1 more, 1 less, and 10 more, 10 less.
- **Use** place value blocks to compare 2 two-digit numbers.
- **Compare** two numbers using a greater than, less than, or equal to sign.

- **Compare** and write two-digit numbers that are greater than or less than other two-digit numbers.

Action Verbs

Below are examples of action verbs associated with each level of the Revised Bloom's Taxonomy. These are useful in writing learning objectives, assignment objectives and exam questions.

Remember	Understand	Apply	Analyze	Evaluate	Create
Choose	Classify	Choose	Categorize	Appraise	Combine
Describe	Defend	Dramatize	Classify	Judge	Compose
Define	Demonstrate	Explain	Compare	Criticize	Construct
Label	Distinguish	Generalize	Differentiate	Defend	Design
List	Explain	Judge	Distinguish	Compare	Develop
Locate	Express	Organize	Identify	Assess	Formulate
Match	Extend	Paint	Infer	Conclude	Hypothesize
Memorize	Give Examples	Prepare	Point out	Contrast	Invent
Name	Illustrate	Produce	Select	Critique	Make
Omit	Indicate	Select	Subdivide	Determine	Originate
Recite	Interrelate	Show	Survey	Grade	Organize
Select	Interpret	Sketch	Arrange	Justify	Plan
State	Infer	Solve	Breakdown	Measure	Produce
Count	Match	Use	Combine	Rank	Role Play
Draw	Paraphrase	Add	Detect	Rate	Drive
Outline	Represent	Calculate	Diagram	Support	Devise
Point	Restate	Change	Discriminate	Test	Generate
Quote	Rewrite	Classify	Illustrate		Integrate
Recall	Select	Complete	Outline		Prescribe
Recognize	Show	Compute	Point out		Propose
Repeat	Summarize	Discover	Separate		Reconstruct
Reproduce	Tell	Divide			Revise
	Translate	Examine			Rewrite
	Associate	Graph			Transform
	Compute	Interpolate			
	Convert	Manipulate			
	Discuss	Modify			
	Estimate	Operate			
	Extrapolate	Subtract			
	Generalize				
	Predict				



Interdisciplinary Connections

Each topic has an interactive story and a STEM component.

Topic 8 Math and Science Project (STEM): Daylight Throughout the Year

- Explain to students that there is more daylight during the summer than in the winter because of how the Earth is tilted as it moves around the sun.
- Challenge students to write their own sentences and drawings to describe the patterns of the seasons.

Reference the "Topic Opener" pages in the teacher's edition for STEM projects for topics 8 (pg. 445) and 9 (pg. 493).

TECH.8.1.2

All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

SCI.K-2-ETS1

Engineering Design

LA.K-12.NJSLSA.R

Reading

LA.K-12.NJSLSA.W

Writing

Alignment to 21st Century Skills & Technology

Key SUBJECTS AND 21st CENTURY THEMES

Mastery of key subjects and 21st century themes is essential for all students in the 21st century.

Key subjects include:

- English, reading or language arts
- World languages
- Arts
- Mathematics
- Economics
- Science
- Geography
- History
- Government and Civics

21st Century/Interdisciplinary Themes

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

21st Century Skills

- 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

Technology Infusion



Differentiation

As a Reminder:

The basis of good differentiation in a lesson lies in differentiating by content, process, and/or product.

Resources:

- NJDOE: Instructional Supports and Scaffolds for Success in Implementing the Common Core State Standards <http://www.state.nj.us/education/modelcurriculum/success/math/k2/>
- enVision math 2.0 Technology Center,
- On-Level and Advanced Activity Centers
- Math Diagnosis and Intervention System 2.0 (accessed through PearsonRealize.com)
- Monitor progress, reteach as needed, and extend student thinking.
- Assess to identify students needs and then provide appropriate support.
- As needed, provide more instruction that is on level or below grade level for the students who are struggling.
- Use vocabulary cards, vocabulary activities, vocabulary review, and vocabulary glossary.
- Utilize **Quick Check** found in order to determine differentiation of instruction.
- **Assess and differentiate** page will prescribe the differentiated instruction activity.

Special Education

- printed copy of board work/notes provided
- additional time for skill mastery
- assistive technology
- behavior management plan
- Center-Based Instruction
- check work frequently for understanding
- computer or electronic device utilizes
- extended time on tests/ quizzes
- have student repeat directions to check for understanding
- highlighted text visual presentation
- modified assignment format
- modified test content

- modified test format
- modified test length
- multiple test sessions
- multi-sensory presentation
- preferential seating
- preview of content, concepts, and vocabulary
- reduced/shortened reading assignments
- Reduced/shortened written assignments
- secure attention before giving instruction/directions
- shortened assignments
- student working with an assigned partner
- teacher initiated weekly assignment sheet
- Use open book, study guides, test prototypes

ELL

- teaching key aspects of a topic. Eliminate nonessential information
- using videos, illustrations, pictures, and drawings to explain or clarify
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;
- allowing students to correct errors (looking for understanding)
- allowing the use of note cards or open-book during testing
- decreasing the amount of work presented or required
- having peers take notes or providing a copy of the teacher's notes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using computer word processing spell check and grammar check features
- using true/false, matching, or fill in the blank tests in lieu of essay tests

Intervention Strategies

- allowing students to correct errors (looking for understanding)
- teaching key aspects of a topic. Eliminate nonessential information
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
- allowing students to select from given choices
- allowing the use of note cards or open-book during testing

- collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test.
- decreasing the amount of work presented or required
- having peers take notes or providing a copy of the teacher's notes
- marking students' correct and acceptable work, not the mistakes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using authentic assessments with real-life problem-solving
- using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarify

Evidence of Student Learning-CFU's

Please list ways educators may effectively check for understanding in this section.

- Admit Tickets
- Anticipation Guide
- Common benchmarks
- Compare & Contrast
- Create a Multimedia Poster
- Define
- Describe
- Evaluate
- Evaluation rubrics
- Exit Tickets
- Explaining
- Fist- to-Five or Thumb-Ometer
- Illustration
- Journals
- KWL Chart
- Newspaper Headline
- Outline
- Question Stems
- Quickwrite
- Quizzes
- Red Light, Green Light
- Self- assessments

- Socratic Seminar
- Study Guide
- Teacher Observation Checklist
- Think, Pair, Share
- Think, Write, Pair, Share
- Top 10 List
- Unit tests

Primary Resources

EnVision Math 2.0, EnVision Math 2.0 Digital Resources

Ancillary Resources

Teachers Pay Teachers

<http://interactivesites.weebly.com>

<http://www.mindmeister.com/173843166/free-learning-websites-for-elementary-students>

www.factmonster.com

www.mathabc.com

www.mathblaster.com

www.ixl.com/math/grade-1

www.education.com

www.math-aids.com