

Unit 4 Using Models and Strategies to Add and Subtract Tens and Ones

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Title Section

Department of Curriculum and Instruction



Belleville Public Schools

Curriculum Guide

Mathematics: Grade 1

Unit 4: Using Models and Strategies to Add and Subtract Tens and Ones

Belleville Board of Education

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Unit Overview

Unit 4 expands on the understanding of place value gained in unit 3 in order to add and subtract tens and ones.

- Topic 10 focuses on adding a 2-digit number to a 1-digit number or 2-digit number with a sum less than 100.
- Topic 11 focuses on subtracting multiples of 10 less than 100.
- Answers will be found using concrete models, drawings, properties of operations, the relationship between addition and subtraction, and strategies based on place value.
- Students are expected to be able to explain the reasoning used to solve an equation.

(Reference topics 10 and 11 in the teacher's edition)

NJSLS

MA.1.1.NBT.C.6

Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used.

MA.1.1.NBT.C.4

Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g., base ten blocks) 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

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 10:

- Adding groups of 10 is similar to adding numbers less than 10.
- When adding tens to a two-digit number, the tens digit changes. The ones digit remains unchanged.
- When a two-digit number is added to a one-digit number, the ones are added to the ones.
- When a two-digit number is added to a one-digit number, the ones are added to the ones and sometimes it is necessary to compose a ten.

Topic 11:

- Subtracting a multiple of 10 from another multiple of 10 is similar to subtracting numbers less than 10.
- Addition and subtraction have an inverse relationship.
- When subtracting tens from a two-digit number, the tens digit changes. The ones digit remains unchanged.
- You can use different strategies to solve subtraction problems.

Essential Questions

- **What are ways to use tens and ones to add?**
- **How can I use what I know about subtraction to subtract tens?**

Learning Objectives

After completing Unit 4, students will be able to:

Topic 10:

- **Add** 2 multiples of 10.
- **Use** mental math to add tens to two-digit numbers.
- **Use** a hundred chart to add tens and ones.
- **Use** a number line to solve addition problems.
- **Solve** addition problems by using blocks or drawings.

- **Make** a ten to help solve addition problems.
- **Add** 2 two-digit numbers.
- **Solve** addition problems using different strategies.
- **Model** and solve problems by drawing a picture and writing an equation.

Topic 11:

- **Use** models to subtract tens.
- **Use** a hundred chart to subtract a multiple of 10 from another multiple of 10.
- **Use** an open number line to solve subtraction problems.
- **Use** addition to subtract tens.
- **Use** mental math to subtract ten from a two-digit number.
- **Use** different strategies to subtract.

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.

Reference the "Topic Opener" pages in teacher's edition for STEM projects for topics 10 (pg.541) and 11 (pg. 609).

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.NJLSA.R	Reading
LA.K-12.NJLSA.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

EnVision 2.0 Digital Resources, SMART Board



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