

GRADE 2 UNIT 4 – ADDITION AND SUBTRACTION USING PLACE-VALUE, AND MEASUREMENT

<p>Established Goals:</p> <p>Standards</p> <p>Numbers base ten</p> <p>2.NBT.9</p> <p>Explain why addition and subtraction strategies work, using place value and the properties of operations.</p> <p>Measurement and data</p> <p>2.MD.5</p> <p>Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.</p> <p>2.MD.6</p> <p>Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ...,</p> <p>2.MD.7</p> <p>Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.</p> <p>2.MD.8</p> <p>Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately</p> <p>Operation and algebraic thinking</p> <p>2.OA.1,2</p> <p>Fluently add and subtract within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers.</p>	Transfer	
	<p><i>Students will be able to:</i></p> <ul style="list-style-type: none"> Find the missing number that is needed by using a symbol to represent the unknown number. Tell time on an analog and a digital clock to the nearest 5 minutes. Recognize, name, and know the value of coins and dollars, and use money symbols appropriately. Break apart 2 digit numbers into tens and ones in order to add accurately. 	
	Meaning	
	ENDURING UNDERSTANDING	ESSENTIAL QUESTIONS
	<ul style="list-style-type: none"> When solving a problem, the missing number can be written as a symbol. Analog and digital clocks can be read to tell time to the nearest 5 minutes. Coins and dollars are written in a specific way and each has a specific value. A 2 digit number can be broken apart into tens and ones to help us add more easily. 	<ul style="list-style-type: none"> How can symbols be used to represent the missing number? Why do you need to tell time correctly? How can you tell what time it is to the nearest 5 minutes? What is the value of a penny, nickel, quarter, dime, dollar, and how do you write it? How would you break apart a particular 2 digit number into tens and ones?
	Acquisition	
KNOWLEDGE	SKILLS	
<p><i>Students will know how to...</i></p> <ul style="list-style-type: none"> Use symbols to represent numbers in an equation. Use clocks to measure time. Break apart two-digit numbers into tens and ones. Determine the values of various coins and one dollar. 	<p><i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> Using a symbol in place of a number in an equation Telling time on a digital and analog clock to nearest 5 minutes. Breaking a 2 digit number apart into tens and ones. Counting various sets of coins and telling the value of the set. 	

Vocabulary	Instruction and Pacing (suggested order to teach)	
Penny, nickel, dime, quarter, half dollar, dollar bill, dollar sign, cents, decimal point, analog, digital, AM, PM, minute hand, hour hand, symbol, unknown, equation, number sentence, compose, decompose,	Measurement & Data (Time)	2 Weeks
	Measurement & Data (Money)	2 Weeks
	Measurement & Data (Solve word problems involving lengths)	2 Weeks
	Fluency Standards (Add/Sub to 20)	Entire Unit
	Benchmark Testing & Reteaching	2 Weeks
Common Misconceptions		Proper Conceptions
Students have difficulty understanding how long or short an activity may take	Act out activities that take short amounts of time (tying a shoe, writing their name)	
Students have difficulty with intervals (5 min) on a clock and 60 minutes as a total	Time is grouped and measured in a different ways	
Students confuse the hour and minute hand	The hands on a clock move differently and have different functions	
Students incorrectly write the time	Time is recorded by hour : minute	
Students are not sure when to regroup	Using place value blocks and cubes can help us to see when to regroup	
Students are not sure how to record the new numbers once they regroup	Connecting place value blocks and cubes show the connection to the written number	
Students add or subtract in the tens column first	Steps to adding and subtracting 2 and 3 digit numbers start in the ones column	
Dependency on clue words in story problems	Visualizing or acting out or drawing and reading to a partner can to “see” the problem.	
Students lose count or cannot track when measuring	Marking and writing down measurements help you keep track	
Students become confused when the measurement falls between two numbers	Use the number that is closer to the “end” of the object	
Students confuse inches/centimeters on a ruler	Inches are larger than centimeters. Before measuring always find the correct side of the ruler marked cm. or in.	
Students confuse coins (quarter, nickel, dime, penny)	A coin has 2 different sides. Each coin has a different value	
Students have difficulty counting coins	Recording money amounts or placing dots on coins is a strategy to help us count coins	
Students count and total coins in random order	Total the largest coins first and record totals, then count/add the smaller coins	
Resources		
Common Core Standards, New Jersey Model Curriculum Envisions Math Program Suggested Topics Topic 13 Counting Money Topic 14 Money Topic 16 (Selected Lessons involving Time)		

MANIPULATIVES AND GRAPHIC ORGANIZERS – Hand held clocks, play money (coins, bills), Place Value Blocks, Templates for Communicators/Smart Pal Sleeves

<https://grade2commoncoremath.wikispaces.hcps.org/>

<http://illuminations.nctm.org>, <https://www.illustrativemathematics.org>

Additional Resources for ELL Learners

<http://www.dreambox.com/teachertools> activities for interactive whiteboard, some available in Spanish

<http://www.mathinenglish.com/worksheetsgrade2.php> printables for second grade math

<http://www.lessonstudygroup.net/lq/conference/-456048990.pdf> (multiple strategies for regrouping)

<http://www.njctl.org/courses/math/2nd-grade/time-money/>

<http://www.njctl.org/courses/math/2nd-grade/length/>

<http://www.njctl.org/courses/math/2nd-grade/place-value/>

<http://www.njctl.org/courses/math/2nd-grade/2-digit-addition-subtraction/>

<http://www.state.nj.us/education/modelcurriculum/math/ellscaffolding/2u4.pdf>

Math site for parents and Math from different countries <http://www.aaamaticas.com/>

Differentiation and Accommodations

Provide graphic organizers

Provide additional examples and opportunities for additional problems for repetition

Provide tutoring opportunities

Provide retesting opportunities after remediation (up to teacher and district discretion)

Teach for mastery not test

Teaching concepts in different modalities

Adjust pace and homework assignments

ELL Modifications

- Assess/teach prerequisite skills
- Illustrated reference charts (i.e. coins, clock with 5 minute increments, regrouping strategies)
- Read picture books to build vocabulary and background knowledge (samples below)
 - <http://www.the-best-childrens-books.org/teaching-clocks.html>
 - <http://theincidentaleconomist.com/wordpress/wp-content/uploads/2009/11/childrenbooksmoney.pdf>
- Use math manipulatives for all activities. (two color counters, multilink cubes, part part whole mats, base 10 blocks, place value mats, hundreds chart) Students should have ample practice with manipulatives prior to completing paper and pencil activities.

- Teach a variety of strategies that students can use to problem solve (act it out, manipulatives, draw a picture, etc.)
- Read all directions and word problems. Translate if necessary.
- Use different colored clock hands to make paper student clocks to assist students in correctly identifying the time.
- Utilize Envision Spanish Version/Interactive Path and Printable Resources

21st Century Skills

Critical Thinking, Creative Thinking, Collaborating, Communicating, and Technology Literacy

Instructional Strategies

Fairfield Township School recognizes the importance of the varying methodologies that may be successfully employed by teachers within the classroom and, as a result, identifies a wide variety of possible instructional strategies that may be used effectively to support student achievement. These may include, but not be limited to, strategies that fall into categories identified by the Framework for Teaching by Charlotte Danielson:

- Communicating with students
- Using questioning and discussion techniques
- Engaging students in learning
- Using assessment in instruction
- Demonstrating Flexibility and Responsiveness

Interdisciplinary Connections

ELA, Science, and Technology

Performance Task

The teacher has sent you to the school store to buy 30 pencils for the class.

For each set of 10 pencils, you need one quarter, one nickel, and two pennies.

•Draw the coins needed for one set of 10 pencils and find the total value of those coins

•Break apart the total cost of the set of 10 pencils to help find the total cost of all 30 pencils.

Write it in equation form.

However, the student in charge of the store tells you they only have 23 pencils left.

•Write an equation that will help you find the missing number of pencils you will need to get later.

The student in charge of the store points to the clock on the door that says “Will Return At” and tells you to come back at that time to get the rest of the pencils.

•What time do you need to go back to get the pencils?

Rubric

3 points: Student identifies correct value for each set of 10 pencils.

Student correctly writes an equation broken down into 10s and 1s for the cost of three sets of ten pencils.

Student accurately finds the number of pencils needed to total 30.

Student writes the correct time for the clock shown.

2 points: Student identifies correct value of coins for one set of ten pencils.

Student attempts to write an equation breaking down the value of 3 sets of ten pencils into 10s and 1s to find the sum.

Student writes the correct time for the clock shown.

1 point: Student identifies the value of coins for one set of pencils but is unable to break apart and add the cost of three sets of ten pencils.

Student attempts to find the number of pencils needed to total 30. Student writes the correct time for the clock shown.

0 points: Student shows no understanding of tasks.

ASSESSMENTS

Suggested Formative Assessment

Problem of the Day

Lesson Quizzes

Exit Ticket

Anecdotal Records (Topic Observation Checklist)

Suggested Summative Assessment - Grade Level developed Unit/Envisions Topic Tests/ Ed Connect Tests/ State Unit Benchmark/Performance Task

