

MATH: PACING CHART
GRADE 2

Trimester 1

Topic	Description	Number of Weeks	
<u>OPERATIONS AND ALGEBRAIC THINKING</u> <ul style="list-style-type: none"> • Add and Subtract within 100 • Understand Place Value to 1000 	Add and subtract within 20 to solve 1 and 2 step word problems with unknown positions.	3 weeks	
	Represent a 3-digit number as specific amounts		
	Identify ten tens as 100 and represent numbers using bundles of 100		
<u>NUMBER OPERATIONS BASE TEN</u> <ul style="list-style-type: none"> • Understand Place Value to 1000 • Understanding the Meaning and Application of Addition and Subtraction 	Skip counting- 5s, 10s, up to 100	2 weeks	
	Read and write numbers to 1000 base ten numerals, number names, expanded form		
	Use symbols $>$, $<$, $=$ to record the results of comparing 2 3-digit numbers		
	Even numbers can be counted by 2s and odd numbers are not paired evenly	4 weeks	
	Write equations to illustrate even numbers		
	Add up to four two-digit numbers based on place value and properties of operation.		
	Count within 1000 by ones, 5s, 10s, and 100s as well as skip counting by 100 up to 1000		
		Add and subtract fluently using mental strategies	2 weeks
		Use a variety of strategies such as place value, properties of operations as well as relationship between addition and subtraction in order to add and subtract within 50.	

Trimester 2

Topic	Description	Number of Weeks
<p><u>MEASUREMENT AND DATA</u></p> <ul style="list-style-type: none"> Compare lengths-measures in standard units 	<p>Write an equation with repeated equal addends from a rectangular array with up to 5 rows and columns and solve to find total number.</p>	<p>5 weeks</p>
	<p>Estimate or measure lengths of objects using appropriate tools. Measure in units of inches, centimeters, feet, and meters.</p>	
	<p>Compare measurements of objects with two different units of measure and explain that the difference is related to the size of unit chosen.</p>	
	<p>Compare lengths of objects and determine how much longer one object is than another using the same standard of measure.</p>	
<ul style="list-style-type: none"> Foundations of Multiplication 	<p>Orally count within 1000 including skip counting by 5s, 10s, and 100s</p>	<p>3 weeks</p>
	<p>Add fluently within 20 using mental strategies, such as decomposing and composing numbers using ten as the benchmark.</p>	
	<p>Choose strategy- place value, properties of operation, and /or the relationship between addition and subtraction to add and subtract within 100</p>	

Topic	Description	Number of Weeks
<p data-bbox="212 233 581 331"><u>OPERATIONS AND ALGEBRAIC THINKING and NUMBER OPERATIONS BASE TEN</u></p> <ul data-bbox="201 380 553 443" style="list-style-type: none"> <li data-bbox="201 380 553 443">• Addition and subtraction using place value 	<p data-bbox="630 380 964 548">Apply properties of place value to mentally add or subtract 10/or 100 to/from a given number within 100-900</p>	<p data-bbox="1101 590 1203 617" style="text-align: center;">2 weeks</p>
	<p data-bbox="630 554 964 800">Apply addition and subtraction strategies based on place value and the properties of operations and explain why these strategies work using drawings or objects.</p>	
	<p data-bbox="630 842 964 1010">Add and subtract within 100 in word problems involving lengths using a symbol to represent the unknown number.</p>	<p data-bbox="1101 1087 1203 1115" style="text-align: center;">3 weeks</p>
	<p data-bbox="630 1022 964 1230">Use a number line to represent the solution of whole number sums and differences related to length with 100 using equally spaced points.</p>	
	<p data-bbox="630 1236 964 1444">Add and subtract fluently within 20 using mental strategies, such as decomposing and composing numbers using ten as the benchmark.</p>	
	<p data-bbox="630 1451 964 1608">Add and subtract within 100 to solve 1 or 2 step word problems within unknowns of any position.</p>	

<ul style="list-style-type: none">• Work with time and money	Tell and write time using analog and digital clocks to the nearest 5 minutes using AM and PM.	2 weeks
	Identify, recognize, and solve word problems with dollar bills, quarters, dimes, nickels, and pennies using the dollar sign and cents symbols appropriately.	

Trimester 3

Topic	Description	Number of Weeks
<u>NUMBER OPERATIONS BASE TEN</u> <ul style="list-style-type: none">Represent and solve problems involving addition and subtraction	Add and subtract with 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 written method. Understand that in adding and subtracting three-digit numbers, one adds or subtracts hundreds with hundreds, tens with tens, ones with ones; and sometimes necessary to compose and decompose tens or hundreds.	4 weeks
<u>Geometry</u> <ul style="list-style-type: none">Recognize and Reason with shapes and their attributes	Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. (Size are compared visually or directly, not compared by measuring.) Identifying triangles, quadrilaterals, pentagons, hexagons, and cubes. Partition a rectangle into rows and columns of same size squares and count to find the total number.	2 weeks
<u>Data Analysis</u> <ul style="list-style-type: none">Represent and Interpret Data	Use tools of measurement to measure lengths of several objects to the nearest whole unit and represent data on a line plot with appropriate whole number units on a horizontal scale.	3 weeks

<ul style="list-style-type: none"> • Represent and Interpret Data (CONT.) 	<p>Use a pictograph and bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take apart, and compare problems using information presented in the graph.</p>	
<p><u>Fractions</u></p>	<p>Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc. and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.</p>	<p>2 weeks</p>



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Unit Overview

Content Area: Math

Unit Title:

Target Course/Grade Level: 2

Duration: Trimester 1- 12 weeks

Description:

- In this unit students will be exposed to representing and solving problems involving addition and subtracting.
- In this unit students will be exposed to adding and subtracting within 20 using mental strategies.

Concepts & Understandings

Concepts

- **Operations and Algebraic Thinking
2.OA**

Understandings

A.

- Choose the best strategy to solve a problem.
- Demonstrate ability to solve addition and subtraction problems.

B.

- Identify sums using mental math (doubles, near doubles, make a 10).
- Understand the relationship between addition and subtraction.

C.

- Use manipulatives to determine if groups are equal.
- Recognize sequential numbering and patterns.

Learning Targets

CPI Codes



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A.

2.OA.1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem

- **Add and subtract within 20 to solve 1- and 2-step word problems with unknowns in any position.**

B.

2.OA.2 Fluently add and subtract within 20 using mental strategies.² By end of Grade 2, know from memory all sums of two one-digit numbers.

- **Add and subtract fluently within ten using mental strategies (within 10).**

C.

2.OA.3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

Science-

5.1.4.B.3 Formulate explanations from evidence.

5.1.4.B.4 Communicate and justify explanations with reasonable and logical arguments.

5.1.4.D.1 Actively participate in discussions about student data, questions, and understandings.

Language Arts-

RI.2.1. Ask and answer such questions to demonstrate understanding of key details in a text.

RI.2.4. Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.

W.2.2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

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.

Social Studies-

6.6.A.1 Explain the spatial concepts of location, distance and direction, including:

The location of school, home, neighborhood, community, state, and country

The relative location of the community and places within it

The location of continents and oceans

6.6.A.2 Explain that the globe is a model of the Earth and maps are representations of local and distant places.

6.6.2.A.3 Demonstrate basic globe and map skills.

See addendum for MATH PRACTICES

21st Century Themes and Skills

- **Financial, Economic, Business, and Entrepreneurial Literacy/ Critical Thinking and Problem Solving, Life and Career**

Guiding Questions



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- How do we use addition and subtraction to solve problems?
- How do operations affect numbers?

Unit Results

- *Students will represent and solve problems involving addition and subtraction.*
- *Student will fluently add and subtract within 20 using mental strategies.*

Assessments:

Study Island

Teacher made tests

Performance tasks

Trimester Tests

Projects

Suggested Activities

The following activities can be incorporated into the daily lessons:

- A. Word problems that are connected to students' lives can be used to develop fluency with addition and subtraction. Table 1 describes the four different addition and subtraction situations and their relationship to the position of the unknown.**

Examples:

David had 18 stickers. He gave 12 to Susan. How many stickers does he have now? $18-12=$

It is important to attend to the difficulty level of the problem situations in relation to the position of the unknown.

- Result Unknown problems are the least complex for students followed by Total Unknown and Difference Unknown.
- The next level of difficulty includes Change Unknown, Addend Unknown, followed by Bigger Unknown.
- The most difficult are Start Unknown, Both Addends Unknown, and Smaller Unknown.

Second grade students should work on ALL problem types regardless of the level of difficulty. Students can use interactive whiteboard or document camera to demonstrate and justify their thinking. This standard focuses on developing an algebraic representation of a word problem through addition and subtraction --the intent is not to introduce traditional algorithms or rules.

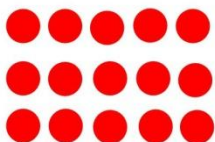


B. Mental strategies may include the following:

- Counting on
- Making tens ($9 + 7 = 10 + 6$)
- Doubles plus one ($7 + 8 = 7 + 7 + 1$)

C.

- Model using counters to make equal groups.
- Determine that even numbers can be separated into equal groups.



Differentiated Instruction:

A.2.OA.1

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: cubes

Students will use different colored cubes to show addition operations.

Students will make a train with three red connecting cubes a train with two green connecting cubes. Tell students to join the trains and put the red cubes first. *How many red cubes are there? 3 How many green cubes are there? 2 What is the number sentence? $3+2=5$ Break apart the trains and put the green cubes first. How many green cubes are there? 2 How many red cubes are there? 3 Make a number sentence. $2+3=5$ Does the order of the cubes change the sum?*

B. On-Level

Hands-on Activity- materials: number cubes, white board, dry erase markers

Students will work with a partner. Have one student roll 2 number cubes and write the numbers an addition sentence. Student will then pass the board to their partner and have their partner write another addition sentence using the same three numbers. Tell students to make sure the number sentence is not in the exact same order. Have students switch rolls and repeat activity.

C. Beyond Level

Hands-on Activity- materials: timer, paper, pencils

Students will work with a partner, set a timer for five minutes and write as many addition number sentences as possible that show the Commutative Property of addition. Have the students switch papers with a partner to check their work.



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B.2.OA.2

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: ten frames, connecting cubes

Students shall write the number sentence $8+4 = \underline{\quad}$ on the board. Have students show the number 8 with cubes of one color on the ten-frame. Show students that to add 4 cubes of another color, only 2 cubes will fit on the ten-frame. Tell students that $8+4 = 12$, because $8+2= 10$ and 2 more is 12. Repeat the process several times showing how to make a ten to add with other number sentences.

B. On-Level

Hands-on Activity- materials: addition flash cards

Students shall work with a partner. Have students mix up flash cards and put them facedown. Tell students to take turns picking a flashcard from the top of the pile, saying the number fact and sum. A student whose flash card has a sum of 10 gets 10 points. Explain that the student with the most points at the end of the game wins.

C. Beyond Level

Hands-on Activity- materials: number cards

Students will receive number cards 1-9. Have students work in pairs. Tell students to shuffle both sets of number cards together. Have students take turns flipping over the three cards. Then have students in the pair call out the sum.

C.2.OA.3

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: hundred chart, yellow crayons, red crayons

Students shall receive a hundred chart. Students will color the even numbers red and the odd numbers yellow. Discuss the patterns students created on the hundred charts. Tell students to compare their hundred charts. Tell students to compare their hundred chart to a friend's hundred chart to make sure the same boxes are colored the same colors.

B. On-Level

Hands-on Activity- materials: connecting cubes, hundred charts, crayons

Students shall work with a partner. Have partners take turns make a connecting cube train using different colored cubes. Have the students determine whether the number of cubes is even or odd by breaking the trains into pairs of cubes. Remind students that if they can place all the cubes into pairs then the number is even. If there is one left over, the number is odd. Each time students break apart a train discover whether the number is even or odd, have students record their findings on a hundred charts. Having them color the even and odd numbers in different colors.

C. Beyond Level

Hands-on Activity- materials: (0-5) number cubes, dry erase boards

Students will work in pairs. Tell one of the students to roll a number cube two times. Explain that the first number rolled should be written in the ten place and the second number rolled should be written in the ones place. Tell that student to write the number on the dry erase boards. Have their partner say whether the number is even or odd. Then have students switch roles and repeat activity.



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Unit Overview

Content Area: Math

Unit Title:

Target Course/Grade Level: 2

Duration: Trimester 1- 12 weeks

Description: In this unit students will be exposed to identifying place value and using the properties of operations to add and subtract.

Concepts & Understandings



Concepts

- **Number and Operations in Base Ten 2.NBT**

Understandings

A.

- **Use models of hundreds, tens, and ones to represent and identify the value of each digit in a three-digit number.**

B.

- **Count hundreds, tens, and ones up to 1,000.**

C.

- **Identify and use words, models, and expanded form to represent numbers to 1,000**

D.

- **Compare and order whole numbers to 1000**
- **Use $<$, $>$, $=$ to compare whole numbers**

E.

- **Add and subtract one digit and two-digit numbers up to 100 using a variety of strategies (such as counting on, doubles, near doubles, and make a ten)**

F.

- **Demonstrate addition strategies with up to four two-digit numbers either with or without regrouping**
- **Understand and apply the Associative and Commutative Properties.**



CPI Codes

A. 2.NBT.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:

- a. 100 can be thought of as a bundle of ten tens — called a “hundred.”
- b. 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).

B. 2.NBT.2. Count within 1,000; skip-count by 5s, 10s, and 100s.

C. 2.NBT.3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

D. 2.NBT.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.

E. 2.NBT.5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

- **Use a variety of strategies (place value, properties of operation, and/or the relationship between addition and subtraction) to add and subtract within 50.**

F. 2.NBT.6. Add up to four two-digit numbers using strategies based on place value and properties of operations.

Science-

5.1.4.B.3 Formulate explanations from evidence.

5.1.4.B.4 Communicate and justify explanations with reasonable and logical arguments.

5.1.4.D.1 Actively participate in discussions about student data, questions, and understandings.

Language Arts-

RI.2.1. Ask and answer such questions to demonstrate understanding of key details in a text.

RI.2.4. Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.

W.2.2. Write informative/explanatory texts in which they introduce



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a topic, use facts and definitions to develop points, and provide a concluding statement or section.

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.

Social Studies-

6.6.A.1 Explain the spatial concepts of location, distance and direction, including:

The location of school, home, neighborhood, community, state, and country

The relative location of the community and places within it

The location of continents and oceans

6.6.A.2 Explain that the globe is a model of the Earth and maps are representations of local and distant places.

6.6.2.A.3 Demonstrate basic globe and map skills.

See addendum for MATH PRACTICES

21st Century Themes and Skills

- **Financial, Economic, Business, and Entrepreneurial Literacy/ Critical Thinking and Problem Solving, Life and Career**

Guiding Questions

- **How do we identify place value and use properties of operations to add and subtract?**



Unit Results

Students will understand place value and use properties of operations to add and subtract.

Assessments:

Study Island

Teacher made tests

Performance tasks

Trimester Tests

Projects

Suggested Activities

The following activities can be incorporated into the daily lessons:

A. Use base-ten blocks and place value charts to show numbers. Write how many hundreds, tens, and ones. Then write the number.

B. Count by 5's up to 1,000

5,10,_,_,_

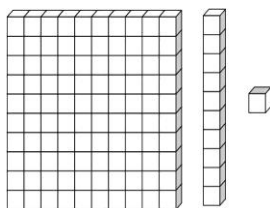
Count by 10's up to 1,000

10,20,_,_,_

Count by 100's up to 1,000

100,200,_,_,_

C. What are two ways to write this number?



D. $81 > 50$

$92 = 92$

$207 < 210$

$1000 > 999$

E. 43

+9



$$\begin{array}{r} 56 \\ - 43 \\ \hline \end{array}$$

F. $15+40+15+33=$

Differentiated Instruction:

A.2.NBT.1

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: base-ten blocks

Students will be given a variety of base ten blocks. Tell them sort the blocks by hundreds, tens, and ones. Then have them tell how many hundreds, tens, and ones there are in each group and say the three- digit number. Have students repeat the activity with different groups of base-ten blocks.

B. On-Level

Hands-on Activity- materials: (0-9) spinners, base-ten blocks, place value chart

Students shall work with a partner. Have one student spin the spinner. Have their partner show the number of ones using unit cubes and write the number in the ones column on the place value chart. Have students continue the process by spinning, modeling, and recording the tens and hundreds place. Have students say what number they created. Then have students switch roles and repeat the activity.

C. Beyond Level

Hands-on Activity- materials: 0-9 Spinner, paper, crayons, pencils, base-ten blocks

Students will write the number 537 in the middle of a piece of paper. Have students spin the spinner three times to make a three-digit number. Tell students if the number is greater than 537, to circle it in red. If the number is less than draw an X on top of it. Repeat process

B.2.NBT.2

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: shoes, groups of five and ten counters, hundreds chart

Students will stand in a line and count by 2's by counting their shoes. Students will group together counters and then count. Record number on the hundreds chart.

B. On-Level

Hands-on Activity- materials: spinners, (0-5) number cubes, connecting cubes

Students will spin a spinner and make a cube train to model that number. Then have students roll a number cube to determine how many cube trains they will create, with an equal number of cubes as shown on the spinner. Have students count how many equal groups they created. Have students describe the groups and repeat activity.

C. Beyond Level

Hands-on Activity- materials: counters or connecting cubes

Students will be reminded that they learned to skip count by 2s, 5s, and 10s. Explain that they can skip count by any number, including 3 and 4. Have students use counters or cubes to make models of groups of 3s. Ask them to write the number pattern from 3-18. Have students repeat the activity by skip counting by 4s from 4-24.

C.2.NBT.3

A. Approaching Level (At-Risk, ELL and Sp. Ed)



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Hands-on Activity- materials: ten-part spinners labeled 0-90, place value chart, base ten blocks
Students will work in pairs. Have students take turns spinning numbers, placing the number of tens rods on their place value charts, and recording the numbers.

B. On-Level

Hands-on Activity- materials: index cards with numbers 0-9 written on them

Students will choose three cards and use them to create a number. Then student rewrite the numbers using words. Repeat activity

C. Beyond Level

Hands-on Activity- materials: clue cards

Students will use the following clues to find a number. For example: It is a three-digit number, there is a 1 in the hundreds place. The tens place is 5 less than 8. The ones place has an even number less than 4. Then students will choose a number and write their own clues.

D.2.NBT.4

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: base ten blocks

Students will work in pairs. Give each student pair two varying groups of base-ten blocks. Have students count each group and write the three-digit number. Have student pairs compare their base-ten blocks by saying which group is greater than, less than, or equal to each other. Repeat.

B. On-Level

Hands-on Activity- materials: sticky notes

Students will create several sticky notes with a three-digit number written on each one some with have to have the same number on them. Write $<$, $>$, and $=$ on the board. Have students work in small groups. Each student chooses 2 sticky notes. They will come to board and place the numbers accordingly based on the correct symbol to compare them.

C. Beyond Level

Hands-on Activity- materials: number cards (0-9), paper, pencils

Students will place number cards face down. They will work in groups of three. Students will make a three column chart with each group members name on top. Have students draw three cards and write the numbers in the columns. The student will compare the numbers. Student with the greatest number wins. Repeat.

E.2.NBT.5

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: color tiles, dry erase marker and boards

Students will receive three piles of color tiles that form a fact family, such as a pile of 8 red, 5 blue and 13 green. Explain to students that by moving the piles around, they can model the facts in a fact family. As they change, have students record number sentence that reflects the fact.

B. On-Level

Hands-on Activity- materials: dry erase boards and markers, and index cards with three numbers that are part of a two-digit fact family.

Students will work in pairs. They will pick up an index cards and work in pairs to create two addition number sentences and two subtraction number sentences in the two-digit fact family. Have students record their number sentences on their board and continue with a new card.

C. Beyond Level

Hands-on Activity- materials: index cards

Students will work in pairs and receive several index cards. Tell each student to draw a triangle on the index card. Inside the triangle, have students write two numbers that make up a two-digit fact family. Tell students that they need to write the greatest number on top. Trade cards with partner to find the missing number from the fact family. Repeat.

F.2.NBT.6

A. Approaching Level (At-Risk, ELL and Sp. Ed)



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Hands-on Activity- materials: base ten block, place value chart

Students will write a number sentence that has three addends on a place value chart. Have students use base-ten blocks to show each addend. Tell students to add the ones first then add the tens to find the sum. Repeat.

B. On-Level

Hands-on Activity- materials: menu with healthy snacks

Prepare a menu with a list of healthy snacks. Label the items with prices from 11 pennies to 50 pennies. Have students choose three snacks that will have a sum above 99. Tell students to find how pennies the snack will cost. Have students repeat the activity several times choosing different snacks each time.

C. Beyond Level

Hands-on Activity- materials: paper, pencils, scissors, envelopes, glue

Students will write three addition number sentences vertically using four two-digit addends. Tell students to make sure there is a lot of room between each number. Have students cut out all the symbols, addends, and sums and place them mixed on an envelope. Tell students to switch envelopes with a friend. Have their partner reassemble the addition number sentences and glue them back together.

Addendum

1. CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform



algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2. **CCSS.Math.Practice.MP2 Reason abstractly and quantitatively.**

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. **CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others.**

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even



though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

4. **CCSS.Math.Practice.MP4 Model with mathematics.**

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5. **CCSS.Math.Practice.MP5 Use appropriate tools strategically.**

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6. **CCSS.Math.Practice.MP6 Attend to precision.**



Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. **CCSS.Math.Practice.MP7** Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y .

8. **CCSS.Math.Practice.MP8** Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when



expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word “understand” are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices.

In this respect, those content standards which set an expectation of understanding are potential “points of intersection” between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.



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Unit Overview

Content Area: Math

Unit Title:

Target Course/Grade Level: 2

Duration: Trimester 2- 15 weeks

Description:

- In this unit students will be exposed to working with equal groups of objects to gain foundations for multiplication.
- In this unit students will be exposed to adding and subtracting within 20.
- In this unit students will be exposed to representing and solving problems involving addition and subtraction.

Concepts & Understandings

Concepts

- **Operations and Algebraic Thinking
2.OA**

Understandings

A.

- Choose the best strategy to solve a problem.
- Demonstrate ability to solve addition and subtraction problems.

B.

- Identify sums using mental math (doubles, near doubles, make a 10).
- Understand the relationship between addition and subtraction.

C.

- Write a number sentence to show the relationship between repeated addition and multiplication.
- Create a model array of...stickers, stamps, tiles, counters, etc.

Learning Targets

CPI Codes



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A.

2.OA.1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem

- **Add and subtract within 20 to solve 1- and 2-step word problems with unknowns in any position.**

B.

2.OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

- **Add and subtract fluently within ten using mental strategies.**

C.

2.OA.4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

- **Write a number sentence that represents the total as the sum of equal addends as shown below.**
- **$4+4+4=12$**

Science-

5.1.4.B.3 Formulate explanations from evidence.

5.1.4.B.4 Communicate and justify explanations with reasonable and logical arguments.

5.1.4.D.1 Actively participate in discussions about student data, questions, and understandings.

Language Arts-

RI.2.1. Ask and answer such questions to demonstrate understanding of key details in a text.

RI.2.4. Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.

W.2.2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

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.

Social Studies-

6.6.A.1 Explain the spatial concepts of location, distance and



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direction, including:

The location of school, home, neighborhood, community, state, and country

The relative location of the community and places within it

The location of continents and oceans

6.6.A.2 Explain that the globe is a model of the Earth and maps are representations of local and distant places.

6.6.2.A.3 Demonstrate basic globe and map skills.

See addendum for MATH PRACTICES

21st Century Themes and Skills

- Financial, Economic, Business, and Entrepreneurial Literacy/ Critical Thinking and Problem Solving, Life and Career

Guiding Questions

- How do we use addition and subtraction to solve problems?
- How do operations affect numbers?

Unit Results

Students will represent and solve problems involving addition and subtraction.

Students will work with equal groups of objects to gain foundations for multiplication.

Students will add and subtract within 20 using mental strategies.

Suggested Activities



The following activities can be incorporated into the daily lessons:

A. Word problems that are connected to students' lives can be used to develop fluency with addition and subtraction.

Examples:

David had 18 stickers. He gave 12 to Susan. How many stickers does he have now? $18-12=$

It is important to attend to the difficulty level of the problem situations in relation to the position of the unknown.

- Result Unknown problems are the least complex for students followed by Total Unknown and Difference Unknown.
- The next level of difficulty includes Change Unknown, Addend Unknown, followed by Bigger Unknown.
- The most difficult are Start Unknown, Both Addends Unknown, and Smaller Unknown.

Second grade students should work on ALL problem types regardless of the level of difficulty. Students can use interactive whiteboard or document camera to demonstrate and justify their thinking.

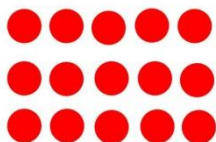
This standard focuses on developing an algebraic representation of a word problem through addition and subtraction --the intent is not to introduce traditional algorithms or rules.

B. Mental strategies may include the following:

- Counting on
- Making tens ($9 + 7 = 10 + 6$)
- Doubles plus one ($7 + 8 = 7 + 7 + 1$)

C.

- Model using counters to make equal groups.
- Determine that even numbers can be separated into equal groups.



- Write a number sentence that represents the total as the sum of equal addends as shown below.
- $4+4+4=12$



Differentiated Instruction

A.2.OA.1

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: base ten blocks

Write this word problem on the board. There were 48 people at the baseball game. 11 more people came to the game. How many people were at the game in all? 59 people. Guide students in using the base-ten blocks to find the sum. Have students tell a friend their answer and repeat.

B. On-Level

Hands-on Activity- materials: word problem cards, various manipulatives

Students will work in small groups. Pass out 3 word problem cards to each group. Have students discuss each word problem and decide which strategy they will use to solve it. On the back of each card, have students write the answers and the strategy they used to solve the problem. Invite groups to share one of the word problems they solved and the strategy they used. Repeat.

C. Beyond Level

Hands-on Activity- materials: connecting cubes (2 colors)

Students will work in small groups. Have them pretend they went strawberry picking. Tell students they picked a total of 80 berries and placed them in 2 different baskets. Explain that 1 of every 5 berries was bad. How many good strawberries are there? 64 How many bad strawberries are there? 16. Have students use connecting cubes to solve the problem. Tell students to work together in their groups to find a solution.

B.2.OA.2

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: base-ten blocks

Write the problem $200+100$ on the board. Have students model the problem using hundreds flats. What is the sum? 300. Repeat the process several times with different addition number sentences.

B. On-Level

Hands-on Activity- materials: base-ten blocks

Write $243+10$ horizontally on the board. Have students use base-ten blocks to find the sum.

Discuss that the only digit that will change the sum is the tens place. Then write $156+100$ horizontally on the board. Have students use the base tens to find the sum. Discuss that the only digit that will change in the sum is the hundreds place. Repeat process.

C. Beyond Level

Hands-on Activity- materials:

Write the same hundreds addition sentence on the board two times. Have two students come up to the board to solve one of the addition sentences. The first student that answers the addition sentence correctly gets to stay at the board, the other sits back down. Then bring up a different student to face the winner. Continue till all students have a chance to solve a problem.

C.2.OA.3

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- dot stickers, construction paper, pencils

Give each student 10 dot stickers and a sheet of construction paper. On your own paper, model how to make an array for 2 rows of 5. Have students copy your model. Discuss how many rows and columns of stickers are shown. Repeat

B. On-Level

Hands-on Activity- materials: two- color counters, 10 array cards, dry erase board and markers

Have students work with a partner. Give each pair of students 10 array cards, counters, a dry



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erase board and marker. Have students take turns picking cards Tell students to work together to show the matching array using counters. Explain to students that if they choose a card that says 4 rows of 3, model how to put counters into 4 rows with 3 columns. Then have pairs of students work together to write the corresponding number sentence on dry erase board.

C. Beyond Level

Hands-on Activity- materials:

Write the following problem on the board. A cat has 4 legs. A person has 2 legs. How many more legs do 4 cats have than 4 people? 8 more legs. Have students shade a grid to show an array to represent the number of legs on four cats and a grid to show the number of legs on four people. Then have students explain how they solved the problem.

Assessment:

- *Trimester test*
- *Performance Task*



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Unit Overview

Content Area: Math

Unit Title:

Target Course/Grade Level: 2

Duration: Trimester 2- 15 weeks

Description:

- In this unit students will be exposed to understanding place value.
- In this unit students will be exposed to using place value understanding and the properties of operations to add and subtract.

Concepts & Understandings

Concepts

- **Number and Operations in Base Ten 2.NBT**

Understandings

A.

- Use models of hundreds, tens, and ones to represent and identify the value of each digit in a three-digit number.
- Count hundreds, tens, and ones up to 1,000.

B.

- Add and subtract one-digit and two-digit numbers up to 100 using a variety of strategies (such as counting on, doubles, near doubles, and make a ten)

C.

- Use mental math strategies to add and subtract.

D.

- Understand and apply the Associative and Commutative Properties.



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Learning Targets

CPI Codes

A. 2.NBT.2. Count within 1,000; skip-count by 5s, 10s, and 100s.

B. 2.NBT.5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

C. 2.NBT.8. Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.

D.2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.

Science-

5.1.4.B.3 Formulate explanations from evidence.

5.1.4.B.4 Communicate and justify explanations with reasonable and logical arguments.

5.1.4.D.1 Actively participate in discussions about student data, questions, and understandings.

Language Arts-

RI.2.1. Ask and answer such questions to demonstrate understanding of key details in a text.

RI.2.4. Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.

W.2.2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

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.

Social Studies-

6.6.A.1 Explain the spatial concepts of location, distance and direction, including:

The location of school, home, neighborhood, community, state, and country

The relative location of the community and places within it



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The location of continents and oceans

6.6.A.2 Explain that the globe is a model of the Earth and maps are representations of local and distant places.

6.6.2.A.3 Demonstrate basic globe and map skills.

See addendum for MATH PRACTICES

21st Century Themes and Skills

- **Financial, Economic, Business, and Entrepreneurial Literacy/ Critical Thinking and Problem Solving, Life and Career**

Guiding Questions

- **How do we identify place value?**
- **How do the properties of operations help us to add and subtract?**

Unit Results

- *Students will understand place value.*
- *Students will use place value and the properties of operations to add and subtract.*

Assessments:

Study Island

Teacher made tests

Performance tasks

Trimester Tests

Projects



Suggested Activities

The following activities can be incorporated into the daily lessons:

A. Count by 5's up to 1,000

5,10,__,__,_

Count by 10's up to 1,000

10,20, __,__,_

Count by 100's up to 1,000

100,200,__,__,_

B. Add and subtract one-digit and two-digit numbers up to 100 using a variety of strategies (such as counting on, doubles, near doubles, and make a ten)

C. Write the missing numbers.

Then write the number pattern.

500,510,____, 530, _____

The pattern is 10 more.

655, _____, 455, 355, _____

The pattern is 100 less.

D. Use a variety of strategies (place value, properties of operation, and/or the relationship between addition and subtraction) to add and subtract within 100.

Use base-ten blocks and place value charts to show numbers. Write how many hundreds, tens, and ones. Then write the number.

Differentiated Instruction

A.2.NBT.2

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: number cards

Have three students stand in front of the class. Count the students aloud and write 3 on the board. Ask three more students to join them. Count the students and write 6. Ask three more students to join. What is the next number in the pattern. Count and write 9. What is the next number in the pattern? What is the rule? Skip count forward by 3s. Repeat using number cards for 5s, 10s, and 100s

B. On-Level

Hands-on Activity- materials: spinners, hundred charts

Students will work in groups of three. Assign each member responsibility for counting hundreds, tens or fives. Have students take turns in spinning to make a three digit number. Tell students to count on by fives, tens and hundreds. Have students record each of the patterns on a piece of paper. Tell students to repeat and use hundred charts to assist.

C. Beyond Level

Hands-on Activity- materials:

Teacher will write 15 number patterns on the board. Have patterns of 5s 10s and 100s. Make errors in some of the number patterns. Tell students identify what the pattern is, to copy patterns, find errors, and make corrections. Have students discuss their answers.



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B.2.NBT.5

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: number cards (20-40) dry erase board and markers, base-ten blocks
Students will receive 2 number cards. Have students write those numbers as addends vertical and horizontal number sentence on their boards. Tell students to show those addends using their base-ten blocks and find the sums. Have students write the sum on both of the number sentences. Have student repeat with different number cards.

B. On-Level

Hands-on Activity- materials: number cards (10-50) dry erase board and markers, base-ten blocks
Students will work in pairs; pass out number cards 10-50 to each pair of students. Tell students to shuffle the cards and deal 20 cards to each student. Have students place their cards in a stack facedown. Tell students to turn over the top two cards. Tell students to write an addition number sentence vertically using base-ten blocks to represent the addends. The students that arrive at the correct sum get a point and then students choose two other cards and continue.

C. Beyond Level

Hands-on Activity- materials:

Have students brainstorm real-world situations in which they would add two-digit numbers. Ask students to list the situations on paper. Examples might include: finding the total number of boys and girls in a classroom or finding the total number of days in two months. Students will work with a partner to write a real world problem based on each situation. Present their word problem to the class to solve.

C.2.NBT.8

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: base-ten blocks, place value chart

Write the problem $200+100$ on the board. Have students model the problem using hundreds flats. What is the sum? 300. Repeat the process several times with different addition number sentences showing $+10$ or $+100$.

B. On-Level

Hands-on Activity- materials: base-ten blocks, place value chart

Write $243+10$ horizontally on the board. Have students use base-ten blocks to find the sum. Discuss that the only digit that will change the sum is the tens place. Then write $156+100$ horizontally on the board. Have students use the base tens to find the sum. Discuss that the only digit that will change in the sum is the hundreds place. Repeat process varying addition and subtraction by 10s and 100s.

C. Beyond Level

Hands-on Activity- materials:

Write the same hundreds addition sentence on the board two times. Have two students come up to the board to solve one of the addition sentences. The first student that answers the addition sentence correctly gets to stay at the board, the other sits back down. Then bring up a different student to face the winner. Continue till all students have a chance to solve a problem varying adding and subtraction 100 and 10 mentally.

C.2.NBT.9

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: base-ten blocks, place value matt for addition and subtraction

Students will work in pairs to solve two digit addition and subtraction problems with and without regrouping. Students will use base-ten blocks to represent the numbers being added or subtracted. Once pairs can do so with ease. Have students begin solving three-digit addition and subtraction problems.

B. On-Level

Hands-on Activity- materials: base-ten blocks, place value matt for addition and subtraction



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Students will write three-digit addition number sentences. Students will use base-ten blocks and place value matt to model each number and find the sum or difference.

C. Beyond Level

Hands-on Activity- materials: dry erase markers and boards; base-ten blocks

Write $369 + \underline{\quad} = 724$ vertically on their board. Students will use knowledge of three-digit addition and subtraction to find the missing number. Students will solve and explain their problem to group. Students will prove answer using base-ten blocks. Repeat the process many times varying addition and subtraction to reinforce skill.

Unit Overview

Content Area: Math

Unit Title:

Target Course/Grade Level: 2

Duration: Trimester 2- 15 weeks

Description:

- In this unit students will be exposed to measuring and estimating lengths in standards units.
- In this unit students will be exposed to relating addition and subtraction to length.
- In this unit students will be exposed to working with time and money.

Concepts & Understandings



Concepts

- **Measurement and Data 2.MD**

Understandings

A. Select and use appropriate tools such as rulers, yardsticks, meter sticks, and measuring tape. (inch, foot, yard & centimeter)

B. Compare and measure lengths using standard and nonstandard (metric) units.

C. Estimate and measure length using standard units of measure.

D. Use standard units to measure to find the difference in length between two objects.

E.

- **Write a number sentence to show the relationship between the lengths of two objects.**
- **Construct and solve real world problems involving addition or subtraction of measurement**
- **Part unknown (e.g. $5-n=2$)**

F.

- **Represent whole numbers as equal lengths on a number line.**
- **Use a number line to find sums and differences.**

G.

- **Skip count by fives to tell time.**
- **Understand when to use A.M. and P.M. when telling time.**

H. Skip count to solve word problems to find the value of a group of coins.



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Learning Targets

CPI Codes:

A.2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

B. 2.MD.2 Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

C.2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters.

D.2.MD.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

E.2.MD.5 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.

F.2.MD.6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

G.2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

H.2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?



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Science-

5.1.4.B.3 Formulate explanations from evidence.

5.1.4.B.4 Communicate and justify explanations with reasonable and logical arguments.

5.1.4.D.1 Actively participate in discussions about student data, questions, and understandings.

Language Arts-

RI.2.1. Ask and answer such questions to demonstrate understanding of key details in a text.

RI.2.4. Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.

W.2.2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

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.

Social Studies-

6.6.A.1 Explain the spatial concepts of location, distance and direction, including:

The location of school, home, neighborhood, community, state, and country

The relative location of the community and places within it

The location of continents and oceans

6.6.A.2 Explain that the globe is a model of the Earth and maps are representations of local and distant places.

6.6.2.A.3 Demonstrate basic globe and map skills.

See addendum for MATH PRACTICES

21st Century Themes and Skills

- Financial, Economic, Business, and Entrepreneurial Literacy/ Critical Thinking and Problem Solving, Life and Career

Guiding Questions

- How do we use addition and subtraction to solve problems?
- How is measurement and data used in the real world? ☒

Unit Results

Students will represent and solve problems involving addition and subtraction.

Students will measure and estimate lengths in standards units.

Students will relate addition and subtraction to length.

Students will work with time and money.

Assessments:

Study Island

Teacher made tests

Performance tasks

Trimester Tests

Projects

Activities



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The following activities can be incorporated into the daily lessons:

- A. They should have many experiences measuring the length of objects with rulers, yardsticks, meter sticks, and tape measures. They will need to be taught how to actually use a ruler appropriately to measure the length of an object especially as to where to begin the measuring. Do you start at the end of the ruler or at the zero?

Which unit would be better to measure the length of the classroom floor, a ruler or a yard stick? Explain your answer.

- B. Measure the fish in inches and centimeters. Are there a greater number of centimeters or inches? Why?

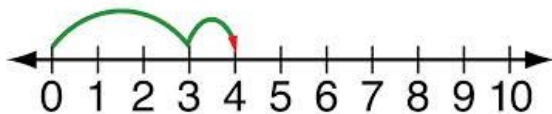


- C. Find the assigned classroom object. First, estimate the length and record it. Then measure the same objects in standard units and record it. Discuss the recorded data.
- D. They can make direct comparisons by measuring the difference in length between two objects by laying them side by side and selecting an appropriate standard length unit of measure. Students should use comparative phrases such as “It is longer by 2 inches” or “It is shorter by 5 centimeters” to describe the difference between two objects. An interactive whiteboard or document camera may be used to help students develop and demonstrate their thinking.

- E. Example: Mary is making a dress. She has 5 yards of fabric. She uses some of the fabric and has 2 yards left. How many yards did Mary use?

$$5 - \underline{\quad} = 2$$

$$3 + 1 = 4$$



F.



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- G. What time of day do you eat breakfast? 6:00 am
- H. Tina has 1 quarter in her piggy bank. Her mom gives her a nickel. Her dad gives her a dime. How much money does Tina have in all?



Differentiated Instruction:

A.2.MD.1

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: index cards with names of different objects, centimeter ruler, meter sticks, pencils, classroom objects

Students will work in small groups. Each student will have two index cards, a centimeter ruler, and a meter sticks. Have groups find an object in the room and decide which tool they should use to measure it. Have students measure the object and write its length on the back of the index card.

B. On-Level

Hands-on Activity- materials: pictures of objects, index cards (with each measuring tool), pencils, stapler, scissors

Students will receive an index card. Students will choose a picture that could be measured. Students will circle the best tool for the job on the index card. Then have students measure the object. Then have students measure the object and write the length on the card. Tell students to match the pictures to the tools. Then present to the group.

C. Beyond Level

Hands-on Activity- materials: classroom object, paper and pencil

Students will work in groups to write a list of instruction on how to measure a large object. Student will be specific on which tool they need to use to measure the object. Ask students to find a classroom object to measure and support their explanations. Repeat

B.2.MD.2

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: classroom objects, index cards, rulers, yardsticks, After students measure different objects they will match cards with measurements to that object and share with partners.

B. On-Level

Hands-on Activity- materials: pictures of classroom objects, scissors, glue, pencils, paper

Students will receive pictures and choose an object and measure it in two ways creating a chart gluing picture and recording the measurements

C. Beyond Level

Hands-on Activity- materials: classroom object, paper and pencil

Students will match cards with different measurements. For example 6 feet = 72 inches and use measurement tools.

C.2.MD.3

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: connecting cubes, classroom objects

Students will work in pairs and create a cube train that is 1 foot long. Students will estimate their length then measure it with a ruler to prove. After students will find objects that are 1 foot long in the classroom. Students will continue activities estimating different lengths.

B. On-Level

Hands-on Activity- materials: yard sticks, classroom objects

Students will work in groups in six measure stations that each includes a yardstick and a classroom object that measures between 1 ft and 5ft. Have students estimate their measurement in a chart then actually measure it and record their findings. The students that's estimation is closest to the actual measurement win.

C. Beyond Level

Hands-on Activity- materials: classroom objects, yarn

Students will discuss how they might use a piece of yarn to measure objects that are not straight. Students will measure a piece of yarn 3 ft long and cut it. Use it to estimate measurements of objects in the room.



Garfield Elementary Schools

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D.2.MD.4

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: connecting cubes, index cards with object measurements
Students will work in pairs. They will receive 10 index cards and have students place them facedown. Students will choose two cards and model the subtraction sentences using connecting cubes (for example the index cards shows 10 inches- 4 inches= ____ inches) Have students work together to solve all problems.

B. On-Level

Hands-on Activity- materials: rulers, yard sticks, classroom objects, number lines
Students will measure different objects in the classroom. They will create subtraction sentences and solve to find the difference between the two lengths using number lines to assist.

C. Beyond Level

Hands-on Activity- materials: classroom objects dry erase boards and markers
Students will work in pairs to measure three objects. Students will compare the three objects using addition and subtraction sentences and record on dry erase boards.

E.2.MD.5

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: yarns classroom objects
Students will cut pieces of yarn in 1 inch, 1 foot, and 1 yard long. Students will work in groups of three and use their yarn pieces to solve the apply the strategy problems.

B. On-Level

Hands-on Activity- materials: classroom objects, rulers, index cards, pencils
Students will work in small groups. Teacher will display an object with its measurement. Display several other objects without labels. Applying the strategy guess and check to find the unknown measurements.

C. Beyond Level

Hands-on Activity- materials: index cards, pencils, paper
Students will work in pairs. Have students work together to solve each problem and write answers. Have students present to class showing which strategy they used.

F.2.MD.6

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: masking tape, index cards, classroom objects, pencils
Students will create a numbers line on a table using masking tape and writing numbers on index cards. Be sure increments are 1 inch. Have students work in pairs. Students will use number line to measure the length of several classroom objects.

B. On-Level

Hands-on Activity- materials:
Students will draw a number line using increments of 1 inch. Students will measure pictures and record their findings using the number line. Students will take turns measure pictures.

C. Beyond Level

Hands-on Activity- materials: rulers, classroom objects, dry erase board and markers.
Students will work in pairs. Have students create a number line shown in inches on dry erase board. Have students to pick a measurement and find an object in the class with that measurement. Measure using number line to check.



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G.2.MD.7

- A. **Approaching Level (At-Risk, ELL and Sp. Ed)**
Hands-on Activity- materials: Judy Clocks cards, digital clock cards
Students will match analog clocks and digital clocks showing time to the nearest five minutes.
- B. **On-Level**
Hands-on Activity- materials: Judy clocks.
Students will work in pairs and attend six time stations. At each station a time will be shown in either digital or analog format. Students will attend each station and record the other format on a chart. Students will receive the list of times to the nearest five minutes.
- C. **Beyond Level**
Hands-on Activity- materials: rulers, classroom objects, dry erase board and markers.
Students will work in pairs to create a daily schedule. Students will complete a foldable making a list of times to the nearest five minutes. Students will create the schedule showing the time in both an analog format and digital format.

H.2.MD.8

- A. **Approaching Level (At-Risk, ELL and Sp. Ed)**
Hands-on Activity- materials: coins,
Students will draw 20 stars on a piece of paper. Students will find the coins that equal that amount of stars; 2 dimes, 4 nickels, 20 pennies. Review how to change the coins to express the same amount. Review with different number amounts.
- B. **On-Level**
Hands-on Activity- materials: coins and dry erase markers and boards
Students will work in pairs to solve a problem without an operation (addition or subtraction) included, such as: 27cents _____ 15 cents = 12 cents. Ask students to act out the problem using coins to figure out which operation is used to get the given answer and repeat process.
- C. **Beyond Level**
Hands-on Activity- materials: coins
Students will work in pairs and be given a handful of coins. Students will write a word problem that involves money. Have students trade problems with a classmate to solve.

Addendum

1. **CCSS.Math.Practice.MP1** Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students



might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2. **CCSS.Math.Practice.MP2 Reason abstractly and quantitatively.**

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. **CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others.**

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

4. **CCSS.Math.Practice.MP4 Model with mathematics.**



Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5. CCSS.Math.Practice.MP5 Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6. CCSS.Math.Practice.MP6 Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In



the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. CCSS.Math.Practice.MP7 Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y .

8. CCSS.Math.Practice.MP8 Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.



Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word “understand” are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices.

In this respect, those content standards which set an expectation of understanding are potential “points of intersection” between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.



Garfield Elementary Schools

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Unit Overview

Content Area: Math

Unit Title:

Target Course/Grade Level: 2

Duration: Trimester 3- 11 weeks

Description:

- In this unit students will be exposed to adding and subtracting within 20.

Concepts & Understandings

Concepts

- **Operations and Algebraic Thinking
2.OA**

Understandings

A.

- **Identify sums using mental math (doubles, near doubles, make a 10).**
- **Understand the relationship between addition and subtraction.**

Learning Targets

CPI Codes

B. 2.OA.2 Fluently add and subtract within 20 using mental strategies.2 By end of Grade 2, know from memory all sums of two one-digit numbers.

- **Add and subtract fluently within ten using mental strategies.**

Science-

5.1.4.B.3 Formulate explanations from evidence.

5.1.4.B.4 Communicate and justify explanations with reasonable and logical arguments.

5.1.4.D.1 Actively participate in discussions about student data, questions, and understandings.

Language Arts-

RI.2.1. Ask and answer such questions to demonstrate understanding of key details in a text.



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RI.2.4. Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.

W.2.2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

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.

Social Studies-

6.6.A.1 Explain the spatial concepts of location, distance and direction, including:

The location of school, home, neighborhood, community, state, and country

The relative location of the community and places within it

The location of continents and oceans

6.6.A.2 Explain that the globe is a model of the Earth and maps are representations of local and distant places.

6.6.2.A.3 Demonstrate basic globe and map skills.

See addendum for MATH PRACTICES

21st Century Themes and Skills

- **Financial, Economic, Business, and Entrepreneurial Literacy/ Critical Thinking and Problem Solving, Life and Career**

Guiding Questions

- **How do we use addition and subtraction to solve problems?**
- **How do operations affect numbers?**

Unit Results

Students will add and subtract within 20 using mental strategies.

Assessments:

Study Island

Teacher made tests

Performance tasks

Trimester Tests

Projects

Suggested Activities



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The following activities can be incorporated into the daily lessons:

A. Mental strategies may include the following:

- Counting on
- Making tens ($9 + 7 = 10 + 6$)
- Doubles facts ($7 + 7 = 14$)
- Doubles plus one ($7 + 8 = 7 + 7 + 1$)

B.2.OA.2

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: ten frames, connecting cubes, number lines

Students shall write the number sentence $8+4 = \underline{\quad}$ on the board. Have students show the number 8 with cubes of one color on the ten-frame. Show students that to add 4 cubes of another color, only 2 cubes will fit on the ten-frame. Tell students that $8+4 = 12$, because $8+2 = 10$ and 2 more is 12. Repeat the process several times showing how to make a ten to add with other number sentences.

B. On-Level

Hands-on Activity- materials: addition flash cards, number lines

Students shall work with a partner. Have students mix up flash cards and put them facedown. Tell students to take turns picking a flashcard from the top of the pile, saying the number fact and sum. A student whose flash card has a sum of 10 gets 10 points. Explain that the student with the most points at the end of the game wins.

C. Beyond Level

Hands-on Activity- materials: number cards, number lines

Students will receive number cards 1-9. Have students work in pairs. Tell students to shuffle both sets of number cards together. Have students take turns flipping over the three cards. Then have students in the pair call out the sum.



Garfield Elementary Schools

Aligned to the 2009 New Jersey Core Curriculum Content Standards

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

Unit Overview

Content Area: Math

Unit Title:

Target Course/Grade Level: 2

Duration: Trimester 3- 11 weeks

Description:

- In this unit students will be exposed to using place value understanding and the properties of operations to add and subtract.

Concepts & Understandings

Concepts

- **Number and Operations in Base Ten 2.NBT**

Understandings

A.

- Add and subtract one-digit and two-digit numbers up to 100 using a variety of strategies (such as counting on, doubles, near doubles, and make a ten)

B.

- Construct, use, and explain in writing, procedures for performing addition and subtraction in problem solving.
- Support explanations through the use of drawings and manipulatives.
- Use models or drawings of hundreds, tens, and ones to represent and identify the value of each digit in a three-digit number in order to add and subtract.
- Understand and apply the Associative and Commutative Properties.



Garfield Elementary Schools

Aligned to the 2009 New Jersey Core Curriculum Content Standards

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Learning Targets

CPI Codes

A. 2.NBT.5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

B.2.NBT.7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationships between addition and subtraction; relate the strategy to a written method. Understand that in adding and subtracting three digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose and decompose tens or hundreds.

Science-

5.1.4.B.3 Formulate explanations from evidence.

5.1.4.B.4 Communicate and justify explanations with reasonable and logical arguments.

5.1.4.D.1 Actively participate in discussions about student data, questions, and understandings.

Language Arts-

RI.2.1. Ask and answer such questions to demonstrate understanding of key details in a text.

RI.2.4. Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.

W.2.2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

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.

Social Studies-

6.6.A.1 Explain the spatial concepts of location, distance and direction, including:

The location of school, home, neighborhood, community, state, and country. The relative location of the community and places within it.

The location of continents and oceans

6.6.A.2 Explain that the globe is a model of the Earth and maps are representations of local and distant places.

6.6.2.A.3 Demonstrate basic globe and map skills.

See addendum for MATH PRACTICES

21st Century Themes and Skills

- **Financial, Economic, Business, and Entrepreneurial Literacy/ Critical Thinking and Problem Solving, Life and Career**



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Guiding Questions

- How do we identify place value?
- How do the properties of operations help us to add and subtract?

Unit Results

- *Students will understand place value.*
- *Students will use place value and the properties of operations to add and subtract.*

Assessments:

Study Island

Teacher made tests

Performance tasks

Trimester Tests

Projects

Suggested Activities

The following activities can be incorporated into the daily lessons:

A. Add and subtract one-digit and two-digit numbers up to 100 using a variety of strategies (such as counting on, doubles, near doubles, and make a ten)

B. Use a variety of strategies (place value, properties of operation, and/or the relationship between addition and subtraction) to add and subtract within 1000.

Example:

Mason read 473 pages in June. He read 227 pages in July. How many pages did Mason read altogether?

Karla's explanation: $473 + 227 = \underline{\quad}$. I added the ones together ($3 + 7$) and got 10. Then I added the tens together ($70 + 20$) and got 90. I knew that $400 + 200$ was 600. So I added $10 + 90$ for 100 and added $100 + 600$ and found out that Mason had read 700 pages altogether.

Debbie's explanation: $473 + 227 = \underline{\quad}$. I started by adding 200 to 473 and got 673. Then I added 20 to 673 and I got 693 and finally I added 7 to 693 and I knew that Mason had read 700 pages altogether.

Becky's explanation: I used base ten blocks on a base ten mat to help me solve this problem. I added 3 ones (units) plus 7 ones and got 10 ones which made one ten. I moved the 1 ten to the tens place. I then added 7 tens rods plus 2 tens rods plus 1 tens rod and got 10 tens or 100. I moved the 1 hundred to the hundreds place. Then I added 4 hundreds plus 2 hundreds plus 1 hundred and got 7 hundreds or 700. So Mason read 700 books.

Students should be able to connect different representations and explain the connections. Representations can include numbers, words (including mathematical language), pictures, number lines, and/or physical objects. Students should be able to use any/all of these representations as needed.



Garfield Elementary Schools

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ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

- A. Approaching Level (At-Risk, ELL and Sp. Ed)**
Hands-on Activity- materials: color tiles, dry erase marker and boards
Students will receive three piles of color tiles that form a fact family, such as a pile of 8 red, 5 blue and 13 green. Explain to students that by moving the piles around, they can model the facts in a fact family. As they change, have students record number sentence that reflects the fact.
- B. On-Level**
Hands-on Activity- materials: dry erase boards and markers, and index cards with three numbers that are part of a two-digit fact family.
Students will work in pairs. They will pick up an index cards and work in pairs to create two addition number sentences and two subtraction number sentences in the two-digit fact family. Have students record their number sentences on their board and continue with a new card.
- C. Beyond Level**
Hands-on Activity- materials: index cards
Students will work in pairs and receive several index cards. Tell each student to draw a triangle on the index card. Inside the triangle, have students write two numbers that make up a two-digit fact family. Tell students that they need to write the greatest number on top. Trade cards with partner to find the missing number from the fact family. Repeat.

B.2.NBT.7

- A. Approaching Level (At-Risk, ELL and Sp. Ed)**
Hands-on Activity- materials: base-ten blocks, place value matt for addition and subtraction
Students will work in pairs to solve two digit addition and subtraction problems with and without regrouping. Students will use base-ten blocks to represent the numbers being added or subtracted. Once pairs can do so with ease. Have students begin solving three-digit addition and subtraction problems.
- B. On-Level**
Hands-on Activity- materials: base-ten blocks, place value matt for addition and subtraction
Students will write three-digit addition number sentences. Students will use base-ten blocks and place value matt to model each number and find the sum or difference.
- C. Beyond Level**
Hands-on Activity- materials: dry erase markers and boards; base-ten blocks
Write $369 + \underline{\quad} = 724$ vertically on their board. Students will use knowledge of three-digit addition and subtraction to find the missing number. Students will solve and explain their problem to group. Students will prove answer using base-ten blocks. Repeat the process many times varying addition and subtraction to reinforce skill.



Garfield Elementary Schools

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Unit Overview

Content Area: Math

Unit Title:

Target Course/Grade Level: 2

Duration: Trimester 3- 11 weeks

Description:

- In this unit students will be exposed to representing and interpreting data.

Concepts & Understandings

Concepts

- **Measurement and Data 2.MD**

Understandings

A.

- **Make, read, and use data in a line plot.**
- **Interpret and analyze line plots.**

B.

- **Make, read, and use data in a picture graph and a bar graph.**
- **Interpret and analyze picture graphs and bar graphs.**

Learning Targets

CPI Codes:

A.2.MD.9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

B.2.MD.10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Science-

5.1.4.B.3 Formulate explanations from evidence.

5.1.4.B.4 Communicate and justify explanations with reasonable and logical arguments.

5.1.4.D.1 Actively participate in discussions about student data, questions, and understandings.

Language Arts-

RI.2.1. Ask and answer such questions to demonstrate understanding of key details in a text.

RI.2.4. Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.



Garfield Elementary Schools

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W.2.2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

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.

Social Studies-

6.6.A.1 Explain the spatial concepts of location, distance and direction, including:

The location of school, home, neighborhood, community, state, and country

The relative location of the community and places within it

The location of continents and oceans

6.6.A.2 Explain that the globe is a model of the Earth and maps are representations of local and distant places.

6.6.2.A.3 Demonstrate basic globe and map skills.

See addendum for MATH PRACTICES

21st Century Themes and Skills

- **Financial, Economic, Business, and Entrepreneurial Literacy/ Critical Thinking and Problem Solving, Life and Career**

Guiding Questions

- **How do we use addition and subtraction to solve problems?**
- **How is measurement and data used in the real world? ☒**

Unit Results

Students will represent and interpret data.

Assessments:

Study Island

Teacher made tests

Performance tasks

Trimester Tests

Projects

Suggested Activities

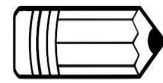
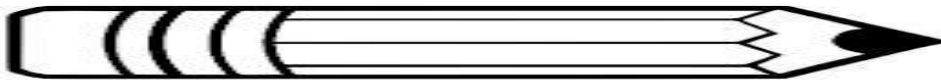
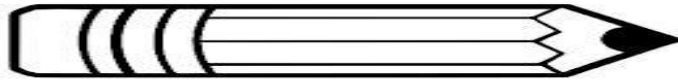
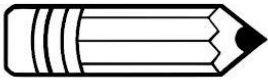


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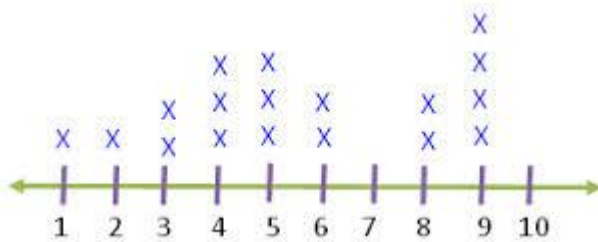
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The following activities can be incorporated into the daily lessons:

A. Use a ruler to measure the length of each pencil below to the nearest inch. Write the length above each pencil.



Make a line plot of the lengths below.



Lengths of pencils (inches)

B. Brian asked 15 friends to tell him what their favorite pet is. The table below shows what his friends said.



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Favorite Pet	Number of Friends
Dog	6
Cat	4
Bird	2
Fish	3

Part A: Make a bar graph (and/or picture graph) to show the favorite pets of Brian's friends.

Part B: How many more friends said dog than said bird?

Answer: _____ friends

Differentiated Instruction:

A.2.MD.9

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: masking tape, marker

Students will create a line plot on floor using tape and marker. Students will create a human line plot by asking a question to which there is a numerical answer. For example, "How many pets do you have?" Have students stand where they would put an X for their answer. The teacher can record the line plot on a template in Smart notebook. Students would then repeat but this time recording their line plot on matt for another question. For example, how many letters in your first name.

B. On-Level

Hands-on Activity- materials: blank line plots, paper, pencils

Students will complete a survey about the hours of sports people play each week. Have students survey 10 classmates. Tell students to use the tally chart to create line plot. The repeat for another question.

C. Beyond Level

Hands-on Activity- materials: dry erase markers and boards;

Students will complete following problem on dry erase board. *Geo asked 26 classmates how many hours of reading they do each week. Six people said 1 hour. Four people said 2 hours. Three people said 3 hours. Nine people said 4 hours. The same number of people said 5 hours and 7 hours.* Then create a problem of their own.



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B.2.MD.10

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: dice with pictures and numbers.

Student will work in pairs rolling dice creating a picture graph or bar graph from the information of the dice.

B. On-Level

Hands-on Activity- materials: graph paper.

Students will collect data about 3 or 4 objects in their desks Students will make a tally chart with the information. They will use the tally chart to make a bar graph or picture graph.

C. Beyond Level

Hands-on Activity- materials: papers and pencils

Students will work in pairs. Students will create a tally chart. They will switch tally charts with their partners and create a bar or picture graph with the information. They will check graphs and discuss.

Unit Overview

Content Area: Math

Unit Title:

Target Course/Grade Level: 2

Duration: Trimester 3- 11 weeks

Description:

- In this unit students will be exposed to reasoning with shapes and their attributes.



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Concepts & Understandings

Concepts

- Reason with Shapes and their Attributes 2.G

Understandings

A.

- Identify and describe 2-dimensional and 3-dimensional figures.
- Using geometric vocabulary (vertex, edge, face, side, angle)

B.

- Use same sized squares to determine the area of a surface shaped like a rectangle.

C.

- Use partitioned circles and rectangles to show wholes, and parts of wholes (fractions).
- Use correct mathematical vocabulary when communicating about parts/shares and wholes (fractions).

Learning Targets

CPI Codes

A.2.G.1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

B.2.G.2. Partition a rectangle into rows and columns of same-size squares and count to find the total



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number of them.

C.2.G.3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical whole need not have the same shape.

Science-

5.1.4.B.3 Formulate explanations from evidence.

5.1.4.B.4 Communicate and justify explanations with reasonable and logical arguments.

5.1.4.D.1 Actively participate in discussions about student data, questions, and understandings.

Language Arts-

RI.2.1. Ask and answer such questions to demonstrate understanding of key details in a text.

RI.2.4. Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.

W.2.2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.

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.

Social Studies-

6.6.A.1 Explain the spatial concepts of location, distance and direction, including:

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6.6.A.2 Explain that the globe is a model of the Earth and maps are representations of local and distant places.

6.6.2.A.3 Demonstrate basic globe and map skills.

See addendum for MATH PRACTICES

21st Century Themes and Skills

- Financial, Economic, Business, and Entrepreneurial Literacy/ Critical Thinking and Problem Solving, Life and Career

Guiding Questions

- How do we understand shapes and their attributes?

Unit Results

Students will reason with shapes and their attributes.

Assessments:

Study Island

Teacher made tests

Performance tasks

Trimester Tests

Projects

Suggested Activities



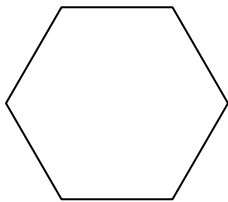
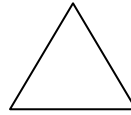
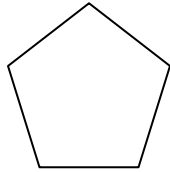
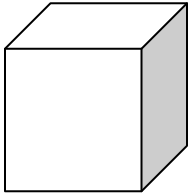
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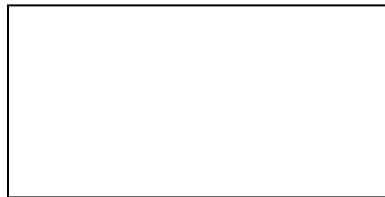
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The following activities can be incorporated into the daily lessons:

1. Identify the triangle, quadrilateral, pentagon, hexagon and cube.



2. Draw and describe a quadrilateral using geometric vocabulary such as faces, sides and angles.
3. Partition this rectangle into rows and columns of same-size squares.



Count to find the total number of squares.

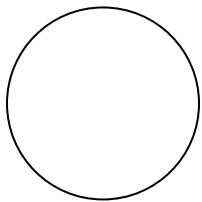
4. Break this whole circle into equal shares. Then describe the shares using the words halves, thirds, etc.



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5. Use the rectangle to make fourths in 2 different ways.



Are fourths of a rectangle always the same shape?

Be able to explain that each share is a fourth and that the whole is 4 fourths.

Differentiated Instruction:

A.2.G.1

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: cards with 2-dimensional shapes and 3-dimensional shapes
Students will match cards with pictures and attributes. Students will use 3-dimensional shapes and 2-dimensional shape cards to assist.

B. On-Level

Hands-on Activity- materials: shape examples

Students will complete a chart where they fill in the attributes of each shape based on pictures.

C. Beyond Level

Hands-on Activity- materials:



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Students will complete a foldable. Students will choose a real world object and identify the shape and describe it by its attributes.

B.2.G.2

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: large same sized squares

Students will use squares to create columns and rows. Students will record their rectangular arrays.

B. On-Level

Hands-on Activity- materials: color tiles

Students will work with a partner. Students will create a rectangle using color tiles. Their partner will find the total number of color tiles that make up the rectangle. Switch roles and repeat.

C. Beyond Level

Hands-on Activity- materials: grid paper, pencils

Students will work with a partner. They will trace different rectangles on their piece of grid paper. Students will switch papers to find the number of equal sized squares that make up their partners rectangles.

B.2.G.3

A. Approaching Level (At-Risk, ELL and Sp. Ed)

Hands-on Activity- materials: construction paper, scissors, fraction tiles

Students cut out a variety of shapes in different colors from construction paper. Draw lines to separate the shapes into halves, thirds, or fourths- using fraction tiles to assist. Have the students cut apart the shapes and mix up the pieces. Match the equal parts.

B. On-Level

Hands-on Activity- materials: fraction circles

Students will work with a partner using fraction circles for halves, thirds, and fourths.

Emphasize that equal parts make up the whole circle and each part can be called half of, third of, fourth of. Display the fraction and use circle to prove.

C. Beyond Level

Hands-on Activity- materials: fraction number cards, pencils paper

Students will work with a partner. They will take turns choose a fraction card and drawing a circle or rectangle partitioning it to show the corresponding number of parts. Have students switch roles and repeat.



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Addendum

1. **CCSS.Math.Practice.MP1** Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2. **CCSS.Math.Practice.MP2** Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. **CCSS.Math.Practice.MP3** Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to



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analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

4. **CCSS.Math.Practice.MP4 Model with mathematics.**

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5. **CCSS.Math.Practice.MP5 Use appropriate tools strategically.**

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can



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enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6. **CCSS.Math.Practice.MP6** Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. **CCSS.Math.Practice.MP7** Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y .

8. **CCSS.Math.Practice.MP8** Look for and express regularity in repeated reasoning.



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Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word “understand” are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices.

In this respect, those content standards which set an expectation of understanding are potential “points of intersection” between the Standards for Mathematical Content and the



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Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.