



Mathematics Department

Grade 2

Effective Date: Fall 2020

Scope and Sequence

Month	Grade 2
September	<p>Grade 2 Math Baseline Assessment (by September 14)- HOLD OFF</p> <p>Chapter 1: Numbers to 1,000</p> <ul style="list-style-type: none"> ● <i>Counting to 1,000</i> ● <i>Place Value</i> ● <i>Comparing and Ordering Numbers</i> ● <i>Number Patterns</i>
October	<p>Chapter 2: Addition Within 1,000</p> <ul style="list-style-type: none"> ● <i>Adding Fluently Within 100</i> ● <i>Adding Without Regrouping</i> ● <i>Adding with Regrouping in Ones</i> ● <i>Adding with Regrouping in Tens</i> ● <i>Adding with Regrouping in Ones and Tens</i> ● <i>Adding 4 Two-Digit Numbers</i> <p>Chapter 3: Subtraction Within 1,000</p> <ul style="list-style-type: none"> ● <i>Subtracting Fluently Within 100</i> ● <i>Subtracting Without Regrouping</i> ● <i>Subtracting with Regrouping in Tens and Ones</i> ● <i>Subtracting with Regrouping in Hundreds and Tens</i> ● <i>Adding with Regrouping in Hundreds, Tens, and Ones</i> ● <i>Subtracting Across Zeros</i>
November	<p>Chapter 3: Subtraction Within 1,000</p> <ul style="list-style-type: none"> ● <i>Subtracting Fluently Within 100</i> ● <i>Subtracting Without Regrouping</i> ● <i>Subtracting with Regrouping in Tens and Ones</i> ● <i>Subtracting with Regrouping in Hundreds and Tens</i> ● <i>Adding with Regrouping in Hundreds, Tens, and Ones</i>

	<ul style="list-style-type: none"> • <i>Subtracting Across Zeros</i> <p>Chapter 4: Using Bar Models: Addition and Subtraction</p> <ul style="list-style-type: none"> • <i>Using Part-Whole in Addition and Subtraction</i> • <i>Adding and Taking Away Sets</i> • <i>Comparing Two Sets</i> • <i>Real-World Problems: Two-Step Problems</i> <p>Please Note: Bar Models- Students do not have to be able to draw bar models independently until Grade 3: In Grade 2 the goal is for students to understand and use bar models to solve problems. Use: construction strips of paper- Pictures of bar models which contain ? -Students have to label.</p>
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December	<p>Chapter 4: Using Bar Models: Addition and Subtraction</p> <ul style="list-style-type: none"> • <i>Using Part-Whole in Addition and Subtraction</i> • <i>Adding and Taking Away Sets</i> • <i>Comparing Two Sets</i> • <i>Real-World Problems: Two-Step Problems</i> <p>Please Note: Bar Models- Students do not have to be able to draw bar models independently until Grade 3: In Grade 2 the goal is for students to understand and use bar models to solve problems. Use: construction strips of paper- Pictures of bar models which contain ? -Students have to label.</p>
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January	<p>Chapter 5: Length</p> <ul style="list-style-type: none"> • <i>Measuring in Meters</i> • <i>Measuring in Centimeters</i> • <i>Comparing and Ordering Metric Lengths</i> • <i>Real World Problems: Addition and Subtraction of Metric Lengths</i> • <i>Measuring in Feet</i> • <i>Measuring in Inches</i> • <i>Comparing and Ordering Customary Lengths</i> • <i>Real World Problems: Addition and Subtraction of Customary Lengths</i> <p>Chapter 6: Mass</p> <ul style="list-style-type: none"> • <i>Measuring in Kilograms</i> • <i>Measuring in Grams</i> • <i>Comparing and Ordering Masses in Kilograms and Grams</i> • <i>Real World Problems: Addition and Subtraction of Masses</i>
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February	<p>Book B</p> <p>Chapter 7: Graphs and Line Plots</p> <ul style="list-style-type: none"> • <i>Picture Graphs</i> • <i>Bar Graphs</i>
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	<ul style="list-style-type: none"> • <i>Line Plots</i>
March	<p>Chapter 8: Multiplication & Division</p> <ul style="list-style-type: none"> • <i>How to Multiply</i> • <i>How to Divide</i> • <i>Real-World Problems: Multiplication and Division</i> • <i>Odd and Even Numbers</i>
April	<p>Chapter 9: Multiplication Tables</p> <ul style="list-style-type: none"> • <i>Multiply by 2</i> • <i>Multiply by 5</i> • <i>Multiply by 10</i> • <i>Multiply by 3</i> • <i>Multiply by 4</i>
May	<p>Chapter 10: Time and Money</p> <ul style="list-style-type: none"> • <i>Reading and Writing Time</i> • <i>Using A.M. and P.M.</i> • <i>Bills</i> • <i>Comparing Amounts of Money</i> • <i>Real World Problems: Money</i>
June	<p>Chapter 11: Shapes</p> <ul style="list-style-type: none"> • <i>Lines and Surfaces</i> • <i>Flat Shapes</i> • <i>Solid Shapes</i>

Unit 1
Numbers to 1,000 Addition & Subtraction
Summary and Rationale
<p>Children extend their concept of numbers, and learn how to count, read, and write up to 1,000. Base- ten blocks, place-value charts, and number lines are used to develop the association between the physical representation of the number, the number symbol, and the number word. The concept of place-value is extended to the hundreds place value.</p> <p>Children apply addition concepts to three-digit numbers. They use multiple regroupings by using base-ten blocks and</p>

place-value charts as concrete representations, which allow them to visualize addition with regrouping in the ones and tens place.

Children perform multi-digit subtraction with and without regrouping. They use base-ten blocks and place-value charts as concrete representations, which aid them in visualizing the regrouping of tens as ones, hundreds as tens, and hundreds as tens and ones. Another method of subtraction introduced in this unit is subtraction across zeros, through which regrouping is done in the hundreds first, followed by tens and ones.

Children use place-value and number bond strategies such as *adding 10 and subtracting extra ones* and *adding 100 and subtracting extra tens* to help them with mental addition and subtraction. The number line is used as a visual representation to illustrate the rounding concept, which is an important application of place value and number sense. Children round numbers to the nearest 10 and estimate sum and difference to check reasonableness of answers.

Bar models provide a useful pictorial representation of sets as parts making up a whole. Children learn strategies such as adding on and taking away sets represented by bar models to solve addition and subtraction real-world problems. Children label the bars with words as well as numbers, so they can use bar models to illustrate a problem, indicating in the model the known and the unknown parts of the whole. Comparing sets using bar models helps children to see clearly whether to add or subtract to solve a given problem.

Recommended Pacing

___ days, weeks, etc.

Standards

Operations & Algebraic Thinking

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. ¹
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.
2.OA.3	Work with equal groups of objects to gain foundations for multiplication.

Number & Operations in Base Ten

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.
2.NBT.1a	Understand that 100 can be thought of as a bundle of ten tens — called a “hundred.”
2.NBT.1b	Understand that 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).
2.NBT.2	Count within 1000; skip-count by 5s, 10s, and 100s.

2.NBT.3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
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.
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.
2.NBT.6	Add up to four two-digit numbers using strategies based on place value and properties of operations.
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 relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
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.
2.NBT.9	Explain why addition and subtraction strategies work, using place value and the properties of operations. ¹
Measurement & Data	
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.
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.
Mathematical Practices	
K-12.MP.1	Make sense of problems and persevere in solving them.
K-12.MP.2	Reason abstractly and quantitatively.
K-12.MP.3	Construct viable arguments and critique the reasoning of others.
K-12.MP.4	Model with mathematics.
K-12.MP.5	Use appropriate tools strategically.
K-12.MP.6	Attend to precision.
K-12.MP.7	Look for and make use of structure.
Interdisciplinary Connections	
Standard x.x	

Integration of Technology	
Instructional Focus	
Enduring Understandings:	Essential Questions:
<p>Number concepts include demonstrating numbers in different ways.</p> <p>Fluency in adding and subtracting basic facts is gained by discovering patterns and using strategies in finding sums and differences.</p> <p>Relationships are developed within addition and subtraction combinations.</p> <p>Three digit numbers can be added with and without grouping.</p> <p>Three digit numbers can be subtracted with and without regrouping.</p> <p>Addition and subtraction can be shown with bar models.</p> <p>Exploring place value allows students to see how patterns continue.</p> <p>Three digit numbers are written in standard and expanded form.</p> <p>Mental math can be used when an exact answer is needed.</p> <p>Estimation can be used when and exact answer is not needed.</p> <p>When numbers are added, the result is called the sum.</p>	<p>How do you use place value to describe numbers in different ways?</p> <p>How can you use place value to write 3-digit numbers?</p> <p>How can you compare 3-digit numbers?</p>

<p>When numbers are subtracted, the result is called the difference.</p>	
<p>Evidence of Learning (Assessments)</p>	
<p><i>Math In Focus</i> Chapter 1 Test Prep: Numbers to 1,000 <i>Math In Focus</i> Chapter 2 Test Prep: Addition to 1,000 <i>Math In Focus</i> Chapter 3 Test Prep: Subtraction to 1,000 <i>Math In Focus</i> Chapter 4 Test Prep: Using Bar Models: Addition and Subtraction <i>Math In Focus</i> Chapter 10 Test Prep: Mental Math and Estimation</p> <p>Benchmark Assessment #1 (Chapters 1 through 4 on numbers within 100 ONLY) Math Spring Summative Assessment Math Centers Homework Classwork Class Participation</p>	
<p>Objectives (SLO)</p>	
<p>Students will know:</p> <ul style="list-style-type: none"> ● Hundred, hundreds ● Thousand, thousands ● Standard form ● Expanded form ● Word form ● Greater than (>) ● Less than (<) ● Join ● Set ● Take away ● Compare ● Sum ● Difference ● Mental addition and subtraction ● Number line ● Estimate ● Reasonable answers 	<p>Students will be able to:</p> <ul style="list-style-type: none"> ● Use base ten blocks and a place-value chart to recognize, read, write, and represent numbers to 1,000. ● Read and write numbers to 1,000 in standard form, expanded form, and word form. ● Use base ten blocks to compare numbers. ● Compare numbers using the terms greater than and less than. ● Compare numbers using symbols > and <. ● Order three digit numbers. ● Identify the greatest number and the least number. ● Identify number patterns. ● Use base-ten blocks to add numbers without and with regrouping. ● Add up to three-digit numbers without and with regrouping. ● Solve real world addition and subtraction problems. ● Use base-ten blocks to add numbers without and with regrouping. ● Subtract from three-digit numbers without and with regrouping. ● Apply the inverse operations of addition and subtraction. ● Use bar models to solve addition and subtraction problems. ● Model addition as joining sets. ● Model subtraction as taking away. ● Model addition and subtraction as comparing sets.

- Use bar models to solve two-step addition and subtraction problems.
- Add numbers up to 3-digits mentally with and without regrouping.
- Subtract up to 3-digit numbers mentally with and without regrouping.
- Estimate to check reasonableness of answers.

Suggested Resources/Technology Tools

Math In Focus Resources Chapter 1: Numbers to 1,000

Math In Focus Resources Chapter 2: Addition up to 1,000

Math In Focus Resources Chapter 3: Subtraction up to 1,000

Math In Focus Resources Chapter 4: Using Bar Models: Addition and Subtraction

Math In Focus Resources Chapter 10: Mental Math & Estimation

Resources and Manipulatives

Base-Ten Blocks

Place-Value Chart

Place-Value Mat

Numbered Dice

Ten-Sided Dice

Number Lines

Number Cards

Connecting Cubes

Counters

Number Cards

Number Cubes

Online Resources

Math In Focus Virtual Manipulatives:

https://www-k6.thinkcentral.com/content/hsp/math/mathinfocus/common/itools_pri_9780547673851_/barmodel.html

Bar Models for Adding, Subtracting, and Solving Multi-Step Problems

Math In Focus Student Interactivities

<https://www.ixl.com/math/grade-2> Grade 2 Concepts by Topic

http://www.abcya.com/base_ten_bingo.htm Base Ten Bingo

http://www.abcya.com/comparing_number_values.htm Comparing Numbers

http://www.abcya.com/guess_the_number.htm Guess the Number: Less Than/Greater Than

http://www.abcya.com/rounding_numbers.htm Estimation

<http://www.abcya.com/estimating.htm> Estimation and Adding

https://www.mathplayground.com/tb_addition_jr/index.html Moderate Word Problems using Bar Models

https://www.mathplayground.com/tb_addition/index.html Difficult Word Problems using Bar Models

<https://jr.brainpop.com/math/additionandsubtraction/addingwithregrouping/> Addition With Regrouping Video

<https://jr.brainpop.com/math/additionandsubtraction/subtractingwithregrouping/> Subtraction With Regrouping Video

<https://jr.brainpop.com/math/numbersense/rounding/> Rounding Video

<https://jr.brainpop.com/math/numbersense/placevalue/> Place-Value to Hundreds Video

https://www-k6.thinkcentral.com/content/hsp/math/mathinfocus/common/itools_pri_9780547673851_/basetenblocks.html Virtual Base Ten Blocks Up to Thousands for Showing, Comparing, Adding, and Subtracting

Modifications

*These are only suggested ideas to modify instruction, modifications and accommodations should be tailored to each student's IEP and needs. Also, see textbook for Differentiated Instruction ideas at the start of each chapter.

Special Education - Reteach/Extra practice workbook pages, anchor charts, scaffolded explanations of topics, manipulatives, additional time for work, group work, visual aids, modeling, hands-on learning activities, small group work for more individualized attention

504 - Reteach/Extra practice pages, anchor charts, scaffolded explanations of topics, manipulatives, extra time for work, group work, visual aids, modeling, hands-on learning activities, small group work for more individualized attention

ELL - Select activities which reinforce chapter vocabulary and connections among these words such as:

A Word Wall which includes terms, definitions, and examples

Drawings and numbers to show examples of terms

Gifted and Talented - Enrichment workbook, Put on Your Thinking Cap pages and resources, higher-level questions, challenge packets, KenKen and other puzzles, leading group work

21ST CENTURY LIFE AND CAREER STANDARDS

Please select all standards that apply to this unit of study:

- Act as a responsible and contributing citizen and employee.
- Apply appropriate academic and technical skills.
- Attend to personal health and financial well being.
- Communicate clearly and effectively and with reason.
- Consider the environmental social and economics impacts of decisions.
- Demonstrate creativity and innovation.
- Employ valid and reliable research strategies.
- Utilize critical thinking to make sense of problems and persevere in solving them.
- Model integrity, ethical leadership, and effective management.
- Plan education and career paths aligned to personal goals.
- Use technology to enhance productivity.
- Work productively in teams while using cultural global competence.

Suggestions on integrating these standards can be found at: <http://www.state.nj.us/education/cccs/2014/career/9.pdf>

LINKS TO CAREERS:

Unit 2

Measurement & Data

Summary and Rationale

Children learn to read time based on the position of the minute hand on the clock and use skip-counting strategies to tell how many minutes have passed and to read and write time in hours and minute using numerals and words. In addition, children will order events by time and determine how much time has elapsed.

There are two basic systems of measurement in the United States- customary and metric. The basic units of length in the customary system are feet and inches. In this unit, children learn to estimate and measure lengths of objects using a foot ruler. To further reinforce children's understanding of length, they draw lines of specific lengths and apply these

strategies along with addition and subtraction skills to solve real-world one and two-step word problems involving length.

There are two basic systems of measurement in the United States- customary and metric. The basic units of length in the metric system are meters and centimeters. In this unit, children estimate and measure medium and short lengths using the standard metric units meters (m) and centimeters (cm). The meter stick and centimeter ruler are used to illustrate length as a concept of measure to determine how long or short an object is. The lengths of curved lines are measured with the help of a piece of string which is placed along the curved line and then measured with a ruler. Children also draw lines of specific lengths.

The topic of money provides a natural application of place-value and introduction to decimal notation. Children recognize bills and coins, and their respective values. They use the *dot* to separate dollars from cents when writing money amounts in dollars and to exchange dollars as cents and vice versa. Just as in place value, children compare money from left to right by first comparing the dollars, and then move on to the cents.

Collecting, organizing, reporting, and interpreting data are important activities related to children’s everyday experiences. In this unit, children analyze more complex picture graphs in which the reading, analysis, and interpretation of the graphs involves symbols that may represent more than one item. This allows symbols to stand for multiples of a number so that larger numbers can be represented. These type of picture graphs turn out to be more presentable, easier to read and make, and assist children in solving real-world problems

Recommended Pacing

___ days, weeks, etc.

Standards

Measurement & Data

2.MD.1	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
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.
2.MD.3	Estimate lengths using units of inches, feet, centimeters, and meters.
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.
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.
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.
2.MD.7	Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
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?
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.
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.
Operations & Algebraic Thinking	
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, <i>e.g.</i> , by using drawings and equations with a symbol for the unknown number to represent the problem. ¹
Number & Operations in Base Ten	
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.
2.NBT.6	Add up to four two-digit numbers using strategies based on place value and properties of operations.
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 relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
Mathematical Practices	
K-12.MP.1	Make sense of problems and persevere in solving them.
K-12.MP.2	Reason abstractly and quantitatively.
K-12.MP.4	Model with mathematics.
K-12.MP.5	Use appropriate tools strategically.
K-12.MP.6	Attend to precision.
K-12.MP.7	Look for and make use of structure.
Interdisciplinary Connections	
Standard x.x	

Integration of Technology	
Instructional Focus	
Enduring Understandings:	Essential Questions:
<p>Time of the day can be shown in different ways.</p> <p>Duration of an event is determined by reading a clock and comparing the beginning time to the ending time.</p> <p>Standard and non-standard units of measure are used to find measurements. Units of measurement used often depend on the size of an object.</p> <p>Every measurement is an estimate. The precision of measurement depends on the size of the unit used to measure the object. The smaller the unit used, the more precise the measurement.</p> <p>Tools can be used to estimate and measure the lengths of objects to the nearest inch, foot, centimeter, and meter.</p> <p>Inch rulers, yardsticks, centimeter rulers, and meter sticks can be used to measure and compare how long and how tall things are.</p> <p>Money amounts can be shown and counted using bills and coins.</p> <p>Values of money can be represented in different ways.</p> <p>Data can be collected and organized in different charts to display information that can be used to solve problems.</p> <p>Picture graphs use pictures to show data about things you can count.</p>	<p>How do you read times on a digital and analog clock?</p> <p>What are some of the tools that can be used to estimate and measure the length of an object?</p> <p>How do you use the value of coins and bills to find the total amount of a group of money?</p> <p>How is money compared?</p> <p>How do picture graphs represent multiplication?</p> <p>How can you collect data and organize that data to show information?</p>

Evidence of Learning (Assessments)	
Objectives (SLO)	
<p>Students will know:</p> <ul style="list-style-type: none"> ● A.M. ● P.M. ● Foot/feet (ft) ● Ruler ● Yardstick ● Length, width, height ● Unit ● Inch (in.) ● Meter (m) ● Meter stick ● \$1, \$5, \$10, \$20 bills ● Cent sign ● Dollar sign (\$) ● Decimal point ● Picture graph ● Symbol ● Key ● Line plot 	<p>Students will be able to:</p> <ul style="list-style-type: none"> ● Use the minute hand to show and tell the number for every five minutes after the hour. ● Show and tell time in hours and minutes. ● Use A.M. and P.M. to show morning, afternoon, or night. ● Order events by time. ● Use a ruler to estimate and measure length. ● Use a metric stick to estimate and measure length. ● Compare lengths. ● Find differences in lengths of objects. ● Use a ruler to measure length to the nearest inch. ● Use a centimeter ruler to measure and compare lengths. ● Draw parts of lines of given lengths. ● Use an inch ruler to measure and compare lengths. ● Find the difference in lengths of objects in inches. ● Measure the same objects in inches and feet. ● Understand how measurements relate to the sizes of units. ● Solve one and two-step problems involving length. ● Draw bar models to solve real-world problems. ● Show and count money using coins and bills up to \$20. ● Write money amounts using \$ and the cents symbol. ● Write dollars as cents and cents as dollars. ● Compare amounts of money using tables. ● Use bar models to solve real-world problems involving addition and subtraction of money. ● Solve word problems using \$ and cents symbols. ● Read, analyze, and interpret picture graphs. ● Complete picture graphs. ● Make picture graphs. ● Make a line plot to show data. ● Solve real-world problems using picture graphs.
Suggested Resources/Technology Tools	

Math In Focus Resources Chapter 14: Time

Math In Focus Resources Chapter 13: Customary Measurement of Length

Focus Lesson: 13.4a Comparing Inches and Feet (after Lesson 4) TE 308B

Math In Focus Resources Chapter 7: Metric Measurement of Length

Math In Focus Resources Chapter 11: Money

Focus Lesson: 11.3.a Real World Problems: Money (after Lesson 3) TE 308A

Math In Focus Resources Chapter 17: Picture Graphs

Focus Lesson: 17.2.a Line Plots (after Lesson 2) TE 308C

Resources and Manipulatives

Analog Clock

Paper Clocks

Foot-Long Rulers

Measuring Tape

Measurement Chart

Meter Stick or Measuring Tape

Centimeter Ruler

Paper Bills

Plastic Coins

Counters

Picture Graph

Online Resources

Math In Focus Virtual Manipulatives:

https://www-k6.thinkcentral.com/content/hsp/math/mathinfocus/common/itools_pri_9780547673851_/measurement.html Virtual Clock and Money

https://www-k6.thinkcentral.com/content/hsp/math/mathinfocus/common/itools_pri_9780547673851_/measurement.html Virtual Graphs

Virtual Graphs

Math In Focus Student Interactivities

<https://www.ixl.com/math/grade-2> Grade 2 Concepts by Topic

https://www.mathplayground.com/candy_cashier.html Cashier

https://www.mathplayground.com/puzzle_pics_money.html Counting Money

https://www.mathplayground.com/puzzle_pics_clocks.html Telling Time

<https://jr.brainpop.com/math/measurement/inchesandfeet/> Inches and Feet Video

<https://jr.brainpop.com/math/measurement/centimetersmeterskilometers/> Centimeters, Meters, and Kilometers Video

<https://jr.brainpop.com/math/time/timetothelquarterandhalfhour/> Time to the Quarter and Half Hour Video

<https://jr.brainpop.com/math/time/timetotheminute/> Time to the Minute Video

<https://jr.brainpop.com/math/money/dollarsandcents/> Dollars and Cents Video

<https://jr.brainpop.com/math/money/countingcoins/> Counting Coins Video

<https://jr.brainpop.com/math/money/equivalentcoins/> Equivalent Coins Video

<https://jr.brainpop.com/math/money/makingchangeunderadollar/> Making Change Video

<https://jr.brainpop.com/math/data/pictographs/> Pictographs Video

<https://jr.brainpop.com/math/data/linegraphs/> Line Graphs Video

Modifications

Special Education - Reteach/Extra practice pages, anchor charts, scaffolded explanations of topics, manipulatives, extra time for work, group work, visual aids, modeling, hands-on learning activities, small group work for more individualized attention

504 - Reteach/Extra practice pages, anchor charts, scaffolded explanations of topics, manipulatives, extra time for work, group work, visual aids, modeling, hands-on learning activities, small group work for more individualized attention

ELL - Using simplified language, modeling, visual aids, manipulatives, vocabulary with images and examples

Gifted and Talented - Enrichment book, Put on Your Thinking Cap pages and resources, higher-level questions, challenge packets, KenKen and other puzzles, leading group work

Extension Topic- Elapsed Time-Chapter 14

21ST CENTURY LIFE AND CAREER STANDARDS

Please select all standards that apply to this unit of study:

- Act as a responsible and contributing citizen and employee.
- Apply appropriate academic and technical skills.
- Attend to personal health and financial well being.
- Communicate clearly and effectively and with reason.
- Consider the environmental social and economics impacts of decisions.
- Demonstrate creativity and innovation.
- Employ valid and reliable research strategies.
- Utilize critical thinking to make sense of problems and persevere in solving them.
- Model integrity, ethical leadership, and effective management.
- Plan education and career paths aligned to personal goals.
- Use technology to enhance productivity.
- Work productively in teams while using cultural global competence.

Suggestions on integrating these standards can be found at: <http://www.state.nj.us/education/cccs/2014/career/9.pdf>

LINKS TO CAREERS:

Unit 3

Geometry

Summary and Rationale

In this unit, children use fractions to describe equal parts of a whole. They identify shapes divided into equal fractional parts, as well as, model and name unit fractions for halves, thirds, and fourths, based on the number of equal parts a whole is divided into. Bar model drawings are used to show fractional parts in different ways. Visual models are further used to compare fractional parts and to add and subtract like fractions.

Children recognize, identify, and describe parts of lines and curves that make up plane and solid shapes. They learn to combine parts of lines and curves to draw plane shapes and to identify, classify, and count flat and curved surfaces of solid shapes by using their senses of sight and touch. Children also discover which properties of shapes allow them to slide, stack, or roll.

Two new plane shapes are introduced, the trapezoid and the hexagon. Children combine smaller plane shapes to make larger ones, and separate larger shapes to make smaller ones. They do the same using solid shapes to make and deconstruct models. Activities that involve drawing and copying shapes onto dot and square grid paper act as preparation for learning symmetry and congruence in later grades.

Recommended Pacing

___ days, weeks, etc.

Standards

Geometry

2.G.1	Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. ¹ Identify triangles, quadrilaterals, pentagons, hexagons, and cubes
2.G.2	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
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 wholes need not have the same shape.

Mathematical Practices

K-12.MP.1	Make sense of problems and persevere in solving them.
K-12.MP.4	Model with mathematics.
K-12.MP.6	Attend to precision.
K-12.MP.7	Look for and make use of structure.

Interdisciplinary Connections

Standard x.x

Integration of Technology	
Instructional Focus	
Enduring Understandings:	Essential Questions:
<p>Fractions can be used to describe how equal parts of a shape are related to a whole shape.</p> <p>Shapes and bar models can be used to represent, compare, add, and subtract fractions.</p> <p>Adding and subtracting like fractions using models and pictures is just like adding and subtracting whole numbers. (Just add or subtract the top numbers.)</p> <p>Properties of parts of lines, curves, and surfaces can be seen and felt.</p> <p>Objects with flat surfaces can slide.</p> <p>Objects that have more than one flat surface can be stacked.</p> <p>Objects that have curved surfaces can be rolled.</p> <p>Planes and solid shapes can be identified and classified. They can be separated and combined to make other shapes.</p>	<p>Which objects can slide? Stack? Roll?</p> <p>Where do we see plane shapes in the real-world?</p> <p>Where so we see solid shapes in the real-world?</p> <p>What is a fraction?</p> <p>How can shapes and bar model drawings be used to represent and compare fractions?</p> <p>How do you add and subtract like fractions?</p>
Evidence of Learning (Assessments)	
Objectives (SLO)	

Students will know:

- Equal and unequal
- Whole
- Fraction
- One-half, one-third, one-fourth
- Unit fraction
- Like fractions
- Part of a line
- Curve
- Flat surface
- Curved surface
- Slide
- Stack
- Roll
- Plane shape
- Hexagon
- Trapezoid
- Figure
- Quadrilateral
- Pentagon
- Angle
- Face
- Solid shape
- Cube

Students will be able to:

- Recognize, identify, and describe parts of lines and curves.
- Draw parts of lines and curves.
- Identify, classify, and count flat and curved surfaces.
- Identify solids that can stack, slide, and/or roll.
- Recognize and identify plane shapes. Combine smaller plane shapes to make larger plane shapes.
- Separate larger plane shapes into smaller plane shapes.
- Combine and separate plane shapes in figures.
- Identify whether a shape is divided into equal fractional parts.
- Read, write, and identify unit fractions for halves, thirds, and fourths.
- Show fractions and a whole using model drawings.
- Compare two or more unit fractions using models of the same size.
- Order two or more unit fractions with or without the use of models of the same size.
- Identify fractions that name more than one equal part of a whole.
- Use models to add and subtract fractions.
- Add and subtract like fractions using models and pictures.
- Identify quadrilaterals as pentagons.
- Recognize and draw shapes having a given number of angles.
- Identify and count the equal faces on a cube.

Suggested Resources/Technology Tools

Math In Focus Resources Chapter 12: Fractions

Math In Focus Resources Chapter 18: Lines and Surfaces

Math In Focus Resources Chapter 19: Shapes and Patterns

Focus Lesson: 19.1a Quadrilaterals and Pentagons (after Lesson 1) TE 308D

Focus Lesson: 19.2a Faces of a Cube (after Lesson 2) TE 308E

Resources and Manipulatives

Solid Shapes

Attribute Blocks

Paper Shapes

Dot and Grid Paper

Connecting Cubes

Triangle Cards

Paper Shapes

Online Resources

Math In Focus Virtual Manipulatives:

https://www-k6.thinkcentral.com/content/hsp/math/mathinfocus/common/itools_pri_9780547673851_/fractions.html

Virtual Fractions for Showing and Comparing

https://www-k6.thinkcentral.com/content/hsp/math/mathinfocus/common/itools_pri_9780547673851_/geometricfigure.s.html Virtual Solids, Plane Figures, Composite Shapes with Solids

Math In Focus Student Interactivities

<https://www.ixl.com/math/grade-2> Grade 2 Concepts by Topic

<https://www.mathplayground.com/tangrams.html> Tangrams

<https://www.mathplayground.com/patternblocks.html> Composite Shapes

<https://jr.brainpop.com/math/geometry/quadrilaterals/> Quadrilaterals Video

<https://jr.brainpop.com/math/fractions/basicpartsofawhole/> Fractional Parts of a Whole Video

<https://jr.brainpop.com/math/fractions/equivalentfractions/> Equivalent Fractions

Modifications

Special Education - Reteach/Extra practice pages, anchor charts, scaffolded explanations of topics, manipulatives, extra time for work, group work, visual aids, modeling, hands-on learning activities, small group work for more individualized attention

ELL - Using simplified language, modeling, visual aids, manipulatives, vocabulary with images and examples

Gifted and Talented - Enrichment book, Put on Your Thinking Cap pages and resources, higher-level questions, challenge packets, KenKen and other puzzles, leading group work

504 - Reteach/Extra practice pages, anchor charts, scaffolded explanations of topics, manipulatives, extra time for work, group work, visual aids, modeling, hands-on learning activities, small group work for more individualized attention

21ST CENTURY LIFE AND CAREER STANDARDS

Please select all standards that apply to this unit of study:

- Act as a responsible and contributing citizen and employee.
- Apply appropriate academic and technical skills.
- Attend to personal health and financial well being.
- Communicate clearly and effectively and with reason.
- Consider the environmental social and economics impacts of decisions.
- Demonstrate creativity and innovation.
- Employ valid and reliable research strategies.
- Utilize critical thinking to make sense of problems and persevere in solving them.
- Model integrity, ethical leadership, and effective management.
- Plan education and career paths aligned to personal goals.
- Use technology to enhance productivity.
- Work productively in teams while using cultural global competence.

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LINKS TO CAREERS:

Unit 4

Multiplication

Summary and Rationale

Multiplication is initially linked to the part-whole meaning of addition. Joining groups (parts) to find a total (whole) and the use of double facts and addition properties together form an important basis for understanding multiplication as repeated addition. Children use the same numbers to understand the concept of multiplication.

Division is the opposite of multiplication. Number sense concepts such as counting and comparing numbers form the groundwork of division. Children explore both meanings of division: finding the number of equal groups of a given size and finding the size of a given number of groups. The use of models is important at this grade level because children may need to rely heavily on manipulatives to comprehend the two meanings of division. Children distribute items equally to understand the concept of sharing equally and distribute items into equal groups to understand the concepts of dividing into equal groups.

Children move to the pictorial and symbolic phases of multiplication and division through the emphasis on equal groups. Multiplication is used to find the number of items in a number of equal groups.

Division is the process of sharing a number of items among a number of groups either by finding the number of items in each group or by finding the number of equal groups that can be formed. The strategies of repeated addition and repeated subtraction are reviewed in this unit.

Children learn the multiplication facts of 2, 5, and 10 using skip-counting and dot-paper strategies. Pictures and fingers illustrate the skip-counting strategy related to computation in multiplication. Using the skip-counting strategy, each finger is used to represent a specific value. Using dot paper for multiplication, each column represents the number of groups while each row represents the number of items in each group.

Children also learn to use related multiplication facts to divide. Division is conceptualized as the inverse of multiplication and as the equal sharing of items.

Recommended Pacing

___ days, weeks, etc.

Standards

Operations & Algebraic Thinking

2.OA.3

Work with equal groups of objects to gain foundations for multiplication.

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.
Number & Operations in Base Ten	
2.NBT.2	Count within 1000; skip-count by 5s, 10s, and 100s.
Mathematical Practices	
K-12.MP.1	Make sense of problems and persevere in solving them.
K-12.MP.2	Reason abstractly and quantitatively.
K-12.MP.3	Construct viable arguments and critique the reasoning of others.
K-12.MP.4	Model with mathematics.
K-12.MP.5	Use appropriate tools strategically.
K-12.MP.6	Attend to precision.
K-12.MP.8	Look for and express regularity in repeated reasoning.
Interdisciplinary Connections	
Standard x.x	
Integration of Technology	
Instructional Focus	
Enduring Understandings:	Essential Questions:
<p>Multiplication is the same as adding equal groups.</p> <p>Dividing is the same as sharing things equally or putting things in equal groups.</p> <p>Any even number can be represented by two equal numbers.</p> <p>Multiplication is used to find the number of items in a number of equal groups.</p>	<p>How can multiplication be modeled?</p> <p>How can division be modeled?</p> <p>What is multiplication?</p> <p>What are some strategies for multiplication?</p> <p>How does the skip-counting strategy for multiplication work?</p> <p>How does the dot-paper strategy for multiplication work?</p>

<p>Division is the process of sharing a number of items among a number of groups either by finding the number of items in each group or by finding the number of equal groups that can be formed.</p> <p>Division is the opposite of multiplication.</p> <p>Pictures and fingers illustrate the skip-counting strategy related to multiplication. Using the skip-counting strategy, each skip is used to represent a specific value.</p> <p>Using dot paper for multiplication, each column represents the number of groups while each row represents the number of items in each group.</p>	<p>What is division?</p> <p>What are some strategies for division?</p> <p>How are multiplication and division related and how does this help us with number facts?</p>
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Evidence of Learning (Assessments)

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Objectives (SLO)

<p>Students will know:</p> <ul style="list-style-type: none"> ● Times ● Equal groups ● Multiply ● Repeated addition and subtraction. ● Share ● Divide ● Multiplication and division sentence ● Multiplication and division story ● Odd and even numbers ● Related multiplication facts. 	<p>Students will be able to:</p> <ul style="list-style-type: none"> ● Relate repeated addition to the concept of multiplication. ● Use objects and pictures to find the number of items in each group when sharing equally. ● Relate sharing equally to the concept of division. ● Use objects and pictures to show the concept of division as finding the number of equal groups. ● Use equal groups and repeated addition to multiply. ● Make multiplication stories about pictures. ● Make multiplication sentences. ● Divide to share equally. ● Divide by repeated subtraction of equal groups. ● Make groups of 2 to find odd and even numbers. ● Understand that an even number is the sum of two equal numbers. ● Solve multiplication and division word problems. ● Use base-ten blocks and a place-value chart to recognize, read, write, and represent numbers to 1,000. ● Count by 1s, 10s, and 100s to 1,000. ● Read and write numbers to 1,000 in standard form, expanded form, and word form. ● Skip count and use dot paper to multiply by 5 and 10.
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- Use known multiplication facts to find new multiplication facts.
- Identify related multiplication facts.
- Use related multiplication facts to find related division facts.
- Write a multiplication sentence and a related division sentence.
- Skip count by 3s and 4s.
- Use dot paper to multiply by 3 and 4.
- Solve multiplication and division word problems
- Find division facts using related multiplication facts.

Suggested Resources/Technology Tools

Math In Focus Resources Grade 1 Chapter 18: Multiplication and Division

Math In Focus Resources Chapter 5: Multiplication and Division

Focus Lesson: 5.2.a Even and Odd Numbers (after Lesson 2) TE 286A

Math In Focus Resources Chapter 6: Multiplication Tables of 2, 5, and 10

Math In Focus Resources Chapter 15: Multiplication Tables of 3 and 4

Resources and Manipulatives

Connecting Cubes

Counters

Base-Ten Blocks

Place-Value Chart

Place-Value Mat

Dot Paper

Hundreds Chart

Multiplication Chart

Number Wheel

Number Cards

Number Stickers

Number Cubes

Multiplication Cards

Online Resources

Math In Focus Virtual Manipulatives:

https://www-k6.thinkcentral.com/content/hsp/math/mathinfocus/common/itools_pri_9780547673851_/counters.html

Virtual Counters and Cubes for Multiplying

Math In Focus Student Interactivities

<https://www.ixl.com/math/grade-2> Grade 2 Concepts by Topic

http://www.abcya.com/multiplication_mine_jr.htm Multiplication

https://www.mathplayground.com/ASB_TugTeamMultiplication.html Multiplication

https://www.mathplayground.com/math_monster_multiplication.html Multiplication

<https://www.mathplayground.com/multiples.html> Multiples

<https://jr.brainpop.com/math/multiplicationanddivision/arrays/> Arrays Video

<https://jr.brainpop.com/math/additionandsubtraction/repeatedaddition/> Repeated Addition/Multiplication Video
<https://jr.brainpop.com/math/additionandsubtraction/repeatedsubtraction/> Repeated Subtraction/Multiplication Video
<https://jr.brainpop.com/math/multiplicationanddivision/multiplyingby0or1/> Multiplying by 0 or 1 Video

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