Califon Public School
Curriculum

Subject: Math	Grade: 4th	Unit #: 1	Pacing: approximately 12-16 weeks

Unit Title: Place Value and Operations with Whole Numbers

OVERVIEW OF UNIT:

Developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends.

Big Ideas

- Each digit in the base ten system is 10 times what it represents in the place to the digit's right.
- There are words in a word problem that prompt us to decide whether to add or subtract.
- One quantity is multiplied by a specific number to get another quantity.
- There are words in a word problem that prompt us to decide when to use multiplication.
- Math sentences are written and solved using a letter in place of the unknown information.
- Math sentences should be written and solved using a letter in place of the unknown information.
- Using inequalities is a way to compare numbers.

Essential Questions

- How can you use place value to compare, contrast, estimate, round, add, and subtract with whole numbers?
- What strategies can you use to multiply by 1-digit numbers?
- What strategies can you use to multiply 2-digit numbers?
- How can you divide by 1-digit numbers?
- How can you determine the perimeter and area of a regular rectangle by using models and applying formulas?
- How can you find factors and multiples, and how can you generate and describe number patterns?

Objectives

- Students will be able to compare, order, estimate, and round whole numbers, as well as add and subtract with whole numbers using place value.
- Students will be able to identify and utilize varied strategies to multiply both 1-digit and 2-digit numbers.
- Students will be able to identify and utilize varied strategies to divide by 1-digit numbers.
- Students will be able to calculate the perimeter and area of regular rectangles using models and by applying formulas.
- Students will be able to find factors and multiples, as well as generate and describe number patterns.

Assessment

Formative Assessment:

- Beginning of the Year Tests
- Observations
- Class Discussions
- Classwork
- Mid-chapter Checkpoints
- Chapter Reviews
- Exit Slips
- Homework

Summative Assessment:

- Go Math! Tests
- Performance Tasks

Benchmark:

- LinkIt! Benchmark Assessment

Alternative:

- Performance Tasks
- Modified Tests Independently Developed by Teacher
- Projects

Key Vocabulary

- Base 10
- Digit
- Place value
- Expanded form
- Period
- Standard form
- Word form
- addition
- subtraction
- multiplication
- division
- Sum
- Compare
- Equal sign
- greater than (>)
- less than (<)
- number line
- order
- estimate
- round
- regroup
- addend factor
- Product
- Distributive Property
- Partial product
- Associative Property of Multiplication
- Compatible numbers
- Commutative Property of Multiplication
- Multiple
- Remainder
- Divide
- Dividend
- Division
- Divisor
- Quotient
- Partial quotients
- Array
- Divisible
- Regular rectangle
- Perimeter
- Area
- Base
- Height
- Square unit
- Common factor
- Common multiple
- Composite number
- Prime number
- Inverse operations
- Pattern
- Term

Resources & Materials
• Textbook (Go Math! Grade 4) • Promethean Board • Chromebooks • Calculator • Teacher-made materials

Technology Infusion
Teacher Technology: • Go Math! Online Resources: Lessons in Action, Teacher's Corner • Google Classroom • www.khanacademy.org • www.ixl.com/math/ **Student Technology:** • Go Math! Online Resources: Waggle, Interactive Student Edition • Google Classroom • www.khanacademy.org • www.ixl.com/math/ • www.prodigygame.com **Activities:** • Students will use Chromebooks to access the Go Math! website to: watch videos, engage in games and use online tools to review, practice and enrich lessons.

Standard	Standard Description
8.2.5.ITH.3	Analyze the effectiveness of a new product or system and identify the positive and/or negative consequences resulting from its use.

Interdisciplinary Integration
Activities: • Students will read and interpret texts in order to solve multi-step word problems. • Students will compose written explanations of problem solving so that their thinking is clear and supported with mathematical details such as computations or related vocabulary. **Resources:** • Teacher Vision Cross-Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html • Engineering Go For It! - http://egfi-k12.org/ • US Department of Education STEM - http://www.ed.gov/stem • Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html • NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko • PBS STEM - http://www.pbs.org/teachers/stem/#content • STEM Works - http://stem-works.com/activities

- What Every Educator Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml
- International Literacy Association Read Write Think - http://www.readwritethink.org/

Standard	Standard Description
NJSLS-ELA RI.CI.4.2	Summarize an informational text and interpret the author's purpose or main idea citing key details from the text.
NJSLS-ELA RI.MF.4.6	Use evidence to show how graphics and visuals (e.g., illustrations, charts, graphs, diagrams, timelines, animations) support central ideas.
NJSLS-ELA W.RW.4.7	Write routinely over extended time frames (with time for research and revision) and shorter time frames (a single sitting) for a range of tasks, purposes, and audiences.

21st Century Life Skills Standards

Activities:

- Students will work both individually and in collaborative groups to interpret and organize data and problem solve while utilizing varied strategies to complete a task.
- Students will discuss various solutions to a problem, communicating their thinking effectively both verbally and in writing.
- Students will practice writing checks.

Standard	Student Learning Objectives
9.4.5.CT.4	Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.

Careers

Activities:

- Students will use rounding to estimate real-world and/or simulated problems.

Practice	Description
Utilize critical thinking to make sense of problems and persevere in solving them.	Students readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of the problem and carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through this when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. Their own actions or the actions of others.
Use technology to enhance productivity increase collaboration and communicate effectively.	Students find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.

Work productively in teams while using cultural/global competence.	Students positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.

Standards for Mathematical Practice	
MP #	Practice
1	Make sense of problems and persevere in solving them.
2	Reason abstractly and quantitatively.
3	Construct viable arguments and critique the reasoning of others.
4	Model with mathematics.
5	Use appropriate tools strategically.
6	Attend to precision.
7	Look for and make use of structure.
8	Look for and express regularity in repeated reasoning.

Standards	
Standard #	**Standard Description**
4.NBT.A.1 4.NBT.A.2 4.NBT.A.3	**Generalize place value understanding for multi-digit whole numbers.** 1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.* 2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. 3. Use place value understanding to round multi-digit whole numbers to any place.
4.NBT.B.4 4.NBT.B.5 4.NBT.B.6	**Use place value understanding and properties of operations to perform multi-digit arithmetic.** 1. With accuracy and efficiency, add and subtract multi-digit whole numbers using the standard algorithm. 2. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. 3. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models
4.OA.A.1 4.OA.A.2	**Use the four operations with whole numbers to solve problems.**

4.OA.A.3	1. Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. 2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. 3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
4.OA.B.4	**Gain familiarity with factors and multiples.** 1. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1– 100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.
4.OA.C.5	**Generate and analyze patterns.** 5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.
4.M.A.3	**Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.** 3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor

Differentiation
Students with 504 plans
● Preferential seating ● Guided notes ● Extra time ● Teacher check-ins ● Use graphic organizers ● Redirect attention ● Prioritize tasks

- Small group testing
- Provide modifications & accommodations per individual student's 504 plan

Special Education

- Provide modifications & accommodations as listed in the student's IEP
- Position the student near a helping peer or have quick access to the teacher
- Modify or reduce assignments/tasks
- Reduce the length of the assignment for different modes of delivery
- Increase one-to-one time
- Prioritize tasks
- Use graphic organizers
- Use online resources for skill-building
- Provide teacher notes
- Use collaborative grouping strategies, such as small groups
- NJDOE resources - http://www.state.nj.us/education/specialed/

Response to Intervention (RTI)

- Tiered interventions following the RTI framework
- Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/
- Intervention Central - http://www.interventioncentral.org/

English Language Learners (ELL)

- Provide text-to-speech
- Use of a translation dictionary or software
- Provide graphic organizers
- NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm
- Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm

Enrichment

- Process should be modified: higher order thinking skills, open-ended thinking, discovery
- Utilize project-based learning for greater depth of knowledge
- Utilize exploratory connections to higher-grade concepts
- Contents should be modified: real-world problems, audiences, deadlines, evaluations, transformations
- Learning environments should be modified: student-centered learning, independence, openness, complexity, and groups should be varied
- NJDOE resources

Califon Public School
Curriculum

Subject: Math	Grade: 4th	Unit #: 2	Pacing: approximately 10-12 weeks

Unit Title: Fractions & Decimals

OVERVIEW OF UNIT:

During this unit, students will compare and find fraction equivalence, add, subtract, and multiply fractions by whole numbers, and relate fractions and decimals.

Big Ideas

- When adding or subtracting fractions with like denominators, you are adding or subtracting pieces of the same size, so you can add the numerators
- Benchmark fractions are familiar fractions that are easy to visualize, such as halves, thirds, and fourths.
- Drawing visual fraction models can help to represent what you know in solving a problem.
- The same fractional part can have different names that are equivalent. Equivalent fractions are found by multiplying or dividing the numerator and denominator of a fraction by the same non-zero number.
- When two fractions have the same denominator, the greater fraction has the greater numerator, and when two fractions have the same numerator, the fraction with greater denominator is less.
- Fractions with a common denominator or a common numerator are easy to compare and order.
- When multiplying a fraction by a whole number you must put the whole number over 1 to make a fraction, and then multiply the numerators by the numerators and multiply the denominators by the denominators.
- Decimals to the hundredths place can be analyzed to tell which number is bigger or smaller allowing one to add or subtract.
- Decimal notation can be changed into a fraction over 10 or 100.
- A line plot can be used to understand and recognize fractions.
- Decimals and fractions can also be compared via >, <, and =.
- When adding or subtracting fractions with like denominators, you are adding or subtracting pieces of the same size, so you can add the numerators
- Benchmark fractions are familiar fractions that are easy to visualize, such as halves, thirds, and fourths.
- Drawing visual fraction models can help to represent what you know in solving a problem.
- The same fractional part can have different names that are equivalent. Equivalent fractions are found by multiplying or dividing the numerator and denominator of a fraction by the same non-zero number.
- When multiplying a fraction by a whole number you must put the whole number over 1 to make a fraction, and then multiply the numerators by the numerators and multiply the denominators by the denominators.

Essential Questions
• What strategies can you use to compare fractions and write equivalent fractions? • How do you add or subtract fractions that have the same denominator? • How do you multiply fractions by whole numbers? • How can you record decimal notation for fractions, and compare decimal fractions? • How do units of measurement compare in regards to money?

Objectives
• Students will be able to utilize varied strategies to compare fractions and write equivalent fractions. • Students will be able to add or subtract fractions that have the same denominator. • Students will be able to multiply fractions by whole numbers. • Students will be able to record decimal notation for fractions and compare decimal fractions. • Students will be able to compare units of measurement in regards to money.

Assessment

Formative Assessment:

- Observations
- Class Discussions
- Classwork
- Mid-chapter Checkpoints
- Chapter Reviews
- Exit Slips
- Homework

Summative Assessment:

- Go Math! Tests
- Performance Tasks

Benchmark:

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Alternative:

- Performance Tasks
- Modified Tests Independently Developed by Teacher
- Projects

Key Vocabulary

- fraction
- numerator
- denominator
- benchmark
- equivalent fraction
- simplest form
- mixed number
- unit fraction
- decimal
- decimal point
- equivalent decimals
- hundredths
- tenths
- multiple

Resources & Materials

- Textbook (Go Math! Grade 4)
- Promethean Board
- Chromebooks
- Calculator
- Teacher-made materials

Technology Infusion

Teacher Technology:

- Go Math! Online Resources: Lessons in Action, Teacher's Corner
- Google Classroom
- www.khanacademy.org
- www.ixl.com/math/

Student Technology:

- Go Math! Online Resources: Waggle, Interactive Student Edition
- Google Classroom
- www.khanacademy.org
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- www.prodigygame.com

Activities:

- Students will use Chromebooks to access the Go Math! website to: watch videos, engage in games and use online tools to review, practice and enrich lessons.

Standard	Standard Description
8.2.5.ITH.3	Analyze the effectiveness of a new product or system and identify the positive and/or negative consequences resulting from its use.

Interdisciplinary Integration

Activities:

- Students will read and interpret texts in order to solve multi-step word problems.
- Students will compose written explanations of problem solving so that their thinking is clear and supported with mathematical details such as computations or related vocabulary.

Resources:

- Teacher Vision Cross-Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
- Engineering Go For It! - http://egfi-k12.org/
- US Department of Education STEM - http://www.ed.gov/stem
- Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html
- NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko
- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities
- What Every Educator Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml
- International Literacy Association Read Write Think - http://www.readwritethink.org/

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21st Century Life Skills Standards

Activities:

- Students will work both individually and in collaborative groups to interpret and organize data and problem solve while utilizing varied strategies to complete a task.
- Students will discuss various solutions to a problem, communicating their thinking effectively both verbally and in writing.
- Students will prepare recipes measuring fractional parts of ingredients.
- Students will calculate the costs of real and/or simulated experiences, such as travel or entertainment budgetary expenses.

Standard	Student Learning Objectives
9.4.5.CT.4	Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.

Careers

Activities:

- Students will prepare recipes measuring fractional parts of ingredients.
- Students will calculate the costs of real and/or simulated experiences such as travel or entertainment budgetary expenses.

Practice	Description
Work productively in teams while using cultural/global competence.	Students positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.
Use technology to enhance productivity increase collaboration and communicate effectively.	Students find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.
Demonstrate creativity and innovation.	Students regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of

	sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.
Utilize critical thinking to make sense of problems and persevere in solving them.	Students readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of the problem and carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through this when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. Their own actions or the actions of others.

Standards for Mathematical Practice	
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4	Model with mathematics.
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6	Attend to precision.
7	Look for and make use of structure.
8	Look for and express regularity in repeated reasoning.

Standards	
Standard #	**Standard Description**
4.NF.A.1 4.NF.A.2	**Extend understanding of fraction equivalence and ordering.** 1. Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. 2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.
4.NF.B.3 4.NF.B.4	**Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.** 1. Understand a fraction a/b with a > 1 as a sum of fractions 1/b. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.*

	c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. 2. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. Understand a fraction a/b as a multiple of 1/b. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).* b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.) c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*
4.NF.C.5 4.NF.C.6 4.NF.C.7	**Understand decimal notation for fractions, and compare decimal fractions.** 1. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.4 *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.* 2. Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.* 3. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.
4.M.A.2	1. **Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.** 2. 2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Differentiation
Students with 504 plans
• Preferential seating • Guided notes • Extra time • Teacher check-ins • Use graphic organizers • Redirect attention • Prioritize tasks • Small group testing • Provide modifications & accommodations per individual student's 504 plan
Special Education
• Provide modifications & accommodations as listed in the student's IEP • Position the student near a helping peer or have quick access to the teacher • Modify or reduce assignments/tasks • Reduce the length of the assignment for different modes of delivery • Increase one-to-one time • Use graphic organizers • Use online resources for skill-building • Provide teacher notes • Use collaborative grouping strategies, such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/
Response to Intervention (RTI)
• Tiered interventions following the RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/ • Intervention Central - http://www.interventioncentral.org/
English Language Learners (ELL)
• Provide text-to-speech • Use of a translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm
Enrichment
• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher-grade concepts • Contents should be modified: real-world problems, audiences, deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning, independence, openness, complexity, and groups should be varied

Califon Public School
Curriculum

Subject: Math	Grade: 4th	Unit #: 3	Pacing: Approximately 10-12 weeks

Unit Title: Geometry, Measurement, & Data

OVERVIEW OF UNIT:

During this unit, students will use geometric properties to compare and contrast shapes and learn how to classify and draw different types of lines and angles. Additionally, students will measure length, weight, volume, and time as well as calculate and convert units of measurement.

Big Ideas

- There are many different types of geometric shapes that can be identified based on their sides and angles.
- A line of symmetry illustrates that an image, figure, or shape, when folded in half, will match the other half identically.
- Triangles can be identified by shape and angles.
- Angles can be identified as right, acute, obtuse, or straight.
- Angles are measured in relation to a 360-degree circle.
- Units of measurement within a single system, such as length, weight, volume, and time, can be converted from larger units to smaller units.

Essential Questions

- What tools and strategies can we use to help us identify and draw shapes, angles, and lines?
- How do we define and identify the attributes of a triangle?
- How do you determine if a shape is symmetrical?
- How are degrees related to fractional parts of a circle?
- How do units of measurement, both Customary and Metric, compare?
- How can you make and interpret line plots with fractional data?

Objectives

- Students will be able to identify and utilize varied tools and strategies to help recognize and draw shapes, angles, and lines.
- Students will be able to define and identify attributes of a triangle.
- Students will be able to determine if a shape is symmetrical.
- Students will be able to explain how degrees are related to fractional parts of a circle.
- Students will be able to compare the units of measurement of both Customary and Metric.
- Students will be able to construct and interpret line plots with fractional data.

Assessment

Formative Assessment:

- Observations
- Class Discussions
- Classwork
- Mid-chapter Checkpoints
- Chapter Reviews
- Exit Slips
- Homework

Summative Assessment:

- Go Math! Tests
- Performance Tasks

Benchmark:

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Alternative:

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- Modified Tests Independently Developed by Teacher
- Projects

Key Vocabulary

- Acute angle
- Obtuse angle
- Right angle
- Straight angle
- Vertex
- Point
- Line
- Line segment
- Ray
- Intersecting lines
- Parallel lines
- Perpendicular lines
- Line of symmetry
- Degree
- Protractor
- Clockwise
- Counterclockwise
- Line plot
- Fluid ounce
- Cup
- Pint
- Quart
- Half gallon
- Gallon
- Ounce
- Pound
- Ton
- Millimeter
- Milliliter
- Kilometer
- Mile
- Second

Resources & Materials

- Textbook (Go Math! Grade 4)
- Promethean Board
- Chromebooks
- Calculator
- Teacher-made materials

Technology Infusion

Teacher Technology:

- Go Math! Online Resources: Lessons in Action, Teacher's Corner

- Google Classroom
- www.khanacademy.org
- www.ixl.com/math/

Student Technology:

- Go Math! Online Resources: Waggle, Interactive Student Edition
- Google Classroom
- www.khanacademy.org
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- www.prodigygame.com

Activities:

- Students will use Chromebooks to access the Go Math! website to: watch videos, engage in games and use online tools to review, practice and enrich lessons.

Standard	Standard Description
8.2.5.ITH.3	Analyze the effectiveness of a new product or system and identify the positive and/or negative consequences resulting from its use.

Interdisciplinary Integration

Activities:

- Students will read and interpret texts in order to solve multi-step word problems.
- Students will compose written explanations of problem solving so that their thinking is clear and supported with mathematical details such as computations or related vocabulary.

Resources:

- Teacher Vision Cross-Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
- Engineering Go For It! - http://egfi-k12.org/
- US Department of Education STEM - http://www.ed.gov/stem
- Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html
- NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko
- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities
- What Every Educator Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml
- International Literacy Association Read Write Think - http://www.readwritethink.org/

Standard	Standard Description
NJSLS-ELA RI.CI.4.2	Summarize an informational text and interpret the author's purpose or main idea citing key details from the text.
NJSLS-ELA RI.MF.4.6	Use evidence to show how graphics and visuals (e.g., illustrations, charts, graphs, diagrams, timelines, animations) support central ideas.

NJSLS-ELA W.RW.4.7	Write routinely over extended time frames (with time for research and revision) and shorter time frames (a single sitting) for a range of tasks, purposes, and audiences.

21st Century Life Skills Standards	
Activities: ● Students will work both individually and in collaborative groups to interpret and organize data and problem solve while utilizing varied strategies to complete a task. ● Students will discuss various solutions to a problem, communicating thinking effectively both verbally and in writing. ● Students will create designs using geometric shapes (EX: quilts, structures, etc.)	
Standard	**Student Learning Objectives**
9.4.5.CT.4	Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.

Careers	
Activities: ● Students will design and construct a game of chance to be played by the school student body at the annual Probability Fair.	
Practice	**Description**
Work productively in teams while using cultural/global competence.	Students positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.
Use technology to enhance productivity increase collaboration and communicate effectively.	Students find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.
Demonstrate creativity and innovation.	Students regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.
Utilize critical thinking to make sense of problems and persevere in solving them.	Students readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of the problem and carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through this when they occur and take action quickly to address the problem; they

	thoughtfully investigate the root cause of the problem prior to introducing solutions. Their own actions or the actions of others.

Standards for Mathematical Practice	
MP #	Practice
1	Make sense of problems and persevere in solving them.
2	Reason abstractly and quantitatively.
3	Construct viable arguments and critique the reasoning of others.
4	Model with mathematics.
5	Use appropriate tools strategically.
6	Attend to precision.
7	Look for and make use of structure.
8	Look for and express regularity in repeated reasoning.

Standards	
Standard #	**Standard Description**
4.OA.C.5	**Generate and analyze patterns.** 5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way*.
4.M.A.1 4.M.A.2 4.M.A.3	**Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.** 1. Know relative sizes of measurement units within one system of units including km, m, cm. mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...* 2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. 3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor
4.M.B.4	**Geometric measurement: understand concepts of angle and measure angles.**

4.M.B.5 4.M.B.6	1. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one degree angle," and can be used to measure angles. b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees. 5. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. 6. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.
4.G.A.1 4.G.A.2 4.G.A.3	**Draw and identify lines and angles, and classify shapes by properties of their lines and angles.** 1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. 2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. 3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.
4.DL.A.1 4.DL.A.2 4.DL.A.3 4.DL.A.4	**Organize data and understand data visualizations** 1. Create data-based questions, generate ideas based on the questions, and then refine the questions. 2. Develop strategies to collect various types of data and organize data digitally. 3. Understand that subsets of data can be selected and analyzed for a particular purpose. 4. Analyze visualizations of a single data set, share explanations, and draw conclusions that the data supports.
4.DL.B.5	**Represent and interpret measurement data** 1. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

Differentiation
Students with 504 plans
• Preferential seating • Guided notes • Extra time • Teacher check-ins • Use graphic organizers • Redirect attention • Prioritize tasks • Small group testing • Provide modifications & accommodations per individual student's 504 plan
Special Education
• Provide modifications & accommodations as listed in the student's IEP • Position the student near a helping peer or have quick access to the teacher • Modify or reduce assignments/tasks • Reduce the length of the assignment for different modes of delivery • Increase one-to-one time • Use graphic organizers • Use online resources for skill-building • Provide teacher notes • Use collaborative grouping strategies, such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/
Response to Intervention (RTI)
• Tiered interventions following the RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/ • Intervention Central - http://www.interventioncentral.org/
English Language Learners (ELL)
• Provide text-to-speech • Use of a translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm
Enrichment
• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher-grade concepts • Contents should be modified: real-world problems, audiences, deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning, independence, openness, complexity, and groups should be varied