Grade: 4	Content Area: Mathematics

Standard Alignment September 2017	NJDOE Adoption Date September 2017
Revise December 2021	ETESD BOE Approved 1/2021

Suggested Pacing Guide

Unit	Unit Length
Unit 1: Operations and Algebraic Thinking	35 Days
Unit 2: Number and Operations in Base Ten	35 Days
Unit 3: Number and Operations—Fractions	35 Days
Unit 4 : Measurement and Data	35 Days
Unit 5: Geometry	35 Days

Core Materials:
GoMath
Reflex Math
Linkit

Grade 4 Overview

Operations and Algebraic Thinking
- Use the four operations with whole numbers to solve problems
- Gain familiarity with factors and multiples
- Generate and analyze patterns

Number and Operations in Base Ten
- Generalize place value understanding for multi-digit whole numbers
- Use place value understanding and properties of operations to perform multi-digit arithmetic

Number and Operations - Fractions
- Extend understanding of fraction equivalence and ordering
- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers
- Understand decimal notation for fractions, and compare decimal fractions

Measurement and Data
- Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit
- Represent and interpret data
- Geometric measurement: understand concepts of angle and measure angles

Geometry
- Draw and identify lines and angles, and classify shapes by properties of their lines and angles

Mathematical Practices

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.

Unit 1: Operations and Algebraic Thinking	Duration: 35

Career Readiness, Life Literacies, and Key Skills Practices	
Act as a responsible and contributing community members and employee.	Students understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.

Consider the environmental, social and economic impacts of decisions.	Students understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organization, and the environment. They are aware of and utilize new technologies, understandings, procedures, materials, and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization.
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 problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They 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 their own actions or the actions of others.
Model integrity, ethical leadership and effective management.	Students consistently act in ways that align personal and community-held ideals and principles while employing strategies to positively influence others in the workplace. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the directions and actions of a team or organization, and they apply insights into human behavior to change others' action, attitudes and/or beliefs. They recognize the

	near-term and long-term effects that management's actions and attitudes can have on productivity, morals and organizational culture.
Plan education and career paths aligned to personal goals.	Students take personal ownership of their own education and career goals, and they regularly act on a plan to attain these goals. They understand their own career interests, preferences, goals, and requirements. They have perspective regarding the pathways available to them and the time, effort, experience and other requirements to pursue each, including a path of entrepreneurship. They recognize the value of each step in the education and experiential process, and they recognize that nearly all career paths require ongoing education and experience. They seek counselors, mentors, and other experts to assist in the planning and execution of career and personal goals.
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.

Career Readiness, Life Literacies, and Key Skills
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9.1.2.CR.1: Recognize ways to volunteer in the classroom, school and community.

9.1.2. FI.1: Differentiate the various forms of money and how they are used (e.g., coins, bills, checks, debit and credit cards).

9.1.2.FP.2: Differentiate between financial wants and needs.

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9.1.5.CR.1: Compare various ways to give back and relate them to your strengths, interests, and other personal factors.

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9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions (e.g., W.4.6, 3.MD.B.3,7.1.NM.IPERS.6)

 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process

9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology (e.g., 8.1.5.NI.2).9.4.5.IML.1: Evaluate digital sources for accuracy, perspective, credibility and relevance (e.g., Social Studies Practice - Gathering and Evaluating Sources).

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue (e.g., 4.MD.B.4, 8.1.5.DA.3). • 9.4.5.IML.3: Represent the same data in multiple visual formats in order to tell a story about the data.

Computer Science and Design Thinking
Computing Systems
By the end of grade 5
Computing devices may be connected to other devices to form a system as a way to extend their capabilities.
Software and hardware work together as a system to accomplish tasks (e.g., sending, receiving, processing, and storing units of information)
Shared features allow for common troubleshooting strategies that can be effective for many systems.
Networks and the Internet
Information needs a physical or wireless path to travel to be sent and received.
Distinguishing between public and private information is important for safe and secure online interactions.
Information can be protected using various security measures (i.e., physical and digital)
Impacts of Computing
The development and modification of computing technology is driven by people's needs and wants and can affect individuals differently.

Data & Analysis
Data can be organized, displayed, and presented to highlight relationships
The type of data being stored affects the storage requirements.
Individuals can select, organize, and transform data into different visual representations and communicate insights gained from the data.
Many factors influence the accuracy of inferences and predictions.
Algorithms & Programming
Different algorithms can achieve the same result.
Some algorithms are more appropriate for a specific use than others.
Programming languages provide variables, which are used to store and modify data.
A variety of control structures are used to change the flow of program execution (e.g., sequences, events, loops, conditionals)
Programs can be broken down into smaller parts to facilitate their design, implementation, and review. Programs can also be created by incorporating smaller portions of programs that already exist.
Individuals develop programs using an iterative process involving design, implementation, testing, and review.
Engineering Design
Engineering design is a systematic and creative process of communicating and collaborating to meet a design challenge.
Often, several design solutions exist, each better in some way than the others.
Engineering design requirements include desired features and limitations that need to be considered.

Interaction of Technology and Humans
Societal needs and wants determine which new tools are developed to address real-world problems.
A new tool may have favorable or unfavorable results as well as both positive and negative effects on society.
Technology spurs new businesses and careers.
Nature of Technology
Technology innovation and improvement may be influenced by a variety of factors.
Engineers create and modify technologies to meet people's needs and wants; scientists ask questions about the natural world.
Effects of Technology on the Natural World
The technology developed for the human designed world can have unintended consequences for the environment.
Technology must be continually developed and made more efficient to reduce the need for nonrenewable resources.
Ethics & Culture
Technological choices and opportunities vary due to factors such as differences in economic resources, location, and cultural values.

Correlation Key		
Holocaust	Amistad	Financial Literacy

Unit 1: Operations and Algebraic Thinking	Duration: 40 Days (Ongoing)
NJ Student Learning Standard: 4.OA	

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Unit Summary
● Use the four operations with whole numbers to solve problems.

● Gain familiarity with factors and multiples.

● Generate and analyze patterns.

Summary: Students will continue to develop their understanding of the four operations to solve multi-step problems with the emphasis on multiplication to find the product and division to find the factor. By comparing a variety of solution strategies, students learn the relationship between multiplication and division. Additional understanding and solutions can be found through the use of groups, arrays and models.

Primary Interdisciplinary Connections	
Science	measurement (distance, weight, and growth), data analysis and collection, experiments relating to Energy, Earth and Human Activity and Engineering and Design.
Social Studies	economics & money, weather patterns, geography & map skills, and graphing
Language Arts	math journal, word problem comprehension, math stories, open-ended math questions, multi-step problems, math literature (see list under Teacher Resources)

A.	**Use the four operations with whole numbers to solve problems.**
4.OA.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.

4.OA.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.
4.OA.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.
B.	**Gain familiarity with factors and multiples.**
4.OA.4	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.
C.	**Generate and analyze patterns.**
4.OA.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.
	NJ Student Learning Standard for Introduction
5.OA.1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
	Interdisciplinary Skills
SL.4.1.A	Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
SL.4.1.B	Follow agreed-upon rules for discussions and carry out assigned roles.
	Computer Science and Design Thinking
8.1.5.CS.1	Model how computing devices connect to other components to form a system.
8.1.5.CS.3	Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.
8.1.5.NI.2:	Describe physical and digital security measures for protecting sensitive personal information.
8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
8.1.5.AP.4	Break down problems into smaller, manageable sub-problems to facilitate program development.

Essential Understandings	Essential Questions
Students will understand that... ● Numbers can be compared abstractly and quantitatively ● Knowing their multiplication facts can help in real life situations ● Different symbols are used to compare numbers ● By identifying patterns helps reinforce facts and develop fluency with operations	● How can numbers be expressed, ordered, and compared? ● How can place value understanding help us with comparing, ordering, and rounding? ● Why is it important to have quick recall of multiplication and division? ● What symbols can be used to compare numbers? ● Why is it important to identify patterns?

Evidence of Student Learning	
Performance Tasks: *Activities to provide evidence for student learning of content and cognitive skills.*	**Other Assessments**
Food In Space *Student Directions:* You need to find out how much food will be needed for the mission to Mars. Use the important facts to create your plan. Find the total number of days. Find the amount of food needed for 1 astronaut for the entire mission. Find the total amount of food needed for all astronauts for the entire mission. **Road Trip** *Student Directions:* Math comes in handy when travelling and shows up in various ways from estimating the amount of fuel you'll need to plan out a trip based on miles per hour	**Formative Assessments** ● Daily Classwork ● Teacher Observation ● Exit slips ● Games (technology/manipulative-based) **Summative Assessments** ● GoMath Tests ● Quizzes ● linkit Assessment a ● GoMath BOY Benchmark

and distance traveled. Calculating fuel usage is crucial to long distance travel. Without it, you may find yourself stranded without gas or on the road for much longer than anticipated. You may also use math throughout the trip by paying for tolls, counting exit numbers, checking tire pressure, etc.

Start your travels at home and have students map a car route to their final location. They will need to determine how long it will take to get there (based on miles/hr) how much they will need to spend on gas, and how many stops they will need to make.

Create a budget for the trip. Research how many miles to the gallon of fuel an average automobile gets and the average cost of fuel. How much money will you need for fuel? Do the same for meals and and lodgings. How much money do you need for these necessities? How much do you estimate for activities and other expenses?

Benchmark Assessment
- GoMath Benchmark Assessment

Alternative Assessments
- Untimed Fact Practice Assessment
- Manipulative Driven Assessment
- Modified/Teacher Created Chapter Tests
- Modified/Teacher Created Mid-Chapter Quiz
- Visual Representation of Skills Assess
- Modified Classwork Assignments
- Modified Benchmarks
- GoMath Reteach Activities and Worksheets
- Project Based Assessments with Scoring Rubric

Mathematical Practice

MP.4 Model with mathematics.

MP.5 Use appropriate tools strategically.

MP.7 Look for and make use of structure.

Vocabulary
product, associative property, commutative property, identity property, distributive property, quotient, factors, multiple, prime, composite, array, area model, divisor, dividend

Knowledge and Skills	
Content	**Skills**
Cluster: ● Use the four operations with whole numbers to solve problems (Chapter 2, 3, 4) ● Gain familiarity with factors and multiples (Chapter 5) ● Generate and analyze patterns (Chapter 5) *Students will know…* ● How to solve multi-step word problems with whole numbers using the four operations ● How to write an algebraic expression ● How to find all factor pairs for a whole number less than 100 ● How to identify patterns and apply the rule	*Students will be able to …* ● Solve multi-step word problems with whole numbers using the four operations ● Write an algebraic expression ● Find all factor pairs for a whole number less than 100 ● Identify patterns and apply rule ● Identify and verbalize which quantity is being multiplied and which number tells how many times ● Use mental computation and estimation strategies to check the reasonableness of their answer ● Determine whether a number is prime or composite ● Investigate different patterns to find rules, identify features in the patterns, and justify the reason for those features ● Solve multi-step word problems involving multiplication and division of whole numbers ● Use an organized procedure to solve word/application problems

Instructional Plan	
Suggested Activities	**Resources**
Around the world with facts - Students will answer multiplication facts. First, two students pair up and compete to correctly answer the multiplication fact first. The student will the correct answer moves to pair up with the next student. This process continues until one student moves all around the classroom back to their seat.	Flashcards
Multiplication War - Students will each evenly share a set of cards with numbers 0 through 12 or playing cards with a partner. Students will each draw two cards from their deck. He/she will multiply their two numbers together. The partner with the larger product wins and collects all four cards. If the students have a tie and have the same product, both students place four cards face down on the table. Then, each student flips over their first two cards and finds the product of those numbers. The person with the higher product wins and collects all cards. If there is a second tie, the student continue to flip over two more cards to find the product. The winner is the person who collects all of the cards.	Playing cards (Ace is 0, Jack is 11, Queen is 12, and King is any number) or cards with numbers 0 through 12
Math Fact Bump - Students will use a multiplication bump board and will roll dice to try to get as many of their pieces on the board as they can. Students roll two dice and multiply the numbers on the dice together. The student then places their game piece on the product of their two dice. Next, the student's partner does the same thing, and they continue to take turns for the given amount of time they have. The student with the most number of pieces on the board wins when the time is up.	Bump Boards, dice (2 six-sided or 2 ten-sided), timer (to set how long students will play with their partner)

Array Boxes - Students will create arrays on graph paper with a partner. One partner will roll two dice and then draw an array on graph paper based on these two numbers. In the middle of their array, they write the product of those two numbers and colors in their array in their color. The next partner chooses a different color and follows the same steps. The students can make their arrays touch on the graph paper. Once the graph paper is full, students count up to see who covered most of the graph paper.	Graph paper, dice
Fly Swat Multiplication - Students will use fly swatters to correctly answer the multiplication problem first. To assemble this game, products of multiplication problems are written on board. Students will cut all out problem. A player from each team tries to swat answer first. The team that gets the answer correct first gets a point for their team. The team with the most points wins.	2 fly swatters, whiteboard and dry erase marker for displaying products
Kahoot Quizzes - Students will take a Kahoot quiz on multi-step word problems or Place value to practice multi-step word problems or place value skills.	Chromebooks
Money Math - In small groups, students will utilize food store flyers to accomplish different objectives (how many of a certain item can they buy with a given amount of money, buy foods for a party, spend as close to $25 as possible, etc.). Students will record their word and describe how they used their money to accomplish the given task.	Supermarket flyers, paper for recording results
Math Literature	
<u>Multiplication:</u> ● *Amanda Beans Amazing Dream* by: Marilyn Burns	

- *The Best of Times* by: Greg Tong
- *Multiplication Menace* by: Pam Calvert
- *One Grain of Rice* by: Demi

Patterns:

- *Chasing Vermeer* by: Blue Ballie
- *A Piece of My Soul: Quilts by Black Arkansans* by Cuesta Benberry

Websites	
https://www-k6.thinkcentral.com/ePC/start.do	Mega Math Games, iTools, Personal Math Trainer, Animated Math Models
https://learnzillion.com/resources/64178-exploring-multiples-and-factors	Learn Zillion
https://www.flocabulary.com/topics/numbers-operations/	Flocabulary
https://www.mathsisfun.com/algebra/index.html	Math is Fun
http://www.studyisland.com/	Study Island
http://www.brainpop.com/math	Brain Pop
http://prodigygame.com	Prodigy
http://www.sheppardsoftware.com/math.htm	Sheppard Software
http://www.aaamath.com/grade4.htm	AAA Math
https://www.ixl.com/math/grade-4	IXL Math
https://www.varsitytutors.com/aplusmath	APlus Math

https://www.khanacademy.org/math/cc-fourth-grade-math/cc-4th-fact-mult-topic	Khan Academy
https://www.khanacademy.org/math/cc-fourth-grade-math/cc-4th-mult-div-topic	Khan Academy
https://www.illustrativemathematics.org/4	Real World Math Word Problems By Standard

Suggested Options for Differentiation

Basic Skills/Economically Disadvantaged/Students at Risk
- Multiplication tables
- Provide a checklist
- Response to intervention
- 2 -digit by one factors
- Math on the Spot
- Intensive Intervention
- Provide place value chart
- Anchor charts, visuals
- Manipulatives

English Language Learners
- Multiplication table
- 2-digit by one factors
- Go Math! Real World Videos
- Go Math! Stem Activities
- Provide place value chart
- Anchor chart, visuals
- Manipulatives

Gifted and Talented
- Go Math! Real World Videos
- Go Math! Stem Activities
- Provide Enrich packet

- Multi-step problems
- Student-driven activities, choices

Special Education/
- One on one instruction
- Adaptive devices
- Provide differentiated instruction as needed
- Follow all IEP modifications/504 plan
- Provide manipulatives or the opportunity to draw solution strategies
- Manipulatives
- Anchor chart, visuals

504
- Follow all 504 Plan modifications
- Seat the student away from distractions and in close proximity to the teacher
- Use simple, concise instructions with concrete steps
- Use a timer to assist student to focus on given task or number of problems in time allotted.
- Stress that problems need to be correctly done
- Pre-teach and/or re-teach important concepts
- Vary kind of instructional materials used
- Simplify and repeat instructions about in-class and homework assignments
- Vary instructional pace

Unit 2: Number and Operations in Base Ten	Duration: 35

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Unit 2: Number and Operations in Base Ten	Duration: 35 Days

NJ Student Learning Standard: 4.NBT

Unit Summary

● Generalize place value understanding for multi-digit whole numbers.

● Use place value understanding and properties of operations to perform multi-digit arithmetic.

Unit Summary: Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

Primary Interdisciplinary Connections	
Science	measurement (distance, weight, and growth), data analysis and collection

Social Studies	economics & money, weather patterns, geography & map skills, and graphing
Language Arts	math journal, word problem comprehension, math stories, open-ended math questions, multi-step problems, math literature (see list under Teacher Resources)

A.	Generalize place value understanding for multi-digit whole numbers.
4.NBT.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.
4.NBT.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.
4.NBT.3	Use place value understanding to round multi-digit whole numbers to any place.
B.	Use place value understanding and properties of operations to perform multi-digit arithmetic.
4.NBT.4	Fluently add and subtract multi-digit whole numbers using the standard algorithm.
4.NBT.5	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.
4.NBT.6	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.
	NJ Student Learning Standard for Introduction
5.NBT.3	Read, write and compare decimals to the thousandths.
	Computer Science and Design Thinking
8.1.5.CS.1	Model how computing devices connect to other components to form a system.
8.1.5.CS.3	Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.
8.1.5.NI.2:	Describe physical and digital security measures for protecting sensitive personal information.
8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.

8.1.5.AP.4	Break down problems into smaller, manageable sub-problems to facilitate program development.
8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

<table>
<tr><td colspan="2" align="center">Evidence of Student Learning</td></tr>
<tr><td>Performance Tasks: <i>Activities to provide evidence for student learning of content and cognitive skills.</i></td><td align="center">Other Assessments</td></tr>
<tr><td><u>Dream Vacation</u>
<u><i>Student Directions:</i></u> Using a budget of $15,000, you get to create your dream vacation. You need to research the hotel cost, travel costs, food, and activities. Make sure not to go over your budget.</td><td>

Formative Assessments
- Performance Assessment
- Teacher Observation
- Exit Slips/Slate Assessments
- Games (technology/manipulative-based)
- Pre-assessments
- Anecdotal Records
- Portfolio/Math Journals
- Daily Classwork

Summative Assessments
- Tests
- Quizzes
- District Assessments

Benchmark Assessment
- GoMath Benchmark Assessment

Alternative Assessments
- Untimed Fact Practice Assessment
</td></tr>
</table>

	- Manipulative Driven Assessment - Modified/Teacher Created Chapter Tests - Modified/Teacher Created Mid-Chapter Quiz - Visual Representation of Skills Assess - Modified Classwork Assignments - Modified Benchmarks - GoMath Reteach Activities and Worksheets - Project Based Assessments with Scoring Rubric

Mathematical Practice

MP.1 Make sense of problems and persevere in solving them.

MP.2 Reason abstractly and quantitatively.

MP.3 Construct viable arguments and critique the reasoning of others.

MP.4 Model with mathematics.

MP.6 Attend to precision

MP.8 Look for and express regularity in repeated reasoning.

Vocabulary

numeral, standard form, written form, expanded form, greater than, less than, equal, place of a digit, value of a digit, digit, difference, subtraction, associative property, commutative property, sum, whole number, operations, remainder, estimate, round

Knowledge and Skills

Content:	Skills:

Cluster: ● Generalize place value understanding for multi-digit whole numbers (Chapter 1) ● Use place value understanding and properties of operations to perform multi-digit arithmetic (Chapter 1, 2, 3, and 4) *Students will know…* ● That in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right ● Use place value understanding to round multi-digit whole numbers to any place ● Fluently add and subtract multi-digit whole numbers using the standard algorithm	*Students will be able to …* ● Model the 10-to-1 relationship among place-value positions in the base-ten number system ● Read and write whole numbers in standard form, word form, and expanded form ● Compare and order whole numbers based on the values of the digits in each number ● Round a whole number to any place ● Rename whole numbers by regrouping ● Add whole numbers and determine whether solutions to addition problems are reasonable ● Subtract whole numbers and determine whether solutions to subtraction problems are reasonable ● Use the strategy draw a diagram to solve comparison problems with addition and subtraction ● Multiply tens, hundreds, and thousands by whole numbers through 10 ● Estimate products by rounding and determine if exact answers to multiplication problems are reasonable ● Use strategies to multi-digit number by a 1-digit number ● Read and write multi-digit numbers using numerals, word, and in expanded forms ● Recognize that in multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right ● Round multi-digit whole numbers

	- Compare and contrast numbers using various strategies - Create a pattern that follows a given rule - Identify and recognize the 5 multiplication properties and use them to solve equations - Find all factor pairs for a whole number in the range 1-100 - Define the terms: factors and multiples and prime and composite - Fluently multiply and divide whole numbers using the standard algorithms.

Instructional Plan	

Suggested Activities	Resources
Place Value - Students will roll the largest number partner activity	Dice
Place Value Yahtzee- Students roll 2 dice and whoever has the higher number when added together takes the cards for the round.	Dice
Swat It Place Value- Students draw three cards and the first student to swat the highest value card wins this round. Student takes all cards for this round.	Swatters
Place Value Stomp - Index Cards with numbers are laid out on the floor in front of each student. Teacher or student leader names a place value and the student needs to stomp of the place value called and say the number in that place value.	Index cards with numbers
Human Place Value - Have students hold cards and move around and practice reading the number with each place value.	Index cards with numbers

Math Literature	
Multiplication: ● *Amanda Beans Amazing Dream* by: Marilyn Burns ● *The Best of Times* by: Greg Tong ● *Multiplication Menace* by: Pam Calvert ● *One Grain of Rice* by: Demi **Place Value:** ● *How much is a Million?* by: David Schwartz ● *If You Made a Million* by: David Schwartz ● *One Hundred Hungry Ants* by: Elinor Pinczes ● *The King's Commissioners* by: Marilyn Burns ● *The M & M Counting Book* ● *The Math Curse* by: Jon Scieszka ● *Two Ways to Count to Ten* by: Ryby Dee	
Websites	
https://www-k6.thinkcentral.com/ePC/start.do	Mega Math Games, iTools, Personal Math Trainer, Animated Math Models
https://www.ixl.com/math/grade-4	IXL Math
https://www.varsitytutors.com/aplusmath/flashcards	APlus Math - Flashcards
https://www.varsitytutors.com/aplusmath/games	APlus Math - Games
http://www.aaamath.com/	AAA Math
http://www.sheppardsoftware.com/math.htm#basicoperations	Sheppard Software
http://www.sheppardsoftware.com/math.htm#placevalue	Sheppard Software Place Value

https://www.flocabulary.com/topics/multiplication-division/	Flocabulary
http://www.explorelearning.com/index.cfm?method=cResource.dspDetail&ResourceID=1024	Rounding Whole Numbers (Number Line)
https://www.khanacademy.org/math/cc-fourth-grade-math/cc-4th-mult-div-topic	Khan Academy
https://www.khanacademy.org/math/cc-fourth-grade-math/cc-4th-place-value-rounding	Khan Academy
https://www.illustrativemathematics.org/4	Real World Math Word Problems By Standard

Suggested Options for Differentiation

Basic Skills/Economically Disadvantaged/Students at Risk
- Multiplication table
- 2-digit by one factors
- Go Math! Real World Videos
- Go Math! Stem Activities
- Provide place value chart
- Anchor charts, visuals
- Manipulatives

English Language Learners
- Multiplication table
- 2-digit by one factors
- GoMath! Spanish edition
- Math on the Spot Tutorial
- Bilingual Math Boards
- ELL Activity Guide
- Anchor charts, visuals

- Manipulatives

Gifted and Talented
- Go Math! Real World Videos
- Go Math! Stem Activities
- Provide Enrich packet
- Anchor charts, visuals
- Multi-step problems
- Student-driven activities/choices

Special Education

- Follow all IEP modifications
- One on one instruction
- Adaptive devices
- Provide differentiated instruction as needed
- Provide manipulatives or the opportunity to draw solution strategies

504
- Follow all 504 Plan modifications
- Seat the student away from distractions and in close proximity to the teacher
- Use simple, concise instructions with concrete steps
- Use a timer to assist student to focus on given task or number of problems in time allotted. Stress that problems need to be correctly done
- Pre-teach and/or re-teach important concepts
- Vary kind of instructional materials used
- Simplify and repeat instructions about in-class and homework assignments
- Vary instructional pace

Unit 3: Number and Operations-Fractions	Duration: 35

Career Readiness, Life Literacies, and Key Skills Practices	
Act as a responsible and contributing community members and employee.	Students understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.
Consider the environmental, social and economic impacts of decisions.	Students understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organization, and the environment. They are aware of and utilize new technologies, understandings, procedures, materials, and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization.
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 problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They 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 their own actions or the actions of others.
Model integrity, ethical leadership and effective management.	Students consistently act in ways that align personal and community-held ideals and principles while employing strategies to positively influence others in the workplace. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the directions and actions of a team or organization, and they apply insights into human behavior to change others' action, attitudes and/or beliefs. They recognize the near-term and long-term effects that management's actions and attitudes can have on productivity, morals and organizational culture.
Plan education and career paths aligned to personal goals.	Students take personal ownership of their own education and career goals, and they regularly act on a plan to attain these goals. They understand their own career interests, preferences, goals, and requirements. They have perspective regarding the pathways available to them and the time, effort, experience and other requirements to pursue each, including a path of entrepreneurship. They recognize the value of each step in the education and experiential process, and they recognize that nearly all career paths require ongoing education and experience. They seek counselors, mentors, and other experts to assist in the planning and execution of career and personal goals.

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.

| *Career Readiness, Life Literacies, and Key Skills* |
Addressed In This Unit

9.1.2.CR.1: Recognize ways to volunteer in the classroom, school and community. 9.1.2. FI.1: Differentiate the various forms of money and how they are used (e.g., coins, bills, checks, debit and credit cards). 9.1.2.FP.2: Differentiate between financial wants and needs. 9.1.2.FP.2: Differentiate between financial wants and needs. 9.1.2.PB.2: Explain why an individual would choose to save money. 9.1.2.RM.1: Describe how valuable items might be damaged or lost and ways to protect them. 9.1.5.CR.1: Compare various ways to give back and relate them to your strengths, interests, and other personal factors.

9.1.5.PB.1: Develop a personal budget and explain how it reflects spending, saving, and charitable contributions.

9.1.5.PB.2: Describe choices consumers have with money (e.g., save, spend, donate).

9.2.5.CAP.1: Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.

9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions (e.g., W.4.6, 3.MD.B.3,7.1.NM.IPERS.6)

9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process

9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology (e.g., 8.1.5.NI.2).9.4.5.IML.1: Evaluate digital sources for accuracy, perspective, credibility and relevance (e.g., Social Studies Practice - Gathering and Evaluating Sources).

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue (e.g., 4.MD.B.4, 8.1.5.DA.3). • 9.4.5.IML.3: Represent the same data in multiple visual formats in order to tell a story about the data.

Computer Science and Design Thinking
Computing Systems
By the end of grade 5
Computing devices may be connected to other devices to form a system as a way to extend their capabilities.
Software and hardware work together as a system to accomplish tasks (e.g., sending, receiving, processing, and storing units of information)
Shared features allow for common troubleshooting strategies that can be effective for many systems.

Networks and the Internet
Information needs a physical or wireless path to travel to be sent and received.
Distinguishing between public and private information is important for safe and secure online interactions.
Information can be protected using various security measures (i.e., physical and digital)
Impacts of Computing
The development and modification of computing technology is driven by people's needs and wants and can affect individuals differently.
Data & Analysis
Data can be organized, displayed, and presented to highlight relationships
The type of data being stored affects the storage requirements.
Individuals can select, organize, and transform data into different visual representations and communicate insights gained from the data.
Many factors influence the accuracy of inferences and predictions.
Algorithms & Programming
Different algorithms can achieve the same result.
Some algorithms are more appropriate for a specific use than others.
Programming languages provide variables, which are used to store and modify data.
A variety of control structures are used to change the flow of program execution (e.g., sequences, events, loops, conditionals)

Programs can be broken down into smaller parts to facilitate their design, implementation, and review. Programs can also be created by incorporating smaller portions of programs that already exist.
Individuals develop programs using an iterative process involving design, implementation, testing, and review.
Engineering Design
Engineering design is a systematic and creative process of communicating and collaborating to meet a design challenge.
Often, several design solutions exist, each better in some way than the others.
Engineering design requirements include desired features and limitations that need to be considered.
Interaction of Technology and Humans
Societal needs and wants determine which new tools are developed to address real-world problems.
A new tool may have favorable or unfavorable results as well as both positive and negative effects on society.
Technology spurs new businesses and careers.
Nature of Technology
Technology innovation and improvement may be influenced by a variety of factors.
Engineers create and modify technologies to meet people's needs and wants; scientists ask questions about the natural world.
Effects of Technology on the Natural World
The technology developed for the human designed world can have unintended consequences for the environment.
Technology must be continually developed and made more efficient to reduce the need for nonrenewable resources.
Ethics & Culture

Technological choices and opportunities vary due to factors such as differences in economic resources, location, and cultural values.

Correlation Key		
Holocaust	Amistad	Financial Literacy

Unit 3: Number and Operations in Base Ten	Duration: 35 Days

NJ Student Learning Standard: 4.NBT

Unit Summary
● Generalize place value understanding for multi-digit whole numbers.

● Use place value understanding and properties of operations to perform multi-digit arithmetic.

Unit Summary: Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

Unit 3: Number and Operations-Fractions	Duration: 35 Days

NJ Student Learning Standard: 4.NF

Unit Summary
● Extend understanding of fraction equivalence and ordering

● Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

● Understand decimal notation for fractions, and compare decimal fractions.

Unit Summary: Students will use their understanding of fractions to recognize the equivalence of a given fraction. They will write fractions in sequential order. Students will demonstrate addition and subtraction of fractional parts using manipulatives and common denominators. They will multiply a fractional part by a whole number. Students make connections between fractions and decimals and also comparing of both fractions and decimals.

Primary Interdisciplinary Connections	
Science	measurement (distance, weight,and growth), data analysis and collection
Social Studies	economics & money, weather patterns, geography & map skills, and graphing
Language Arts	math journal, word problem comprehension, math stories, open-ended math questions, multi-step problems, math literature (see list under Teacher Resources)

A.	Extend understanding of fraction equivalence and ordering.
4.NF.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.
4.NF.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.
B.	**Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.**
4.NF.3	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.
4.NF.4	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?
C.	**Understand decimal notation for fractions, and compare decimal fractions**
4.NF.5	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.

4.NF.6	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.
4.NF.7	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.
	Interdisciplinary Skills
SL.4.1.A	Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
SL.4.1.B	Follow agreed-upon rules for discussions and carry out assigned roles.
	Computer Science and Design Thinking
8.1.5.CS.1	Model how computing devices connect to other components to form a system.
8.1.5.CS.3	Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.
8.1.5.NI.2:	Describe physical and digital security measures for protecting sensitive personal information.
8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
8.1.5.AP.4	Break down problems into smaller, manageable sub-problems to facilitate program development.
8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

Essential Understandings *Students will understand that ...*	Essential Questions
● Fractions and decimals express a relationship between two numbers ● Fractions and decimals are parts of whole numbers ● An improper fraction represents a number greater than one ● A given mixed number is equivalent to its improper fractions.	● How to make a visual representation of a fraction or decimal? ● How are common fractions and decimals alike and different? ● How is computation with rational numbers similar and different to whole number computation? ● How can an improper fraction be expressed as a mixed number?
Evidence of Student Learning	

Performance Tasks: *Activities to provide evidence for student learning of content and cognitive skills.*	Other Assessments
Bake Sale *Student Directions:* You are planning and baking for a bake sale at your school to raise money for your favorite charity. You are using your favorite recipe, but you need to make enough for the bake sale. Write your original recipe, and then determine how many batches you want to make, how many of each ingredient you will need, and how much time it will take. How much will each item at the sale cost? If you sell all of your goods, how much will you have raised for your charity?	**Formative Assessments** ● Performance Assessment ● Teacher Observation ● Exit Slips/Slate Assessments ● Games (technology/manipulative- based) ● Pre-assessments ● Anecdotal Records ● Oral Assessments/Conferencing ● Portfolio/Math Journals ● Daily Classwork **Summative Assessments** ● Tests ● Quizzes ● District Assessments **Benchmark Assessment** ● GoMath Benchmark Assessment **Alternative Assessments** ● Untimed Fact Practice Assessment ● Manipulative Driven Assessment ● Modified/Teacher Created Chapter Tests

	● Modified/Teacher Created Mid-Chapter Quiz ● Visual Representation of Skills Assess ● Modified Classwork Assignments ● Modified Benchmarks ● GoMath Reteach Activities and Worksheets ● Project Based Assessments with Scoring Rubric

Mathematical Practice
MP.1 Make sense of problems and persevere in solving them MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.6 Attend to precision. MP.8 Look for and express regularity in repeated reasoning.

Vocabulary
numerator, denominator, benchmark fractions, whole, equivalent fractions, mixed number, proper fraction, improper fraction, tenth, hundredth

Knowledge and Skills	
Content	**Skills**
Cluster: 　● Extend understanding of fraction equivalence and ordering (Chapter 6)	*Students will be able to …* 　● Make a visual representation of a fraction or decimal 　● Make computations with fractions

● Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers (Chapter 7, 8) ● Understand decimal notation for fractions, and compare decimal fractions (Chapter 9) *Students will know..,.* ● Compare two decimals up to hundredths using the >, <, and = symbols ● Identify the direct relationship between fractions and decimals ● Location of decimals on a number line in relation to a fraction	● Understand fractions as division of two whole numbers ● Read and write symbolic notation for fractions ● Identify fractions as part of a whole, part of a set, part of an area, and locations on the number line ● Recognize and name equivalent fractions ● Order fractions (improper and mixed numbers) ● Multiply a unit of fraction (numerator of 1) by a whole number ● Multiply a fraction with a numerator greater than one by a whole number ● Solve word problems that involve multiplying a fraction by a whole number ● Rewrite a fraction that has a denominator of 10 as an equivalent fraction with a denominator of 100 ● Rewrite a fraction that has a denominator of 100 as an equivalent fraction with a denominator of 10. Add two fractions with denominators of 10 or 100 ● Create a model that depicts a fraction's value ● Determine if given fractions are equivalent ● Use multiple strategies to identify equivalent fractions ● Use symbols (>, <, =) to compare fractions with the same denominator and different numerators ● Use benchmark fractions to compare fractions ● Use fraction models to add and subtract fractions with like denominators ● Use fraction models, number lines, and equations to represent word problems ● Write a decomposed fraction using an equation

Instructional Plan	
Suggested Activities	**Resources**
Fraction War Students will draw 2 cards. With these 2 cards, students will make a fraction. Higher fraction takes cards.	Playing cards
Dice roll create largest decimal- Students will roll dice 5 times and create the largest number using a decimal.	Dice
Playdough Fraction Pies- Students create fraction pies by cutting the playdough into equal pieces.	Playdough
Students will use this website: Fractions in Real Life Cooking Webquest, to learn how to convert fractions in real life cooking situations.	Chromebooks http://zunal.com/webquest.php?w=18355
Math Literature	

Fractions:
- *A Melody in Fraction*
- *Sleeping Half the Day Away*
- *The Hershey's Milk Chocolate Fractions Book* by: Jerry Pallotta
- *A Remainder of One* by: Elinor Pinczes
- *Each Orange Had 8 Slices* by: Paul Giganti
- *Little House in the Big Woods* by: Laura Ingalls Wilder
- *Piece = Part = Portion: Fraction = Decimals = Percents* by: Scott Gifford
- *If You Hopped Like a Frog* by: David M. Schwartz
- *Fraction = Trouble* by: Claudia Mills

Websites

https://www-k6.thinkcentral.com/ePC/start.do	Mega Math Games, iTools, Personal Math Trainer, Animated Math Models
https://www.flocabulary.com/topics/numbers-operations/	Flocabulary
http://www.aaamath.com/fra.htm	AAA Math

https://www.ixl.com/math/grade-4	IXL Math - Fraction Equivalence and Ordering
	        Add & Subtract Fractions with Like Denominators
	        Add & Subtract Fractions with Unlike Denominators
	        Multiply Fractions

https://www.turtlediary.com/games/fourth-grade/fractions.html	TurtleDiary
http://www.sheppardsoftware.com/math.htm#fractions	Sheppard Software
https://www.brainpop.com/math/	Brain Pop
https://www.prodigygame.com	Prodigy
https://www.khanacademy.org/math/cc-fourth-grade-math/cc-4th-fractions-topic	Khan Academy
https://www.illustrativemathematics.org/4	Real World Math Word Problems By Standard
Suggested Options for Differentiation	

Basic Skills/Economically Disadvantaged/Students at Risk
- Multiplication table
- 2-digit by one factors

- Go Math! Real World Videos
- Go Math! Stem Activities
- Provide fraction strips
- Manipulatives
- Anchor charts, visuals

English Language Learners
- Multiplication table
- 2-digit by one factors
- Go Math! Real World Videos
- Go Math! Stem Activities
- Provide fraction strips
- Manipulatives
- Anchor charts, visuals

Gifted and Talented
- Go Math! Real World Videos
- Go Math! Stem Activities
- Provide Enrich packet
- Anchor charts, visuals
- Multi-step problems
- Student-driven activities/choices

Special Education

- Follow all IEP modifications
- One on one instruction
- Adaptive devices
- Provide differentiated instruction as needed
- Provide manipulatives or the opportunity to draw solution strategies
- Anchor charts, visuals

504

- Follow all 504 Plan modifications
- Seat the student away from distractions and in close proximity to the teacher
- Use simple, concise instructions with concrete steps
- Use a timer to assist student to focus on given task or number of problems in time allotted. Stress that problems need to be correctly done
- Pre-teach and/or re-teach important concepts
- Vary kind of instructional materials used
- Simplify and repeat instructions about in-class and homework assignments
- Vary instructional pace

Unit 4: Measurement and Data	Duration: 35

	Career Readiness, Life Literacies, and Key Skills Practices
Act as a responsible and contributing community members and employee.	Students understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.

Consider the environmental, social and economic impacts of decisions.	Students understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organization, and the environment. They are aware of and utilize new technologies, understandings, procedures, materials, and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization.
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 problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They 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 their own actions or the actions of others.
Model integrity, ethical leadership and effective management.	Students consistently act in ways that align personal and community-held ideals and principles while employing strategies to positively influence others in the workplace. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the directions and actions of a team or organization, and they apply insights into human behavior to change others' action, attitudes and/or beliefs. They recognize the

	near-term and long-term effects that management's actions and attitudes can have on productivity, morals and organizational culture.
Plan education and career paths aligned to personal goals.	Students take personal ownership of their own education and career goals, and they regularly act on a plan to attain these goals. They understand their own career interests, preferences, goals, and requirements. They have perspective regarding the pathways available to them and the time, effort, experience and other requirements to pursue each, including a path of entrepreneurship. They recognize the value of each step in the education and experiential process, and they recognize that nearly all career paths require ongoing education and experience. They seek counselors, mentors, and other experts to assist in the planning and execution of career and personal goals.
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.

Career Readiness, Life Literacies, and Key Skills
Addressed In This Unit
9.1.2.CR.1: Recognize ways to volunteer in the classroom, school and community.
9.1.2. FI.1: Differentiate the various forms of money and how they are used (e.g., coins, bills, checks, debit and credit cards).
9.1.2.FP.2: Differentiate between financial wants and needs.
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9.1.2.PB.2: Explain why an individual would choose to save money.
9.1.2.RM.1: Describe how valuable items might be damaged or lost and ways to protect them.
9.1.5.CR.1: Compare various ways to give back and relate them to your strengths, interests, and other personal factors.
9.1.5.PB.1: Develop a personal budget and explain how it reflects spending, saving, and charitable contributions.
9.1.5.PB.2: Describe choices consumers have with money (e.g., save, spend, donate).
9.2.5.CAP.1: Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.
9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions (e.g., W.4.6, 3.MD.B.3,7.1.NM.IPERS.6)
9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process
9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology (e.g., 8.1.5.NI.2).9.4.5.IML.1: Evaluate digital sources for accuracy, perspective, credibility and relevance (e.g., Social Studies Practice - Gathering and Evaluating Sources).

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue (e.g., 4.MD.B.4, 8.1.5.DA.3). • 9.4.5.IML.3: Represent the same data in multiple visual formats in order to tell a story about the data.

Computer Science and Design Thinking
Computing Systems
By the end of grade 5
Computing devices may be connected to other devices to form a system as a way to extend their capabilities.
Software and hardware work together as a system to accomplish tasks (e.g., sending, receiving, processing, and storing units of information)
Shared features allow for common troubleshooting strategies that can be effective for many systems.
Networks and the Internet
Information needs a physical or wireless path to travel to be sent and received.
Distinguishing between public and private information is important for safe and secure online interactions.
Information can be protected using various security measures (i.e., physical and digital)
Impacts of Computing
The development and modification of computing technology is driven by people's needs and wants and can affect individuals differently.
Data & Analysis

Data can be organized, displayed, and presented to highlight relationships
The type of data being stored affects the storage requirements.
Individuals can select, organize, and transform data into different visual representations and communicate insights gained from the data.
Many factors influence the accuracy of inferences and predictions.
Algorithms & Programming
Different algorithms can achieve the same result.
Some algorithms are more appropriate for a specific use than others.
Programming languages provide variables, which are used to store and modify data.
A variety of control structures are used to change the flow of program execution (e.g., sequences, events, loops, conditionals)
Programs can be broken down into smaller parts to facilitate their design, implementation, and review. Programs can also be created by incorporating smaller portions of programs that already exist.
Individuals develop programs using an iterative process involving design, implementation, testing, and review.
Engineering Design
Engineering design is a systematic and creative process of communicating and collaborating to meet a design challenge.
Often, several design solutions exist, each better in some way than the others.
Engineering design requirements include desired features and limitations that need to be considered.
Interaction of Technology and Humans

Societal needs and wants determine which new tools are developed to address real-world problems.
A new tool may have favorable or unfavorable results as well as both positive and negative effects on society.
Technology spurs new businesses and careers.
Nature of Technology
Technology innovation and improvement may be influenced by a variety of factors.
Engineers create and modify technologies to meet people's needs and wants; scientists ask questions about the natural world.
Effects of Technology on the Natural World
The technology developed for the human designed world can have unintended consequences for the environment.
Technology must be continually developed and made more efficient to reduce the need for nonrenewable resources.
Ethics & Culture
Technological choices and opportunities vary due to factors such as differences in economic resources, location, and cultural values.

Correlation Key		
Holocaust	Amistad	Financial Literacy

Unit 4: Measurement and Data	**Duration: 35 Days**
NJ Student Learning Standard: 4.MD	

Unit Summary	

Unit Summary
- Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
- Represent and interpret data.
- Geometric measurement: understand concepts of angles and measure angles.

Unit Summary:

Students will solve, interpret, and analyze problems involving measurements. The use of a protractor for measurement of degrees is introduced in the grade level and area and perimeter is reviewed. Student will also analyze for plotting.

Primary Interdisciplinary Connections	
Science	measurement (distance, weight, and growth), data analysis and collection, experiments relating to Waves, Earth's Place in the Universe and Earth's Systems.
Social Studies	economics & money, weather patterns, geography & map skills, and graphing
Language Arts	math journal, word problem comprehension, math stories, open-ended math questions, multi-step problems, math literature (see list under Teacher Resources)
Technology	Standard 8.1- Educational Technology: use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge. interactive whiteboard lessons, independent centers, classroom websites, online resources and apps (see list under Teacher Resources)

A.	**Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.**

4.MD.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), ...
4.MD.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.
4.MD.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
B.	**Represent and interpret data.**
4.MD.4	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.
C.	**Geometric measurement: understand concepts of angle and measure angles.**
4.MD.5	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.
4.MD.6	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
4.MD.7	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.

	NJ Student Learning Standards for Introduction
5.MD.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a "unit cube" is said to have "one cubic unit" of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said is said to have a volume of n cubic units.
5.MD.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
5.MD.5	Relate volume to the operations of multiplication and addition and solve real world mathematical problems involving volume.
	Interdisciplinary Skills
SL.4.1.A	Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
SL.4.1.B	Follow agreed-upon rules for discussions and carry out assigned roles.
	Computer Science and Design Thinking
8.1.5.CS.1	Model how computing devices connect to other components to form a system.
8.1.5.CS.3	Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.
8.1.5.NI.2:	Describe physical and digital security measures for protecting sensitive personal information.
8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
8.1.5.AP.4	Break down problems into smaller, manageable sub-problems to facilitate program development.
8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

Essential Understandings *Students will understand that ...*	Essential Questions
● Objects have distinct attributes that can be measured ● Standard units provide common language for communication measurements	● What types of problems are solved with measurement? ● What are the tools of measurement and how are they used? ● How do units within a system relate to each other?

● The choice of measurement tools depends on the measurable attribute and the degree of precision desired ● Graphs convey data in a concise way	● When is an estimate more appropriate than an actual measurement? ● How can information be gathered, recorded and organized? ● What visual aspects of a data display help people understand and interpret information easily?

<table>
<tr><td colspan="2" align="center">Evidence of Student Learning</td></tr>
<tr><td>Performance Tasks: <i>Activities to provide evidence for student learning of content and cognitive skills.</i></td><td align="center">Other Assessments</td></tr>
<tr><td><p align="center"><u>Dream House</u></p><u><i>Student Directions:</i></u> Create your dream house using graph paper. Write the perimeter and area of each room.</td><td>Formative Assessments
● Performance Assessment
● Teacher Observation
● Exit Slips/Slate Assessments
● Games (technology/manipulative-based)
● Pre-assessments
● Anecdotal Records
● Oral Assessments/Conferencing
● Portfolio/Math Journals
● Daily Classwork

Summative Assessments
● Tests
● Quizzes
● District Assessments</td></tr>
</table>

	Benchmark Assessment ● GoMath Benchmark Assessment **Alternative Assessments** ● Untimed Fact Practice Assessment ● Manipulative Driven Assessment ● Modified/Teacher Created Chapter Tests ● Modified/Teacher Created Mid-Chapter Quiz ● Visual Representation of Skills Assess ● Modified Classwork Assignments ● Modified Benchmarks ● GoMath Reteach Activities and Worksheets ● Project Based Assessments with Scoring Rubric

Mathematical Practice

MP.2 Reason abstractly and quantitatively. MP.5 Attend to precision MP.6 Attend to precision. MP.7 Look for and make use of structure.

Vocabulary

kilometer, meter, centimeter, kilogram, gram, pound, ounce, milliliter, liter, hour, minute, second, feet, inches, area, perimeter, line plot, bar graph, line graph, protractor, pictograph, polygon, quadrilateral, trapezoid, rhombus, parallelogram, rectangle, square, rectangular prism, cube, sphere, cone, cylinder, rectangular pyramid

Knowledge and Skills	
Content	**Skills**

Cluster:	Students will be able to …
● Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit (Chapter 12, 13) ● Represent and interpret data (Chapter 12) ● Geometric measurement: understand concepts of angles and measure angles (Chapter 10, 11) *Students will know:* Use and read a variety of measurement tools, such as thermometers, rulers, tape measures, and scales	● Measure angles using a protractor ● Create and analyze tables and graphs to record data ● Calculate elapsed time in word problems ● Describe temperature with thermometers ● Determine length/height with rulers and measuring tapes ● Measure weight with variety of scales ● Find area of rectangles using formula ● Calculate perimeter of polygons ● Record with customary and metric units ● Communicate measurements ● Understand the relationships between and among units ● Carry out conversions with units of time and money ● Carry out conversions of customary and metric units of length, weight and volume ● Convert measurements within a system using a chart ● Estimate, measure, compare and order varying units of measurement ● Choose appropriate units of measure and justify choice ● Choose appropriate tools to measure length, weight and capacity ● Measure to collect data to make a fraction line plot ● Apply the formulas for area and perimeter in real world and mathematical problems ● Solve problems involving various measurement situations

Instructional Plan	
Suggested Activities	**Resources**
Students will be given a sheet of paper with different measurements on it. They will have to search the classroom for specific items that match the measurement.	Rulers, tape measure, yardstick
Measuring our World: Students will bring in all different sizes of cardboard boxes (cereal, crackers, oatmeal, etc.). Students will measure the length, width, and height. Then, they can find the area of each side of the box or the volume.	Boxes, rulers
Students will use protractors to construct angles. Students should indicate whether the angles is acute, obtuse, or right, after measuring with the protractor.	Protractors, paper
Students will measure angles on a clock using protractors in a group.	Face clock, protractors
Angle Park - Students will create a playground park using a specific number of right, acute, and obtuse angles. They also need to label these angles.	Paper, ruler, protractor, coloring utensils
Math Literature	

Measurement
    ● The Librarian Who Measured the Earth by Kathryn Lasby
    ● How Big is a Foot? by Rolf Myller (length)
    ● Measuring Penny by Loreen Leedy
    ● *The Light Princess* by: George MacDonald (weight/mass)
    ● *Actual Size* by: Steve Jenkins (length)
    ● *Purple Climbing Days* by: Patricia Giff (liquid volume)	

● *Spaghetti and Meatballs* by: Marilyn Burns (perimeter and area)	
Websites	
https://www-k6.thinkcentral.com/ePC/start.do	Mega Math Games, iTools, Personal Math Trainer, Animated Math Models
https://learnzillion.com/resources/57241-4th-grade-measurement-and-data	Learn Zillion
https://www.turtlediary.com/games/fourth-grade/units-of-measurement.html	TurtleDiary
http://www.studyisland.com/	Study Island
http://www.aaamath.com/mea.htm	AAA Math
https://www.brainpop.com/math/	Brain Pop
https://www.ixl.com/math/grade-4	IXL Math - Data & Graphs 　　　　Units of Measurement 　　　　Angles
https://www.prodigygame.com	Prodigy
https://www.khanacademy.org/math/cc-fourth-grade-math/cc-4th-measurement-topic	Khan Academy
https://www.flocabulary.com/topics/geometry-measurement/	Flocabulary
https://www.illustrativemathematics.org/4	Real World Math Word Problems By Standard
https://www.youtube.com/watch?v=IMeY3iRSA_Y	Explore patterns and shapes through African American quilts .

Suggested Options for Differentiation
Basic Skills/Economically Disadvantaged/Students at Risk ● Multiplication table ● 2-digit by one factors ● Go Math! Real World Videos ● Go Math! Stem Activities ● Provide a ruler ● Provide a paper with angle chart ● Provide peer support ● Manipulatives ● Anchor charts, visuals
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- Follow all IEP modifications/504 plan
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Unit 5: Geometry	Duration: 35

Career Readiness, Life Literacies, and Key Skills Practices	
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Career Readiness, Life Literacies, and Key Skills

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Correlation Key		
Holocaust	Amistad	Financial Literacy

Unit 5: Geometry	Duration: 35 Days
NJ Student Learning Standard: 4.G	
Unit Summary ● Draw and identify lines and angles, and classify shapes by properties of their lines	

Unit Summary:
Students will use their knowledge of geometric shapes to develop understanding of lines and angles. They will classify two-dimensional shapes according to their properties.

Primary Interdisciplinary Connections	
Science	measurement (distance, weight, and growth), data analysis and collection, experiments relating to Molecules to Organisms.
Social Studies	economics & money, weather patterns, geography & map skills, and graphing
Language Arts	math journal, word problem comprehension, math stories, open-ended math questions, multi-step problems, math literature (see list under Teacher Resources)

A.	Draw and identify lines and angles, and classify shapes by properties of their lines and angles
4.G.1	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
4.G.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.
4.G.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.
	Interdisciplinary Skills
SL.3.1.A	Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.
SL.3.1.B	Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).

	Computer Science and Design Thinking	
8.1.5.CS.1	Model how computing devices connect to other components to form a system.	
8.1.5.CS.3	Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.	
8.1.5.NI.2:	Describe physical and digital security measures for protecting sensitive personal information.	
8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.	
8.1.5.AP.4	Break down problems into smaller, manageable sub-problems to facilitate program development.	
8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.	

Essential Understandings *Students will understand that ...*	**Essential Questions**
- Geometry and spatial sense offer ways to interpret and reflect on our physical environment - Analyzing geometric relationships develops reasoning and justification skills	- How can understanding geometric vocabulary assist with drawing points, lines, line segments, rays, and angles? - How do geometric relationships help us solve problems? - Why is it helpful to classify things like angles or shapes? - How are geometric shapes and objects classified?

Evidence of Student Learning	

Performance Tasks: *Activities to provide evidence for student learning of content and cognitive skills.*	**Other Assessments**
Quilting Bee *Student Directions:* After viewing and hearing about the art of quilting and how quilts can tell about history. View the short videos about African American quilts https://www.youtube.com/watch?v=IMeY3iRSA_Y	**Formative Assessments** - Performance Assessments - Teacher Observation

Make your own pattern for a quilt. Include a pair of parallel line segments, a pair of perpendicular line segments, two kinds of quadrilaterals, and an obtuse triangle. Include any other shapes you choose. Does your quilt tell about important events in your life? Explain your pattern in words. **<u>Landscape Architects</u>** _Student Directions:_ Decide on the features for your city garden. Imagine yourself sitting in the garden. What things would you like to be able to see? Write the number of square units that you think you will use for each feature. Use the grid to make a map of your garden. Put the measurement of each item in the garden. Label each feature on the grid.	● Exit Slips/Slate Assessments ● Games (technology/manipulative-based) ● Pre-assessments ● Anecdotal Records ● Oral Assessments/Conferencing ● Portfolio/Math Journals ● Daily Classwork **Summative Assessments** ● Tests ● Quizzes ● District Assessments ● EOY Benchmark **Benchmark Assessment** ● GoMath Benchmark Assessment ● Linkit! Benchmark **Alternative Assessments** ● Untimed Fact Practice Assessment ● Manipulative Driven Assessment ● Modified/Teacher Created Chapter Tests ● Modified/Teacher Created Mid-Chapter Quiz ● Visual Representation of Skills Assess ● Modified Classwork Assignments ● Modified Benchmarks

	● GoMath Reteach Activities and Worksheets ● Project Based Assessments with Scoring Rubric

Mathematical Practice

MP.5 Use appropriate tools strategically.
MP.6 Attend to precision.
MP.7 Look for and make use of structure

Vocabulary

protractor, point, line, line segment, ray, angle, acute angle, obtuse angle, right angle, straight angle, complementary angles, supplementary angles, perpendicular, parallel, symmetry, endpoint, rotation, scalene triangle, isosceles triangle, equilateral triangle, right triangle, polygon, quadrilateral, trapezoid, rhombus, parallelogram, rectangle, square, rectangular prism, cube, sphere, cone, cylinder, rectangular pyramid

Knowledge and Skills

Content:	**Skills:**
Cluster: ● Draw and identify lines and angles, and classify shapes by properties of their lines and angles (Chapter 10) *Students will know…* ● How to draw and classify points, lines, line segments, rays, and angles with the appropriate tools ● The difference between parallel and perpendicular lines. ● How to identify symmetry in a two-dimensional shape.	*Students will be able to …* ● Explain the difference between parallel and perpendicular lines ● Identify symmetry in a two-dimensional shape ● Draw and classify points, lines, line segments, rays, and angles with appropriate tools ● Identify that two lines are perpendicular when they intersect in right angles ● Identify and describe symmetry in two-dimensional geometric shapes ● Identify two dimensional geometric shapes based on their properties

	- Identify, classify, describe, and create 2D figures (square, triangle, and quadrilaterals, hexagon, octagon) according to the measure of their sides and angles - Recognize a line of symmetry for a 2D figure - Identify and classify triangles by their sides and angles (right, obtuse, acute, scalene, equilateral, isosceles) - Investigate 2D and 3D geometric shapes from different perspectives and their attributes (e.g, bases, faces) - Identify line segments, rays, and lines as perpendicular, intersecting, and parallel - Identify, classify, and draw acute, right, and obtuse angles and relate them to the real- world examples

Instructional Plan	
Suggested Activities	**Resources**
Students will use pattern blocks to demonstrate lines of symmetry by tracing patterns on a sheet of paper and drawing lines to indicate lines of symmetry.	Pattern blocks, paper
Students will demonstrate their understanding of angles by identifying types of angles in their classroom and replicating them with toothpick or popsicle sticks. Students will glue the	Popsicle sticks or toothpicks, construction paper, glue

replicated angle on construction paper and label which type of angle it is and where in the classroom they found it.	
Students will take turns being ¨Simon¨ in the game Simon says. Students will be listening carefully to directions and creating specific angles with specific body parts.	Prior knowledge of angles
Students will use paper and create polygons of their choice. Challenge students to see how many lines of symmetry they can create.	Paper, markers
Students will use a geoboard to demonstrate their understanding of lines and polygons. Students will be asked to create specific shapes, lines, and patterns.	http://www.lauracandler.com/filecabinet/math/PDF/geoideas.pdf Geoboards, rubber bands
Angle Name Writing: Have students write their name in print using capital letters on graph paper. Students will measure the angles between the lines for each of the letters in their name. http://www.rundesroom.com/2016/06/5-activities-for-teaching-angles.html?utm_source=bloglovin.com&utm_medium=feed&utm_campaign=Feed:+blogspot/torar+(Runde's+Room) (example)	Graph paper, pencils, protractors
Angle Scavenger Hunt: Students can hunt around the classroom or school and measure the angles they see. Students could also hunt and measure angles to find a specific measure of your choice.	Protractors, note recording sheet
Have students use a ruler as their line of symmetry. Then, students can use pattern blocks to create a symmetric shape with the ruler as their line of symmetry in the middle.	Ruler, pattern blocks
<mark>Voices into Action : Human rights/ Holocaust memorial project using geometric shapes and patterns to create an exhibit.</mark>	https://static1.squarespace.com/static/55195819e4b07ea6d2890691/t/552c1c27e4b0d3f1848504ad/1428954173928/Voices+into+Action+-+Unit+5.pdf
Math Literature	

Shapes
- *The Greedy Triangle* by: Marilyn Burns
- *Three Pigs, One Wolf, and Seven Magic Shapes* by: Grace Maccarone
- *Shape Up!* By: David A. Adler
- *Ed Emberley's Picture Pie: A Circle Drawing Book* by: Ed Emberley
- *Shadows and Reflections* by: Tana Hoban
- *Castle* by: David Macaulay
- *Sir Cumference and the Great Knight of Angleland* by: Cindy Neuschwander
- *Mummy Math: An Adventure in Geometry* by: Cindy Neuschwander

Lines
- *The Dot and the Line* by: Norton Juster
- *Spaghetti and Meatballs* by: Marilyn Burns
- *Grandfather Tang's Story* by: Ann Tampert
- *The Straight Line Wonder* by: Mem Rox
- *There's No Place Like Space* by: Tish Rabe
- *Straight Lines, Parallel Lines, Perpendicular Lines* by: Mannis Charosh

Websites	
https://www-k6.thinkcentral.com/ePC/start.do	Mega Math Games, iTools, Personal Math Trainer, Animated Math Models
https://www.khanacademy.org/math/cc-fourth-grade-math/cc-4th-geometry-topic	Khan Academy
http://www.sheppardsoftware.com/mathgames/menus/geometry.htm	Sheppard Software
https://www.turtlediary.com/games/fourth-grade/geometry.html	TurtleDiary - Geometry Games

https://www.flocabulary.com/topics/geometry-measurement/	Flocabulary
https://www.ixl.com/math/grade-4	IXL Math - Two-dimensional & Three-dimensional Figures Triangles and Quadrilaterals Symmetry & Angles
http://www.studyisland.com/login	Study Island
http://www.aaamath.com/geo.htm	AAA Math
https://www.brainpop.com/math/	Brain Pop
https://www.varsitytutors.com/aplusmath/geometry	APlus Math
https://www.prodigygame.com	Prodigy
https://www.illustrativemathematics.org/4	Real World Math Word Problems By Standard
Suggested Options for Differentiation	

Basic Skills/Economically Disadvantaged/Students at Risk
- Multiplication table
- 2-digit by one factors
- Go Math! Real World Videos
- Go Math! Stem Activities
- Provide students with examples of angles
- Provide students with rulers to help write the letters in their name
- Provide the student will a list of angles they can use
- Limit the number of patterns blocks students use for beginning learners
- Manipulatives
- Anchor charts, visuals

English Language Learners

- Multiplication table
- 2-digit by one factors
- Go Math! Real World Videos
- Go Math! Stem Activities
- Provide students with examples of angles
- Provide students with pictures and examples of each angle to help them create each angle if needed
- Provide the student will a list of angles they can use
- Manipulatives
- Anchor charts, visuals

Gifted and Talented
- Go Math! Real World Videos
- Go Math! Stem Activities
- Provide Enrich packet
- Multi-step problems
- Student-driven activities and choices

Special Education

- Follow all IEP modifications
- Adaptive devices
- Provide differentiated instruction as needed
- One on one instruction
- Provide manipulatives or the opportunity to draw solution strategies

504
- Follow all 504 Plan modifications
- Seat the student away from distractions and in close proximity to the teacher
- Use simple, concise instructions with concrete steps
- Use a timer to assist student to focus on given task or number of problems in time allotted. Stress that problems need to be correctly done
- Pre-teach and/or re-teach important concepts

- Vary kind of instructional materials used
- Simplify and repeat instructions about in-class and homework assignments
- Vary instructional pace