Grade Four

Mathematics - Grade 4: Critical Areas

In Grade 4, instructional time should focus on three critical areas: (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

1. 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. **(OA.1, OA.2, OA.3, NBT.1, NBT .2, NBT.3, NBT.4, NBT.5, NBT. 6)**

2. Students develop understanding of fraction equivalence and operations with fractions. They recognize that two different fractions can be equal (e.g., 15/9 = 5/3), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number. **(NF.1, NF.2, NF3,NF.4,NF.5,NF.6,NF.7)**

3. Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry. **(G.1, G.2, G.3)**

- Major Clusters |
- Supporting |
- Additional Clusters |
- * Benchmarked Standard

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Vocabulary: Building the Language of Mathematics for Students

Fourth Grade

Operations and Algebraic Thinking	Number and Operations in Base Ten	Number and Operations Fractions	Measurement and Data	Geometry
Use the four operations with whole numbers to solve problems. multiplication/multipl y, division/divide, dividend, divisor, addition/add, subtraction/subtract, equations, unknown, remainders, reasonableness, mental computation, estimation, rounding **Gain familiarity with factors and multiples.** multiplication/multipl y, division/divide, factor pairs, factor, multiple, prime, composite **Generate and analyze patterns.** pattern (number or shape), pattern rule	**Generalize place value understanding for multi-digit whole numbers.** place value, greater than, less than, equal to, ‹, ›, =, comparisons/compare, round, inequality, expression **Use place Value understanding and properties of operations to perform multi-digit arithmetic.** add, addend, sum, subtract, difference, equation, strategies, (properties)-rules about how numbers work, rectangular arrays, area model, multiply, divide,	**Extend understanding of fraction equivalence and ordering.** partition(ed), fraction, unit fraction, equivalent, expression, multiple, reason, denominator, numerator, comparison/compare, ‹, ›, =, benchmark fraction **Build fractions from unit fractions by applying and extending previous understanding of operations on whole numbers.** operations, addition/joining, subtraction/separating, fraction, unit fraction, equivalent, multiple, reason, denominator, numerator, decomposing, mixed number, (properties)-rules about how numbers work, multiply, multiple **Understand decimal notation for fractions, and compare decimal fractions.** fraction, numerator, denominator, equivalent, reasoning, decimals, tenths, hundreds,	**Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.** measure, metric, customary, convert/conversion, relative size, liquid volume, mass, length, distance, kilometer (km), meter (m), centimeter (cm), kilogram (kg), gram (g), liter (L), milliliter (mL), inch (in), foot (ft), yard (yd), mile (mi), ounce (oz), pound (lb), cup (c), pint (pt), quart (qt), gallon (gal), time, a.m., p.m., clockwise, counter clockwise, hour, minute, second, equivalent, operations, add, subtract, multiply, divide, fractions, decimals, area, perimeter **Represent and interpret data.** data, line plot, length, fractions, **Geometric measurement: understand concepts of angle and measure angles.** measure, point, end point, geometric shapes, ray, angle, circle, fraction, intersect, one-degree angle, protractor, decomposed, addition, subtraction, unknown, obtuse, acute	**Draw and identify lines and angles, and classify shapes by properties of their lines and angles.** classify shapes/figures, properties (attributes, features)**,** defining characteristics and non-defining characteristic, point, line, line segment, ray, angle, vertex/vertices, right angle, acute, obtuse, perpendicular, parallel, right triangle, isosceles triangle, equilateral triangle, scalene triangle, line of symmetry, symmetric figures, two dimensional, regular and irregular From previous grades: polygon, rhombus/rhombi, rectangle, square, triangle, quadrilateral, pentagon, hexagon, cube, trapezoid, half/quarter circle, circle, cone, cylinder, sphere

	factor, product, quotient, reasonableness	multiplication, comparisons/compare, ‹, ›, =,		

The Common Core State Standards for Mathematical Practice are practices expected to be integrated into every mathematics lesson for all students Grades K- 12. Below are a few examples of how these Practices may be integrated into tasks that Grade 4 students complete.

Practice Explanation and Example

MP1) Make sense of problems and persevere in solving them. Mathematically proficient students in Grade 4 know that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Fourth graders may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, “Does this make sense?” They listen to the strategies of others and will try different approaches. They often will use another method to check their answers.

MP2) Reason abstractly and quantitatively. Mathematically proficient students in Grade 4 recognize that a number represents a specific quantity. They extend this understanding from whole numbers to their work with fractions and decimals. This involves two processes- decontextualizing and contextualizing. Grade 4 students decontextualize by taking a real-world problem and writing and solving equations based on the word problem. For example, consider the task, “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? Students will decontextualize by writing the equation 3 8 × 5 or repeatedly add 3 8 five times. While students are working, they will contextualize their work- knowing that the answer 15 8 or 1 7 8 represents the total number of pounds of roast beef that will be needed. Further, Grade 4 students write simple expressions, record calculations with numbers, and represent or round numbers using place value concepts.

MP3) Construct viable arguments and critique the reasoning of others. Mathematically proficient students in Grade 4 construct arguments using concrete representations, such as objects, pictures, and drawings. They explain their thinking and make connections between models and equations. Students refine their mathematical communication skills as they participate in mathematical discussions involving questions like “How did you get that?” and “Why is that true?” They explain their thinking to others and respond to others’ thinking through discussions and written responses.

MP4) Model with mathematics. Mathematically proficient students in Grade 4 represent problem situations in various ways, including writing an equation to describe the problem. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. Grade 4 students should evaluate their results in the context of the situation and reflect on whether the results make sense.

- Major Clusters |
- Supporting |
- Additional Clusters |
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MP5) Use appropriate tools strategically. Mathematically proficient students in Grade 4 consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, they may use graph paper or a number line to represent and compare decimals and protractors to measure angles. They use other measurement tools to understand the relative size of units within a system and express measurements given in larger units in terms of smaller units.

MP6) Attend to precision. Mathematically proficient students in Grade 4 develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, they use appropriate labels when creating a line plot.

MP7) Look for and make use of structure. Mathematically proficient students in Grade 4 closely examine numbers to discover a pattern or structure. For instance, students use properties of operations to explain calculations (partial products model). They relate representations of counting problems such as tree diagrams and arrays to the multiplication principal of counting. They generate number orshape patterns that follow a given rule.

MP8) Look for and express regularity in repeated reasoning. Mathematically proficient students in Grade 4 notice repetitive actions in computation to make generalizations Students use models to explain calculations and understand how algorithms work. They also use models to examine patterns and generate their own algorithms. For example, students use visual fraction models to write equivalent fractions.

Pacing Guide - Year-at-a-Glance - Timing based upon 4 Marking Periods at 9 weeks each

Pacing Guide	**Standards for Mathematical Content**	**Unit Focus**	**Standards for Mathematical Practice**
Unit 1 - 9 weeks **Place Value & Operations with Whole Numbers**	● 4.OA.B.4 ● 4.OA.C.5 ● 4.MD.A.1 ● 4.OA.A.1 ● 4.OA.A.2 ● 4.NBT.A.1 ● 4.NBT.A.2 ● 4.NBT.A.3	● Gain familiarity with factors and multiples ● Generate and analyze patterns ● Solve problems involving measurement and conversion of measurements ● Use the four operations with whole numbers to solve problems ● Generalize place value understanding for multi-digit whole numbers	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.
Unit 1: Suggested Open Educational Resources	4.OA.B Identifying Multiples 4.OA.B Numbers in a Multiplication Table 4.OA.C.5 Double Plus One 4.MD.A.1 Who is the tallest? 4.OA.A.2 Comparing Money Raised		

	4.NBT.A.1 Thousands and Millions of Fourth Graders 4.NBT.A.2 Ordering 4-digit numbers 4.NBT.A.3 Rounding on the Number Line	MP.4 Model with mathematics.

Unit 2 - 9 Weeks **Multi-digit Arithmetic & Fraction Equivalence**	• 4.NBT.B.4* • 4.NBT.B.5 • 4.NBT.B.6 • 4.OA.A.3* • 4.MD.A.3 • 4.NF.A.1 • 4.NF.A.2 • 4.NF.B.3a-b	• Use place value understanding and properties of operations to perform multi-digit arithmetic • Use the four operations with whole numbers to solve problems • Solve problems involving measurement and conversion of measurements • Extend understanding of fraction equivalence and ordering. • Build fractions from unit fractions	MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.
Unit 2: Suggested Open Educational Resources	4.NBT.B To regroup or not to regroup 4.NBT.B.6 mental Division Strategy 4.OA.A.3, 4.MD.A.3 Karl's Garden 4.NF.A.1 Explaining Fraction Equivalence with Pictures 4.NF.A.1 Fractions and Rectangles 4.NF.A.2 Comparing Fractions Using Benchmarks Game 4.NF.A.2 Doubling Numerators and Denominators 4.NF.B.3a Comparing Sums of Unit Fractions 4.NF.B.3b making 22 Seventeenths in Different Ways		
Unit 3 - 9 weeks **Building Fractions & Decimal Notation**	• 4.NF.B.3c-d • 4.MD.B.4 • 4.NF.B.4a-c • 4.NF.C.5 • 4.NF.C.6 • 4.NF.C.7 • 4.MD.A.2 • 4.NBT.B.4*	• Build fractions from unit fractions • Represent and interpret data • Understand decimal notation for fractions and compare decimal fractions. • Solve problems involving measurement and conversion of measurements • Use place value understanding and properties of operations to add and subtract	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.5 Use appropriate tools strategically.
Unit 3: Suggested Open Educational Resources	4.NF.B.3c Cynthia's Perfect Punch 4.NF.B.3c Peaches 4.MD.B.4 Button Diameters 4.NF.B.4 Extending Multiplication From Whole Numbers to Fractions 4.NF.B.4c Sugar in six cans of soda 4.NF.C.5 Adding Tenths and Hundredths 4.NF.C.6 Dimes and Pennies 4.NF.C.6 Expanded Fractions and Decimals		

	4.NF.C.7 Using Place Value 4.MD.A.2 Margie Buys Apples		MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.
Unit 4 - 9 weeks **Geometry and Measurement**	• 4.G.A.1 • 4.G.A.2 • 4.G.A.3 • 4.MD.C.5 • 4.MD.C.6 • 4.MD.C.7 • 4.OA.A.3* • 4.NBT.B.4*	• Draw and identify lines and angles, and classify shapes by properties of their lines and angles • Understand concepts of angle and measure angles (Geometric measurement) • Use the four operations with whole numbers to solve problems • Use place value understanding and properties of operations to perform multi-digit arithmetic	
Unit 4: Suggested Open Educational Resources	4.G.A.1 The Geometry of Letters 4.G.A.1 What's the Point? 4.G.A.2 Are these right? 4.G.A.2 Defining Attributes of Rectangles and Parallelograms 4.G.A.3 Finding Lines of Symmetry 4.G.A.3 Lines of symmetry for triangles 4.MD.C.6, 4.MD.C.7, 4.G.A.1 Measuring Angles 4.MD.C.7, 4.G.A.2 Finding an unknown angle 4.OA.A.3 Carnival Tickets		

Grade 4: Interdisciplinary Connections

____ Language Arts ____ Science ____ Social Studies ____ World Languages ____ Arts

21st Century Themes

___ Global Awareness ___ Financial, Economic, Business and Entrepreneurial Literacy ___ Civic Literacy ___ Health Literacy ___ Environmental Literacy

21st Century Life and Careers Standards

Career Ready Practices:

☒ 9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a)

☒ 9.4.5.CI.4: Research the development process of a product and identify the role of failure as a part of the creative process (e.g., W.4.7, 8.2.5.ED.6)

☐ 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2)

☒ 9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1)

☒ 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

☒ 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3)

☒ 9.4.5.DC.1: Explain the need for and use of copyrights

☒ 9.4.5.DC.3: Distinguish between digital images that can be reused freely and those that have copyright restrictions.

☐ 9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology (e.g., 8.1.5.NI.2)

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

☒ 9.1.5.EG.3: Explain the impact of the economic system on one's personal financial goals.

☐ 9.1.5. EG.5: Identify sources of consumer protection and assistance..

Unit 1 Grade 4- Place Value and Operations with Whole Numbers		
Content Standards	**Suggested Standards for Mathematical Practice and P21 Skills**	**Critical Knowledge & Skills**
● 4.OA.B.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.	MP.2 Reason abstractly and quantitatively. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning. Critical Thinking and Problem Solving Creativity and Innovation Communication and Collaboration	Concept(s): ● Whole numbers are a multiple of each of its factors. ● Prime numbers do not have factors other than 1 and the number itself. Students are able to: ● find all factor pairs for any whole number (between 1 and 100). ● given a one-digit number, determine whether a given whole number(between 1 and 100) is a multiple of the one-digit number. ● determine whether a given whole number (between 1 and 100) is prime or composite. Learning Goal 1: Find all factor pairs for a whole number up to 100 and determine whether it is a multiple of a given 1-digit whole number and whether it is prime or composite.
● 4.OA.C.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*	MP.8 Look for and express regularity in repeated reasoning. Communication Information Literacy	Concept(s): ● Patterns contain features that are not explicitly stated in the rule defining the numerical pattern. Students are able to: ● produce number patterns from a given rule. ● produce shape patterns from a given rule. ● analyze a sequence of numbers in order to identify features that are not obvious explicitly stated in the rule.

observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.		Learning Goal 2: Generate a number or shape pattern that follows a rule and identify features of the pattern that are not explicit in the rule.
● 4.MD.A.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).*	MP.5 Use appropriate tools strategically. MP.8 Look for and express regularity in repeated reasoning. Critical Thinking and Problem Solving Creativity and Innovation Communication and Collaboration ICT Literacy	Concept(s): ● Relative sizes of measurements (e.g. a kilometer is 1000 times as long as a meter and 100,000 times as long as a centimeter). Students are able to: ● express measurements of a larger unit in terms of a smaller unit (within a single measurement system) (e.g. convert hours to minutes, kilometers to centimeters, etc). ● generate a two-column table to record measurement equivalents. Learning Goal 3: Express measurement in a larger unit in terms of a smaller unit and record equivalent measures in a two-column table.
● 4.OA.A.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.	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. Critical Thinking and Problem Solving Creativity and Innovation Communication and Collaboration	Concept(s): ● Multiplication equations represent comparisons. Students are able to: ● explain multiplication equations as comparisons. ● write multiplication equations given word problems indicating multiplicative comparison. Learning Goal 4: Write multiplication equations from word problems indicating multiplicative comparisons and describe multiplication equations as comparisons.

● 4.OA.A.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.	MP.1 Make sense of problems and persevere in solving them. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. Critical Thinking and Problem Solving Creativity and Innovation Communication and Collaboration	Concept(s): No new concept(s) introduced Students are able to: ● multiply to solve word problems involving multiplicative comparison. ● divide to solve word problems involving multiplicative comparison. ● represent problems with drawings and equations, using a symbol for the unknown number.

	ICT Literacy	● distinguish word problems involving multiplicative comparison from those involving additive comparison. Learning Goal 5: Multiply and divide to solve word problems involving multiplicative comparisons and represent these problems with drawings and equations.
● 4.NBT. A.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.* [Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]	MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation	Concept(s): ● A quantitative relationship exists between the digits in place value positions of a multi-digit number. Students are able to: ● Explain that a digit in one place represents ten times what it would represent in the place to its right. Learning Goal 6: For a whole number up to one million, explain that a digit in one place represents ten times what it would represent in the place to its right.

● 4.NBT. A.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. [Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]	MP.7 Look for and make use of structure. Creativity and Innovation	Concept(s): ● Multiple representations of whole numbers exist. Students are able to: ● read and write multi-digit whole numbers using base-ten numerals. ● read and write multi-digit whole numbers using number names. ● read and write multi-digit whole numbers using expanded form. ● compare two multi-digit numbers using >, =, and < symbols. Learning Goal 7: Compare two multi-digit whole numbers (up to one million) using >, =, and < for numbers presented as base ten numerals, number names, and/or in expanded form.
● 4.NBT. A.3. Use place value understanding to round multi-digit whole numbers to any place. [Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]	MP.7 Look for and make use of structure. Creativity and Innovation	Concept(s): ● Estimation Students are able to: ● round whole numbers to any place. Learning Goal 8: Round multi-digit whole numbers up to one million to any place.

 Key:

Georgia Formative Assessment Tasks
https://www.georgiastandards.org/Georgi a-Standards/Frameworks/4th-Math-Unit-1 .pdf

District/School Formative Assessment Plan

Released item sets
https://sites.google.com/site/releaseditems ets/

formative assessment material
Engageny.org under their New York State Mathematics Curriculum Materials:
https://www.engageny.org/sites/default/fil es/resource/attachments/g4-m1-full-modu le.pdf

NC 3-5 Instructional and Assessment Tasks for the CCSS in Mathematics http://3-5cctask.ncdpi.wikispaces.net/Four th+Grade+Tasks

Classwork

Exit tickets

Task Cards

White boards

Individual and group work

Unit 1 Grade 4 - Place Value and Operations with Whole Numbers District/School Summative Assessment Plan

Benchmarks

 Key:

Chapter tests

Performance tasks

Extended projects

End of Year Assessments

PARCC
Math journals

Study Island
http://www.studyisland.com/

Prodigy
www.prodigygame.com/

Common Core
Sheetshttp://www.commoncoresheets.com

Benchmark Assessment *Alternative Assessment*

Renaissance/STAR

Map Testing

DRA

Benchmark Tests within
EnVision/GoMath/Eureka Math/iReady State Testing Results

3.OA.D.9
2.NBT.A.1
3.NBT.A.1
Teacher Created Assessments

Performance Based Assessments

Extension Projects

Prerequisite skills:

3.OA.A.1
3.OA.B.6
3.OA.A.3
3.OA.A.4
3.OA.B.6

Focus Mathematical Concepts Place Value and Operations with Whole Numbers

2.MD.A.1
3.MD.A.2
3.NF.A.1
3.OA.D.8
3.OA.C.7

Common Misconceptions:
A common misconception is that the number 1 is prime, when in fact; it is neither prime nor composite. Another common misconception is that all prime numbers are odd numbers. This is not true, since the number 2 has only 2 factors, 1 and 2, and is also an even number. When listing multiples of numbers, students may not list the number itself. Emphasize that the smallest multiple is the number itself. Some students may think that larger numbers have more factors. Having students share all factor pairs and how they found them will clear up this misconception.

There are several misconceptions students may have about writing numerals from verbal descriptions. Numbers like one thousand do not cause a problem; however a number like one thousand two causes problems for students. Many students will understand the 1000 and the 2 but then instead of placing the 2 in the ones place, students will write the numbers as they hear them, 10002 (ten thousand two). There are multiple strategies that can be used to assist with this concept, including place-value boxes and vertical-addition method. Students often assume that the first digit of a multi-digit number indicates the "greatness" of a number. The assumption is made that 954 is greater than 1002 because students are focusing on the first digit instead of the number as a whole. Students need to be aware of the greatest place value. In this example, there is one number with the lead digit in the thousands and another number with its lead digit in the hundreds.

When learning to fluently add and subtract using the standard algorithm, students often mix up when to regroup. Also, students often do not notice the need of regrouping and just take the smaller digit from the larger one. Emphasize place value and the meaning of each of the digits.

Students may have “overspecialized” their knowledge of multiplication or division facts and have restricted it to “fact tests” or one particular format. For example, they may think of Multiplicative comparisons, unknown product or partition unknown (see Table 2 Appendix, page 83). For example, students complete multiplication fact assessments satisfactorily but cannot apply knowledge to problem solving situations.

When listing multiples of numbers, students may not list the number itself. Emphasize that the smallest multiple is the number itself. Also, having students write multiples of a number by consecutive factors beginning with one can clear up this misconception. S

Number Fluency: 4.NBT.B.4 Add/Subtract 1,000,000

District/School Tasks District/School Primary and Supplementary Resources

PARCC released items
https://prc.parcconline.org/assessments/parcc-released-items
Framework for 21st Century Learning

PARCC practice tests
https://parcc.pearson.com/practice-tests/math/

Math release set folder- contains two Word docs
https://sites.google.com/site/releaseditemsets/home/math-release-1

NC tasks/assessments
http://3-5cctask.ncdpi.wikispaces.net/

http://illuminations.nctm.org/LessonDetail.aspx?ID=L367
Use this resource as a follow-up lesson to extend place value understanding.

http://www.prometheanplanet.com/en-us/Resources/Item/109644/place-value-through 100-000
A lesson for your ActivSlate or Smart Board to reinforce basic place value ideas through 100,000.

http://www.mathlearningcenter.org/web-apps/number-pieces/
This resource allows students to manipulate base ten blocks virtually.

How does our base ten number system work?

How does understanding the base-ten number system help us add and subtract?
http://www.p21.org/our-work/p21-framework

NJDOE-21st Century Life and Careers

http://www.state.nj.us/education/aps/cccs/career/Arizona flipbook

http://www.katm.org/flipbooks/4%20FlipBook%20Final%20CCSS%202014.pdf

North Carolina wikispaces
http://maccss.ncdpi.wikispaces.net/Elementary

Georgia Department of Education Grade 4https://www.georgiastandards.org/Georgia-Standards/Pages/Math-K-5.aspx

Waggle
http://www.gogetwaggle.com

Math Aids http://www.math-aids.com

Super Teacher Worksheets
http://www.superteacherworksheets.com

IXL
http://www.ixl.com

Kahoot
http://www.getkahoot.com

Essential Questions

 Key:

How does the value of a digit change if its location is changed in a large number?

What determines the value of a digit?

How does estimation help us understand large numbers?

How are large numbers estimated?

What conclusions can I make about the places within our base ten number system?

What happens to a digit when it is multiplied and divided by 10?

What effect does the location of a digit have on the value of the digit?

How can we compare large numbers?

What determines the value of a number?

Why is it important for me to be able to compare numbers?

What is a sensible answer to a real problem?

What information is needed in order to round a whole number to any place?

How can I ensure my answer is reasonable?

How can rounding help me compute numbers?

What effect does a remainder have on my rounded answer?

What strategies can I use to help me make sense of a written algorithm?

Special Education Students English Language Learners Students at Risk for School Failure Gifted and Talented Students

16 | Page Key:

- Provide a checklist for long, detailed tasks
- Use concrete examples of concepts before teaching the abstract
- Highlight important concepts to be learned in text of material
- Provide concrete examples for homework/class work assignments
- Give additional presentations by varying the methods using repetition, simpler explanations and modeling
- Give written directions to supplement verbal directions
- Familiarize student with new vocabulary before beginning lesson
- Utilize visual aids and graphic organizers
- Utilize manipulative, hands-on activities
- Provide graph paper for computation
- Additional time to complete activities/assignments/projects/assessments
- Modify or provide an option for alternative activities/assignments/projects/assessments
- Use enVision Spanish Resources
- Provide text to speech for math problems
- Use of translation dictionary or software
- Confer frequently
- Adapt a Strategy-Adjusting strategies for ESL students: http://www.teachersfirst.com/content/esl/adaptstrat.cfm
- Familiarize student with new vocabulary before beginning lesson
- Utilize visual aids and graphic organizers
- Utilize manipulative, hands-on activities
- Additional Support Materials/ Online resources
- Guided Notes or copy of teacher notes
- Review prerequisite skills
- http://www.wida.us/standards/elp.aspx
- Tiered interventions following RTI framework
- RTI Intervention Bank
- NJDOE resources
- Utilize online resources such as www.tenmarks.com
- EnVision K-5 intervention supports
- Modify activities/assignments/projects/assessments
- Provide an option for alternative activities/assignments/projects/assessments
- Provide higher-order questioning and discussion opportunities
- Utilize exploratory connections to higher grade concepts
- Modify Content
- Adjust Pacing of Content
- Small Group Enrichment
- Individual Enrichment
- Higher-Level Text
- Provide whole group enrichment explorations
- Teach cognitive and methodological skills
- Use center, stations, or contracts
- Organize integrated problem-solving simulations
- Propose interest-based extension activities
- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Propose independent projects based on individual interests

17 | Page Key:

- SmallGroup Instruction/Intervention/Remediation
- Individual Intervention/Remediation
- AdditionalSupportMaterials/ Onlineresources
- GuidedNotesorcopyofteacher notes
- Reviewprerequisiteskills
- AfterSchoolTutoring
- Chunk activities/assignments/projects/as

sessmentsintomanageableunits
- Allowstudenttoreceivereading textinvariousforms(written, verbal,audio)ronalower readinglevel

- Allowstudenttomaketest correctionsorretakeassessment
- AdjustPacingofContent
- SeeIEPsofstudentsforspecific modifications

Studentswith504Plans

- Provideachecklistforlong, detailedtasks
- Useconcreteexamplesof conceptsbeforeteachingthe abstract

- AdditionalSupportMaterials/ Onlineresources
- Afterschoolclubs
- Tieredcenters
- Tieredassignments

 Key:

● Highlight important concepts to be learned in text of material ● Provide concrete examples for homework/class work assignments

● Give additional presentations by varying the methods using

repetition, simpler explanations and modeling

● Give written directions to supplement verbal directions ● Familiarize student with new vocabulary before beginning lesson
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● Utilize manipulative, hands-on activities
● Provide graph paper for computation
● Additional time to complete activities/assignments/projects/assessments
● Modify or provide an option for alternative activities/assignments/projects/assessments
● Small Group Instruction/Intervention/Remediation
● Individual Intervention/Remediation

 Key:

● Additional Support Materials/ Online resources
● Guided Notes or copy of teacher notes
● Review prerequisite skills
● After School Tutoring
● Chunk activities/assignments/projects/assessments into manageable units
● Allow student to receive reading text in various forms (written,

verbal, audio) r on a lower reading level

- Allow student to make test corrections or retake assessment
- Adjust Pacing of Content
- See 504 plan for specific accommodations

Vocabulary Ongoing Modifications

Building the language of mathematics

http://maccss.ncdpi.wikispaces.net/file/view/2014+Building+Vocabulary.pdf

Georgia Department of Education Grade 4 Intervention Table
https://www.georgiastandards.org/Georgia-Standards/Pages/Math-K-5.aspx

Triumph Learning – Common Core Performance Coach

Differentiated centers

Extra time on task

Limited # of items

Manipulatives

Mathematical games

Task Cards

Vocabulary Cards

ELL:

http://www.wida.us/standards/elp.aspx

NJ Model Curriculum:

https://www.state.nj.us/education/bilingual/curriculum/

Achieve the Core:

https://achievethecore.org/aligned/ccss-aligned-materials-for-ell-students/

Instructional Best Practices and Exemplars

The units of measure that have not been addressed in prior years are cups, pints, quarts, gallons, pounds, ounces, kilometers, milliliters, and seconds. Students' prior experiences were

limited to measuring length, mass (metric and customary systems), liquid volume (metric only), and elapsed time. Students did not convert measurements. Students need ample opportunities to become familiar with these new units of measure and explore the patterns and relationships in the conversion tables that they create.

Students need to develop an understanding of the concepts of number theory such as prime numbers and composite numbers. This includes the relationship of factors and multiples. Multiplication and division are used to develop concepts of factors and multiples. Division problems resulting in remainders are used as counter-examples of factors. Review vocabulary so that students have an understanding of terms such as factor, product, multiples, and odd and even numbers.

In order for students to be successful later in the formal study of algebra, their algebraic thinking needs to be developed. Understanding patterns is fundamental to algebraic thinking. Students have experience in identifying arithmetic patterns, especially those included in addition and multiplication tables. Contexts familiar to students are helpful in developing students' algebraic thinking. Students should generate numerical or geometric patterns that follow a given rule. They should look for relationships in the patterns and be able to describe and make generalizations. As students generate numeric patterns for rules, they should be able to "undo" the pattern to determine if the rule works with all of the numbers generated. For example, given the rule, "Add 4" starting with the number 1, the pattern 1, 5, 9, 13, 17, … is generated. In analyzing the pattern, students need to determine how to get from one term to the next term. Teachers can ask students, "How is a number in the sequence related to the one that came before it?", and "If they started at the end of the pattern, will this relationship be the same?" Students can use this type of questioning in analyzing numbers patterns to determine the rule.

 Key:

Interdisciplinary Connections Technology Integration

- Language Arts - Interactive Student Notebook
- Language Arts- reading comprehension (decoding words, vocabulary study), problem solving ("problem of the day", word problems, identifying important information), writing ("writing to explain" mathematical thinking)
- Language Arts- Students will use reading comprehension skills to problem solve and effectively explain their mathematical thinking in written form using mathematical terms
- Language Arts: Students will connect everyday vocabulary to strengthen their understanding of mathematical terms
- Science- representing data, discovering patterns, reading temperature to analyze climates
- Science- utilizing measuring tools to create model, utilizing measurement tools to measure results of an experiment, analyzing data to form new theories, choosing the "best" way to represent data, using data to prove a theory
- Science: Students will collect and analyze data and make calculations involving measurements and other data across all modules (Life Science, Physical Science, Earth Science
- Social Studies- understand how to read dates properly
- **8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems
- **8.1.5.A.3** Use a graphic organizer to organize information about problem or issue.
- **8.2.5.C.4** Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.
- **8.2.5.D.3** Follow step by step directions to assemble a product or solve a problem

Grade 4: Interdisciplinary Connections

____ Language Arts ____ Science ____ Social Studies ____ World Languages ____ Arts

21st Century Themes

___ Global Awareness ___ Financial, Economic, Business and Entrepreneurial Literacy ___ Civic Literacy ___ Health Literacy ___ Environmental Literacy

21st Century Life and Careers Standards

Career Ready Practices:

☒ 9.4.5.DC.1: Explain the need for and use of copyrights

☒ 9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a)

☒ 9.4.5.DC.3: Distinguish between digital images that can be reused freely and those that have copyright restrictions.

☒ 9.4.5.CI.4: Research the development process of a product and identify the role of failure as a part of the creative process (e.g., W.4.7, 8.2.5.ED.6)

☐ 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.CT.1: Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2)

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

☒ 9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1)

☒ 9.1.5.EG.3: Explain the impact of the economic system on one's personal financial goals.

☒ 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

☐ 9.1.5. EG.5: Identify sources of consumer protection and assistance..

☒ 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3)

Unit 2 Grade 4- Multi-Digit Arithmetic and Fraction Equivalence

Content Standards	Suggested Standards for Mathematical Practice and P21 Skills	Critical Knowledge & Skills
● 4.NBT. B.4. Fluently add and subtract multi-digit whole numbers using the standard algorithm. *[Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.] *(benchmarked)	MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning. Critical Thinking and Problem Solving Creativity and Innovation	Concept(s): No new concept(s) introduced Students are able to: ● add multi-digit whole numbers using the standard algorithm with accuracy and efficiency. ● subtract multi-digit whole numbers using the standard algorithm with accuracy and efficiency. Learning Goal 1: Fluently add and subtract multi-digit whole numbers using the standard algorithm.
● 4.NBT. B.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. [Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]	MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation	Concept(s): No new concept(s) introduced Students are able to: ● multiply a whole number of up to four digits by a one-digit whole number using strategies based on place values. ● multiply two two-digit numbers using strategies based on place value. ● represent these operations with equations, rectangular arrays, and area models. ● explain the calculation by referring to the model (equation, array, or area model). Learning Goal 2: Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers; represent and explain calculations using equations, rectangular arrays, and area models.

● 4.NBT. B.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. [Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]	MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning. Critical Thinking and Problem Solving Creativity and Innovation Information Literacy	Concept(s): No new concept(s) introduced Students are able to: ● 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 the relationship between multiplication and division. ● represent these operations with equations, rectangular arrays, and area models. ● explain the calculation by referring to the model (equation, array, or area model). Learning Goal 3: Divide a whole number of up to four-digits by a one-digit divisor; represent and explain the calculation using equations, rectangular arrays, and area models.

● 4.OA.A.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.*(benchmarked)	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation Communication and Collaboration	Concept(s): ● Proper use of the equal sign ● Improper use of the equal sign (e.g. 3 + 7 = 10 – 5 = 5 is incorrect) Students are able to: ● solve multi-step word problems involving any of the four operations. ● solve multi-step word problems involving interpretation (in context) of a remainder. ● write equations to represent multi-step word problems, using a letter to represent the unknown quantity. ● explain why an answer is reasonable. ● use mental computation and estimation strategies to determine whether an answer is reasonable. Learning Goal 4: Write and solve each equation (including any of the four operations) in order to solve multi-step word problems, using a letter to represent the unknown; interpret remainders in context and assess the reasonableness of answers using mental computation with estimation strategies.

● 4.MD.A.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.*	MP.2 Reason abstractly and quantitatively. MP.5 Use appropriate tools strategically. Critical Thinking and Problem Solving Creativity and Innovation ICT Literacy	Concept(s): No new concept(s) introduced Students are able to: ● solve real world and mathematical problems by finding the area of rectangles using a formula. ● solve real world and mathematical problems by finding the perimeter of rectangles using a formula. Learning Goal 5: Solve real world problems with whole numbers by finding the area and perimeter of rectangles using formulas.
● 4.NF.A.1. Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ 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.	MP.1 Make sense of problems and persevere in solving them. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation	Concept(s): ● Equivalent fractions are the same size while the number and size of the parts differ. Students are able to: ● explain, using visual fraction models, why two fractions are equivalent. ● generate equivalent fractions, using fraction a/b as equivalent to fraction $(n \times a)/(n \times b)$. Learning Goal 6: Recognize and generate equivalent fractions and explain why they are equivalent using visual fraction models.

[Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]	Communication and Collaboration ICT Literacy	

● 4.NF.A.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. [Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]	MP.1 Make sense of problems and persevere in solving them. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation Communication and Collaboration ICT Literacy	Concept(s): ● Fractions may only be compared when the two fractions refer to the same whole. Students are able to: ● create common denominators in order to compare two fractions. ● create common numerators in order to compare two fractions. ● compare two fractions with different numerators and different denominators by comparing to a benchmark fraction. ● record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. Learning Goal 7: Compare two fractions with different numerators or different denominators, recording comparison with >, =, or <, and justifying the conclusion using visual fraction models.
● 4.NF.B.3. Understand a fraction *a*/*b* with *a* > 1 as a sum of fractions 1/*b*. 4.NF.B.3a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. 4.NF.B.3b. 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.* [Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]	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.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation Communication and Collaboration ICT Literacy	Concept(s): ● Some fractions can be decomposed. ● Addition/subtraction of fractions is joining/separating parts referring to the same whole. Students are able to: ● decompose a fraction into a sum of fractions with the same denominator in more than one way. ● write decompositions of fractions as an equation. ● develop visual fraction models that represent decomposed fractions and use them to justify decompositions. Learning Goal 8: Decompose a fraction into a sum of fractions with the same denominator in more than one way and record the decomposition as an equation; justify the decomposition with a visual fraction model.

Unit 2 Grade 4-Multi-Digit Arithmetic and Fraction Equivalence

District/School Formative Assessment Plan	**District/School Summative Assessment Plan**
Released item sets https://sites.google.com/site/releaseditemsets/ formative assessment material- Engageny.org under their New York State Mathematics Curriculum Materials: https://www.engageny.org/sites/default/files/resource/attachments/g4-m1-full-module .pdf NC 3-5 Instructional and Assessment Tasks for the CCSS in Mathematics http://3-5cctask.ncdpi.wikispaces.net/Fourth+Grade+Tasks Georgia formative assessment -Equivalent Fractions https://www.georgiastandards.org/Georgia-Standards/Frameworks/4th-Math-Unit-3.p df Classwork Exit tickets White boards Individual and group work Math journals Study Island http://www.studyisland.com/ Prodigy www.prodigygame.com/ Benchmarks	Chapter tests Performance tasks End of Year Assessments Extended projects PARCC

Common Core Sheets
http://www.commoncoresheets.com

Benchmark Assessment Alternative Assessment

Renaissance/STAR

Map Testing

DRA

Benchmark Tests within EnVision/GoMath/Eureka

Math/iReady State Testing Results

Teacher Created Assessments Performance Based Assessments

Extension Projects

Focus Mathematical Concepts -Multi-Digit Arithmetic and Fraction Equivalence

Prerequisite skills:

3.NBT.A.2
3.NBT.A.3
3.OA.B.5
3.MD.C.7
3.OA.A.4
3.OA.C.7
3.OA.B.6
3.OA.D.8
3.MD.D.8
3.NF.A.3
3.NF.A.1
3.NF.A.2

It is expected that students will have prior knowledge/experience related to the concepts and skills identified. It may be necessary to pre-assess in order to determine if time needs to be spent on conceptual activities that help students develop a deeper understanding of these ideas.

● Identify and give multiple representations for the fractional parts of a whole (area model) or of a set, using halves, thirds, fourths, sixths, eighths, tenths and twelfths.

 Key:

● Recognize and represent that the denominator determines the number of equally sized pieces that make up a whole.

● Recognize and represent that the numerator determines how many pieces of the whole are being referred to in the fraction.

● Compare fractions with denominators of 2, 3, 4, 6, 10, or 12 using concrete and pictorial models.

Common Misconceptions:
Often students mix up when to 'carry' and when to 'borrow'. Also, students often do not notice the need of borrowing and just take the smaller digit from the larger one. Emphasize place value and the meaning of each of the digits.

Students think that when generating equivalent fractions, they need to multiply or divide either the numerator or denominator, such as, changing 1 2 to sixths. 3 4 1 3 1 2 Major Supporting Additional Depth Opportunities(DO) They would multiply the denominator by 3 to get 1 6, instead of multiplying the numerator by 3 also. Their focus is only on the multiple of the denominator, not the “whole fraction”. It’s important that students use a fraction in the form of one such as 3 3 so that the numerator and denominator do not contain the original numerator or denominator.

Students use whole-number names when counting fractional parts on a number line. The fraction name should be used instead. For example, if two-fourths is represented on the line plot three times, then there would be six-fourths. Students also count the tick marks on the number line to determine the fraction, rather than looking at the “distance” or “space” between the marks.

Number Fluency:
4.NBT.B.4 Add/Subtract 1,000,000

District/School Tasks District/School Primary and Supplementary Resources Framework for 21st Century Learning

PARCC released items
https://prc.parcconline.org/assessments/parcc-released-items

PARCC practice tests
https://parcc.pearson.com/practice-tests/math/

Math release set folder- contains two Word docs
https://sites.google.com/site/releaseditemsets/home/math-release-1

NC tasks/assessments

http://www.p21.org/our-work/p21-framework

NJDOE-21st Century Life and Careers

http://www.state.nj.us/education/aps/cccs/career/

Arizona flip book

http://www.katm.org/flipbooks/4%20FlipBook%20Final%20CCSS%202014.pdf

 Key:

http://3-5cctask.ncdpi.wikispaces.net/ North Carolina wikispaces

http://maccss.ncdpi.wikispaces.net/Elementary

Georgia Department of Education Grade 4

https://www.georgiastandards.org/Georgia-Standards/Pages/Math-K-5.aspx

Waggle
http://www.gogetwaggle.com

Math Aids http://www.math-aids.com

Super Teacher Worksheets
http://www.superteacherworksheets.com

IXL
http://www.ixl.com

Kahoot
http://www.getkahoot.com

Multiplication.com
http://www.multiplication.com

Technology Connection:

http://illuminations.nctm.org/LessonDetail.aspx? Making and Investigating Fraction Strips: This lesson has students make and use a set of fraction strips. It can be used for remediation purposes.

http://www.eastsideliteracy.org/tutorsupport/documents/HO_Fractions.pdf Student Handout - Fraction Kit: This document provides a template for a fraction kit. It can be used with this task or for remediation purposes.

Essential Questions

 Key:

What is a fraction and how can it be represented?

How can equivalent fractions be identified?

In what ways can we model equivalent fractions?

How can identifying factors and multiples of denominators help to identify equivalent fractions?

What are benchmark fractions?

How are benchmark fractions helpful when comparing fractions?

How can we use fair sharing to determine equivalent fractions?

How do we know fractional parts are equivalent?

What happens to the value of a fraction when the numerator and denominator are multiplied or divided by the same number?

How are equivalent fractions related?

How can you compare and order fractions?

How do I compare fractions with unlike denominators?

How do you know fractions are equivalent?

What can you do to decide whether your answer is reasonable?

How do we locate fractions on a number line?

How are area and perimeter related?

How does the area change as the rectangles dimensions' change (with a fixed perimeter)?

Special Education Students	**English Language Learners**	**Students at Risk of School Failure**	**Gifted and Talented Students**	**Students with 504 Plans**
● Provide a checklist for long, detailed tasks ● Use concrete examples of concepts before teaching the abstract ● Highlight important concepts to be learned in text of material	● Use enVision Spanish Resources ● Provide text to speech for math problems ● Use of translation dictionary or software ● Confer frequently ● Tiered interventions following RTI framework ● RTI Intervention Bank ● NJDOE resources ● Utilize online resources such as www.tenmarks.com ● EnVision K-5 intervention supports ● Modify activities/assignments/projects/assessments ● Provide an option for alternative activities/assignments/projects/assessments ● Provide higher-order questioning and discussion opportunities ● Provide a checklist for long, detailed tasks ● Use concrete examples of concepts before teaching the abstract ● Highlight important concepts to be learned in text of material			

●Provideconcreteexamplesfor homework/classwork assignments
●Giveadditionalpresentations byvaryingthemethodsusing repetition,simplerexplanations andmodeling
●Givewrittendirectionsto supplementverbaldirections
●Familiarizestudentwithnew vocabularybeforebeginning lesson
●Utilizevisualaidsandgraphic organizers
●Utilizemanipulative,hands-on activities
●Providegraphpaperfor computation
●Additionaltimetocomplete activities/assignments/projects/ assessments
●Modifyorprovideanoptionfor alternative activities/assignments/projects/ assessments
●SmallGroup Instruction/Intervention/Remed iation
●Individual Intervention/Remediation
●AdditionalSupportMaterials/ Onlineresources

●AdaptaS trategy-Adjusting strategiesf orESLstu dents: http://ww w.teacher sfirst.com /c ontent/esl/ adaptstrat. cfm
●Familiar izestu dent withn ew voca bular ybefo rebeg innin g lesso n
●Utilizevi sualai dsand graph ic organ izers
●Utilizem anipu lative ,hand s-on activi ties
●Addition alSupport Materials/ Onlineres ources
●Guided Notesorco pyof teachernot es
●Reviewp rerequisit eskills
●http://w ww.wida. us/standar ds/ elp.aspx
●Utilizeexploratoryconnectionst o highergradeconcepts
●ModifyContent
●AdjustPacingofContent
●SmallGroupEnrichment
●IndividualEnrichment
●Higher-LevelText
●Providewholegroupenrichment explorations
●Teachcognitiveand methodologicalskills
●Usecenter,stations,orcontracts
●Organizeintegrated problem-solvingsimulations
●Proposeinterest-basedextension activities

●Createanenhancedsetof introductoryactivities(e.g. advance organizers, concept maps,conceptpuzzles
●Provideoptions,alternativesand choicestodifferentiateand broadenthecurriculum
●Proposeindependentprojects basedonindividualinterests
●AdditionalSupportMaterials/ Onlineresources
●Afterschoolclubs
●Tieredcenters
●Tieredassignments
●Provideconcreteexamplesfor homework/classwork assignments
●Giveadditionalpresentationsby varyingthemethodsusing repetition,simplerexplanations andmodeling
●Givewrittendirectionsto supplementverbaldirections
●Familiarizestudentwithnew vocabularybeforebeginning lesson
●Utilizevisualaidsandgraphic organizers
●Utilizemanipulative,hands-on activities
●Providegraphpaperfor computation
●Additionaltimetocomplete activities/assignments/projects/ass

essments
●Modifyorprovideanoptionfor alternative

activities/assignments/projects/ass essments
●SmallGroup

Instruction/Intervention/Remediat ion
●Individual

Intervention/Remediation
●AdditionalSupportMaterials/ Onlineresources

● Guided Notes or copy of teacher notes
● Review prerequisite skills
● After School Tutoring
● Chunk activities/assignments/projects/ assessments into manageable units
● Allow student to receive reading text in various forms (written, verbal, audio) r on a lower reading level
● Allow student to make test corrections or retake assessment
● Adjust Pacing of Content

● See IEPs of students for specific modifications

Vocabulary Ongoing Modifications
● Guided Notes or copy of teacher notes
● Review prerequisite skills ● After School Tutoring
● Chunk activities/assignments/projects/ass essments into manageable units ● Allow student to receive reading text in various forms (written, verbal, audio) r on a lower reading level
● Allow student to make test corrections or retake assessment ● Adjust Pacing of Content ● See 504 plan for specific accommodations

Georgia Department of Education Grade 4 Intervention Table
https://www.georgiastandards.org/Georgia-Standards/Pages/Math-K-5.aspx

http://illuminations.nctm.org/LessonDetail.aspx? Making and Investigating Fraction Strips: This lesson has students make and use a set of fraction strips. It can be used for remediation purposes.
http://www.eastsideliteracy.org/tutorsupport/documents/HO_Fractions.pdf Student Handout - Fraction Kit: This document provides a template for a fraction kit. It can be used with this task or for remediation purposes.

Building the language of mathematics

http://maccss.ncdpi.wikispaces.net/file/view/2014+Building+Vocabulary.pdf

Differentiated centers

Extra time on task

Limited # of items

Manipulatives

Mathematical games

Task Cards

Vocabulary Cards

ELL:

http://www.wida.us/standards/elp.aspx

NJ Model Curriculum:

https://www.state.nj.us/education/bilingual/curriculum/

Achieve the Core:

https://achievethecore.org/aligned/ccss-aligned-materials-for-ell-students/

Instructional Best Practices and Exemplars

This is the first grade level in which students are expected to be proficient at using the standard algorithm to add and subtract. However, other previously learned strategies are still appropriate for students to use. When students begin using the standard algorithm their explanation may be quite lengthy. After much practice with using place value to justify their steps, they will develop fluency with the algorithm. Students should be able to explain why the algorithm works.

A crucial theme in multi-digit arithmetic is encouraging students to develop strategies that they understand, can explain, and can think about, rather than merely follow a sequence of directions, rules or procedures that they don't understand. It is important for students to have seen and used a variety of strategies and materials to broaden and

deepen their understanding of place value before they are required to use standard algorithms. The goal is for them to understand all the steps in the algorithm, and they should be able to explain the meaning of each digit.

Sometimes students benefit from 'being the teacher' to an imaginary student who is having difficulties applying standard algorithms in addition and subtraction situations. To promote understanding, use examples of student work that have been done incorrectly and ask students to provide feedback about the student work. It is very important for some students to talk through their understanding of connections between different strategies and standard addition and subtractions algorithms. Give students many opportunities to talk with classmates about how they could explain standard algorithms. Think-Pair-Share is a good protocol for all students.

Students' initial experience with fractions began in Grade 3. They used models such as number lines to locate unit fractions, and fraction bars or strips, area or length models, and Venn diagrams to recognize and generate equivalent fractions and make comparisons of fractions. Students extend their understanding of unit fractions to compare two fractions with different numerators and different denominators. Students should use models to compare two fractions with different denominators by creating common denominators or numerators. The models should be the same (both fractions shown using fraction bars or both fractions using circular models) so that the models represent the same whole.

Students used models to find area and perimeter in Grade 3. They need to relate discoveries from the use of models to develop an understanding of the area and perimeter formulas to solve real-world and mathematical problems.

Students should also use their knowledge of squares and rectangles to decompose rectilinear figures into smaller rectangles and squares. Then, using the formula developed through their work in fourth grade with area, students can find the area of each smaller rectangle or square and find the area of the rectilinear figure by finding the sum of the areas calculated in the smaller rectangles or squares.

Interdisciplinary Connections Technology Integration

- Language Arts - Interactive Student Notebook
- Language Arts- reading comprehension (decoding words, vocabulary study), problem solving ("problem of the day", word problems, identifying important information), writing ("writing to explain" mathematical thinking)
- Language Arts- Students will use reading comprehension skills to problem solve and effectively explain their mathematical thinking in written form using mathematical terms
- Language Arts: Students will connect everyday vocabulary to strengthen their understanding of mathematical terms

- Science- representing data, discovering patterns, reading temperature to analyze climates
- Science- utilizing measuring tools to create model, utilizing measurement tools to measure results of an experiment, analyzing data to form new theories, choosing the "best" way to

- **8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems
- **8.1.5.A.3** Use a graphic organizer to organize information about problem or issue.
- **8.2.5.C.4** Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.
- **8.2.5.D.3** Follow step by step directions to assemble a product or solve a problem

represent data, using data to prove a theory
- Science: Students will collect and analyze data and make calculations involving measurements and other data across all modules (Life Science, Physical Science, Earth Science
- Social Studies- understand how to read dates properly

Grade 4: Interdisciplinary Connections
____ Language Arts ____ Science ____ Social Studies ____ World Languages ____ Arts
21st Century Themes
___ Global Awareness ___ Financial, Economic, Business and Entrepreneurial Literacy ___ Civic Literacy ___ Health Literacy ___ Environmental Literacy

21st Century Life and Careers Standards

Career Ready Practices:

☒ 9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a)

☒ 9.4.5.CI.4: Research the development process of a product and identify the role of failure as a part of the creative process (e.g., W.4.7, 8.2.5.ED.6)

☒ 9.4.5.DC.1: Explain the need for and use of copyrights

☒ 9.4.5.DC.3: Distinguish between digital images that can be reused freely and those that have copyright restrictions.

☐ 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.CT.1: Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2)

☒ 9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1)

☒ 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

☒ 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3)

☐ 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.EG.3: Explain the impact of the economic system on one's personal financial goals.

☐ 9.1.5. EG.5: Identify sources of consumer protection and assistance..

 Key:

Unit 3 Grade 4- Building Fractions and Decimal Notation		
Content Standards	**Suggested Standards for Mathematical Practice and P21 Skills**	**Critical Knowledge & Skills**

● 4.NF.B.3. Understand a fraction *a*/*b* with *a* > 1 as a sum of fractions 1/*b*. 4.NF.B.3c. 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. 4.NF.B.3d. 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. [Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]	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.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation Communication and Collaboration Information Literacy	Concept(s): ● Some fractions can be decomposed. ● Addition/subtraction of fractions is joining/separating parts referring to the same whole. Students are able to: ● add and subtract fractions having like denominators in order to solve real world problems. ● develop visual fraction models and write equations to represent real world problems involving addition and subtraction of fractions. ● add and subtract mixed numbers with like denominators. Learning Goal 1: Add and subtract mixed numbers with like denominators by replacing each mixed number with an equivalent fraction or improper fraction. Learning Goal 2: Solve word problems involving addition and subtraction of fractions having like denominators using visual fraction models and equations to represent the problem.
● 4.MD.B.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 dif erence in length between the longest and shortest specimens in an insect collection.*	MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. Critical Thinking and Problem Solving Creativity and Innovation Communication and Collaboration ICT Literacy	Concept(s): No new concept(s) introduced Students are able to: ● given a data set consisting of measurements in fractions of a unit, create a line plot. ● using measurement information presented in line plots, add and subtract fractions with like denominators in order to solve problems. Learning Goal 3: Make a line plot to display a data set in measurements in fractions of a unit (1/2, 1/4, 1/8) and use it to solve problems involving addition and subtraction of fractions with like denominators.
● 4.NF.B.4. Apply and extend previous understandings of multiplication to	MP.1 Make sense of problems and persevere in solving them.	Concept(s): ● Fraction Multiplication: any fraction *a*/*b* as a multiple of fraction 1/*b*.

multiply a fraction by a whole number. 44.NF.B.4a. 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).* 4.F.4. B.4b. 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.)* 4.NF.4.B.4c. 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?* [Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]	MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation Communication and Collaboration ICT Literacy	● Fraction Multiplication: any multiple of fraction *a*/*b* is also a multiple of fraction 1/*b*. Students are able to: ● represent *a*/*b* as a x (1/*b*) using a visual fraction model. ● represent *n* × *(a/b) as (n* × *a)/b* in a visual fraction model. ● multiply a fraction by a whole number. ● solve real world problems by multiplying a fraction by a whole number, using visual fraction models and equations to represent the problem. Learning Goal 4: Multiply a fraction by a whole number using visual fraction models and equations, demonstrating a fraction *a*/*b* as a multiple of 1/*b*. Learning Goal 5: Multiply a fraction by a whole number, using a visual fraction model and equations to demonstrate that a multiple of *a*/*b* is the product of 1/*b* and a whole number. Learning Goal 6: Solve 1-step word problems involving multiplication of a fraction by a whole number, using visual fraction models and equations to represent the problem

● 4.NF.C.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.	MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation	Concept(s): ● Equivalent Fractions Students are able to: ● add two fractions with respective denominators of 10 and 100 using equivalent fractions.

For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100. [Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]		Learning Goal 7: Add two fractions with respective denominators of 10 and 100 by writing each fraction with denominator 100.
● 4.NF.C.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.* [Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]	MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation	Concept(s): ● Relationship between place value (decimals) and fraction Students are able to: ● write a decimal as a fraction that has a denominator of 10 or 100. Learning Goal 8: Given decimal notation, write fractions having denominators of 10 or 100.

● 4.NF.C.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. [Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]	MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation ICT Literacy	Concept(s): No new concept(s) introduced Students are able to: ● represent a decimal using a model. ● compare two decimals to hundredths by reasoning about their size. ● explain 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). Learning Goal 9: Compare two decimals to hundredths by reasoning about their size, demonstrating that comparisons are valid only when the two decimals refer to the same whole; record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.
● 4.MD.A.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	MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. Critical Thinking and Problem Solving Creativity and Innovation Communication and Collaboration Information Literacy	Concept(s): No new concept(s) introduced Students are able to: ● solve word problems (using addition, subtraction and multiplication) involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals. ● solve word problems (using all four operations) involving whole number distances, intervals of time, liquid volumes, masses of objects, and money, including problems requiring expressing measurements given in a larger measurement unit in terms of a smaller measurement unit (conversion).

diagrams such as number line diagrams that feature a measurement scale.		● construct diagrams (e.g. number line diagrams) to represent measurement quantities. Learning Goal 10: Solve word problems involving simple fractions or decimals that incorporate measurement comparisons of like units (including problems that require measurements given in a larger unit in terms of a smaller unit).
● 4.NBT. B.4. Fluently add and subtract multi-digit whole numbers using the standard algorithm. [Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.] *(benchmarked)	MP.7 Look for and make use of structure Critical Thinking and Problem Solving Creativity and Innovation	Concept(s): No new concept(s) introduced Students are able to: ● add using the standard algorithm with accuracy and efficiency. ● subtract using the standard algorithm with accuracy and efficiency. Learning Goal 11: Fluently add and subtract multi-digit whole numbers using the standard algorithm.

Unit 3 Grade 4 - Building Fractions and Decimal Notation

School/District Formative Assessment Plan	District/School Summative Assessment Plan	Benchmark Assessment	Alternative Assessment
Released item sets https://sites.google.com/site/releaseditemsets/ formative assessment material- Engageny.org under their New York State Mathematics Curriculum Materials: https://www.engageny.org/sites/default/files/resource/attachments/g4-m1-full-module.pdf NC 3-5 Instructional and Assessment Tasks for the CCSS in Mathematics http://3-5cctask.ncdpi.wikispaces.net/Fourth+Grade+Tasks	Georgia formative assessment for fraction/decimals https://www.georgiastandards.org/Georgia-Standards/Frameworks/4th-Math-Unit-5.pdf Classwork Exit tickets White boards Individual and group work	Math journals Benchmarks Chapter tests Performance tasks End of Year Assessments Extended projects PARCC Renaissance/STAR	Map Testing DRA Benchmark Tests within EnVision/GoMath/Eureka Math/iReady State Testing Results Teacher Created Assessments Performance Based Assessments Extension Projects

 Key:

Study Island
http://www.studyisland.com/

Prodigy
www.prodigygame.com/

Common Core Sheets
http://www.commoncoresheets.com

Focus Mathematical Concepts- Building Fractions and Decimal Notation

Prerequisite skills:
3.NF.A.1
3.NF.A.2
3.OA.A.1
3.OA.A.3
3.NBT.A.2

Common Misconceptions:
Students treat decimals as whole numbers when making comparison of two decimals. They think the longer the number, the greater the value. For example, they think that .03 is greater than 0.3

Students should be given multiple opportunities to measure the same object with different measuring units. For example, have the students measure the length of a room with one-inch tiles, with one-foot rulers, and with yardsticks. Students should notice that it takes fewer yard sticks to measure the room than rulers or tiles and explain their reasoning.

Students use whole-number names when counting fractional parts on a number line. The fraction name should be used instead. For example, if two-fourths is represented on the line plot three times, then there would be six-fourths. Students also count the tick marks on the number line to determine the fraction, rather than looking at the "distance" or "space" between the marks

Number Fluency:
4.NBT.B.4 Add/Subtract 1,000,000

District/School Tasks District/School Primary and Supplementary Resources

http://3-5cctask.ncdpi.wikispaces.net/

PARCC released items
https://prc.parcconline.org/assessments/parcc-released-items

PARCC practice tests
https://parcc.pearson.com/practice-tests/math/

Math release set folder- contains two Word docs
https://sites.google.com/site/releaseditemsets/home/math-release-1

NC tasks/assessments

Essential Questions
Framework for 21st Century Learning

http://www.p21.org/our-work/p21-framework

NJDOE-21st Century Life and Careers

http://www.state.nj.us/education/aps/cccs/career/

Arizona flip book

http://www.katm.org/flipbooks/4%20FlipBook%20Final%20CCSS%202014.pdf

North Carolina wikispaces
http://maccss.ncdpi.wikispaces.net/Elementary

Georgia Department of Education Grade 4

https://www.georgiastandards.org/Georgia-Standards/Pages/Math-K-5.aspx
Waggle
http://www.gogetwaggle.com

Math Aids http://www.math-aids.com

Super Teacher Worksheets
http://www.superteacherworksheets.com

IXL
http://www.ixl.com

Kahoot
http://www.getkahoot.com

Multiplication.com
http://www.multiplication.com

 Key:
How are fractions used in problem-solving situations?

How are decimal fractions written using decimal notation?

How are decimal numbers and decimal fractions related?

How are decimals and fractions related?

How can I combine the decimal length of objects I measure?

How can I model decimals fractions using the base-ten and place value system?

How can I write a decimal to represent a part of a group?

How does the metric system of measurement show decimals?

What is a decimal fraction and how can it be represented?

What models can be used to represent decimals?

What patterns occur on a number line made up of decimal fractions?

How can equivalent fractions be identified?

How can I represent fractions in different ways?

How can you use fractions to solve addition and subtraction problems?

How do we apply our understanding of fractions in everyday life? How

can I represent multiplication of a whole number?

How can we model answers to fraction problems?

How can we write equations to represent our answers when solving word problems?

How do graphs help explain real-world situations?

How do we determine the most appropriate graph to use to display the data?

How do we make a line plot to display a data set?

Why do we need to be able to convert between capacity units of measurement?

What unit is the best to use when measuring capacity?

What unit is the best to use when measuring volume?

What units are appropriate to measure weight?

When do we use conversion of units?

Why are units important in measurement?

Why do we need a standard unit with which to measure angles?

- Provide a checklist for long, detailed tasks
- Use concrete examples of concepts before teaching the abstract
- Highlight important concepts to be learned in text of material ● Provide concrete examples for homework/class work assignments
- Give additional presentations by varying the methods using repetition, simpler explanations and modeling
- Use enVision Spanish Resources
- Provide text to speech for math problems
- Use of translation dictionary or software
- Confer frequently
- Adapt a Strategy-Adjusting strategies for ESL students: http://www.teachersfirst.com/co n tent/esl/adaptstrat.cfm
- Familiarize student with new vocabulary before beginning lesson
- Tiered interventions following RTI framework
- RTI Intervention Bank ● NJDOE resources
- Utilize online resources such as www.tenmarks.com
- EnVision K-5 intervention supports
- Modify activities/assignments/projects/a ssessments
- Provide an option for alternative activities/assignments/projects/a ssessments
- Provide higher-order questioning and discussion opportunities
- Utilize exploratory connections to higher grade concepts
- Modify Content
- Adjust Pacing of Content ● Small Group Enrichment
- Provide a checklist for long, detailed tasks
- Use concrete examples of concepts before teaching the abstract
- Highlight important concepts to be learned in text of material ● Provide concrete examples for homework/class work assignments
- Give additional presentations by varying the methods using repetition, simpler explanations and modeling

●Givewrittendirectionsto supplementverbaldirections
●Familiarizestudentwithnew vocabularybeforebeginning lesson
●Utilizevisualaidsandgraphic organizers
●Utilizemanipulative,hands-on activities
●Providegraphpaperfor computation
●Additionaltimetocomplete activities/assignments/projects/a ssessments
●Modifyorprovideanoptionfor alternative activities/assignments/projects/a ssessments
●SmallGroup Instruction/Intervention/Remedi ation
●Individual Intervention/Remediation
●AdditionalSupportMaterials/ Onlineresources
●GuidedNotesorcopyofteacher notes
●Reviewprerequisiteskills
●AfterSchoolTutoring
●Chunk activities/assignments/projects/a ssessmentsintomanageable units
●Utilizevisualaidsandgrap hic organizers
●Utilizemanipulative,hand s-on activities

●GuidedNotesorcopyofteach er notes

●Additio nalSuppo rtMateria ls/ Onlineres ources

●Review prerequis iteskills
●http://w ww.wida. us/standa rds/el p.aspx
●IndividualEnrichment
●Higher-LevelText
●Providewholegroup enrichmentexplorations
●Teachcognitiveand methodologicalskills

●Usecenter,stations,orcontra cts ●Organizeintegrated problem-solvingsimulations
●Proposeinterest-basedextension activities
●Createanenhancedsetof introductoryactivities(e.g . advance organizers, concept maps,conceptpuzzles
●Provideoptions,alternatives and choicestodifferentiateand broadenthecurriculum
●Proposeindependentprojects basedonindividualinterests
●AdditionalSupportMaterials / Onlineresources
●Afterschoolclubs
●Tieredcenters
●Tieredassignments
●Givewrittendirectionsto

supplementverbaldirections
●Familiarizestudentwithnew vocabularybeforebeginning lesson
●Utilizevisualaidsandgraphic organizers
●Utilizemanipulative,hands-on activities
●Providegraphpaperfor computation
●Additionaltimetocomplete activities/assignments/projects/assessments
●Modifyorprovideanoptionfor alternative activities/assignments/projects/assessments
●SmallGroup Instruction/Intervention/Remediation
●Individual Intervention/Remediation
●AdditionalSupportMaterials/ Onlineresources
●GuidedNotesorcopyofteacher notes
●Reviewprerequisiteskills
●AfterSchoolTutoring
●Chunk activities/assignments/projects/assessmentsintomanageable units

● Allow student to receive reading text in various forms (written, verbal, audio) r on a lower reading level
● Allow student to make test corrections or retake assessment
● Adjust Pacing of Content
● See IEPs of students for specific modifications

Vocabulary Ongoing Modifications
● Allow student to receive reading text in various forms (written, verbal, audio) r on a lower reading level
● Allow student to make test corrections or retake assessment ● Adjust Pacing of Content ● See 504 plan for specific accommodations

Differentiated centers

Extra time on task

Limited # of items

Manipulatives

Mathematical games

Task Cards

Vocabulary Cards

Building the language of mathematics

http://maccss.ncdpi.wikispaces.net/file/view/2014+Building+Vocabulary.pdf

Georgia Department of Education Grade 4 Intervention Table
https://www.georgiastandards.org/Georgia-Standards/Pages/Math-K-5.aspx

Triumph Learning – Common Core Performance Coach

ELL:

http://www.wida.us/standards/elp.aspx

NJ Model Curriculum:

https://www.state.nj.us/education/bilingual/curriculum/

Achieve the Core:

https://achievethecore.org/aligned/ccss-aligned-materials-for-ell-students/

Instructional Best Practices and Exemplars

In decimal numbers, the value of each place is 10 times the value of the place to its immediate right. Students need an understanding of decimal notations before they try to do conversions in the metric system. Understanding of the decimal place value system is important prior to the generalization of moving the decimal point when performing operations involving decimals.

Students extend fraction equivalence from Grade 3 with denominators of 2, 3 4, 6 and 8 to fractions with a denominator of 10. Provide fraction models of tenths and hundredths so that students can express a fraction with a denominator of 10 as an equivalent fraction with a denominator of 100.

Mathematically proficient students communicate precisely by engaging in discussion about their reasoning using appropriate mathematical language. The terms students should learn to use with increasing precision with this cluster are: fraction, numerator, denominator, equivalent, reasoning, decimals, tenths, hundreds, multiplication, comparisons/compare, ‹, ›, =.

Data has been measured and represented on line plots in units of whole numbers, halves or quarters. Students have also represented fractions on number lines. Now students are using line plots to display measurement data in fraction units and using the data to solve problems involving addition or subtraction of fractions.

Interdisciplinary Connections Technology Integration

● Language Arts - Interactive Student Notebook ● Language Arts- reading comprehension (decoding words,

● **8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems

vocabulary study), problem solving (“problem of the day”, word problems, identifying important information), writing (“writing to explain” mathematical thinking)

● Language Arts- Students will use reading comprehension skills to problem

solve and effectively explain their mathematical thinking in written form using mathematical terms

- Language Arts: Students will connect everyday vocabulary to strengthen their understanding of mathematical terms
- Science- representing data, discovering patterns, reading temperature to analyze climates
- Science- utilizing measuring tools to create model, utilizing measurement tools to measure results of an experiment, analyzing data to form new theories, choosing the "best" way to represent data, using data to prove a theory
- Science: Students will collect and analyze data and make calculations involving measurements and other data across all modules (Life Science, Physical Science, Earth Science
- Social Studies- understand how to read dates properly
- **8.1.5.A.3** Use a graphic organizer to organize information about problem or issue.
- **8.2.5.C.4** Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.
- **8.2.5.D.3** Follow step by step directions to assemble a product or solve a problem

Grade 4: Interdisciplinary Connections

 Key:

____ Language Arts ____ Science ____ Social Studies ____ World Languages ____ Arts
21st Century Themes **___ Global Awareness ___ Financial, Economic, Business and Entrepreneurial Literacy ___ Civic Literacy ___ Health Literacy ___ Environmental Literacy**

21st Century Life and Careers Standards

Career Ready Practices:

☒ CRP1: Act as a responsible and contributing citizen and employee. ☒ CRP2: Apply appropriate academic and technical skills.

☐ CRP3: Attend to personal health and financial well-being. ☒ CRP4: Communicate clearly and effectively and with reason. ☒ CRP5: Consider the environmental, social and economic impacts of decisions. ☒ CRP6: Demonstrate creativity and innovation.

☒ CRP7: Employ valid and reliable research strategies.

☒ CRP8: Utilize critical thinking to make sense of problems and persevere in solving them. ☐ CRP9: Model integrity, ethical leadership and effective management. ☐ CRP10: Plan education and career paths aligned to personal goals. ☒ CRP11: Use technology to enhance productivity.

☐ CRP12: Work productively in teams while using cultural global competence.

Unit 4 Grade 4- Geometry and Measurement		
Content Standards	**Suggested Standards for Mathematical Practice and P21 Skill**	**Critical Knowledge & Skills**
● 4.G.A.1.Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure. Creativity and Innovation ICT Literacy	Concept(s): No new concept(s) introduced Students are able to: ● draw points, lines, line segments and rays. ● draw angles (right, acute, obtuse). ● draw perpendicular and parallel lines. ● distinguish between lines, line segments, and rays. ● identify points, lines, line segment, rays, right angles, acute angles, obtuse angles, perpendicular lines and parallel lines in two-dimensional figures. Learning Goal 1: Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines and identify these in two-dimensional figures.

● 4.G.A.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.	MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation ICT Literacy	Concept(s): ● Trapezoid is a quadrilateral with at least one pair of parallel sides. Students are able to: ● classify triangles based on the presence or absence of perpendicular lines and based on the presence or absence of angles of a particular size. ● classify quadrilaterals based on the presence or absence of parallel or perpendicular lines and based on the presence or absence of angles of a particular size. Learning Goal 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 particular size; recognize right angles as a category, and identify right, acute, obtuse, equilateral, isosceles, and scalene triangles.
● 4.G.A.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.	MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation	Concept(s): No new concept(s) introduced Students are able to: ● fold a figure along a line in order to create matching parts. ● identify lines of symmetry as a line across the figure such that the figure can be folded along the line into matching parts. ● identify figures having line symmetry. ● draw lines of symmetry. Learning Goal 3: Draw lines of symmetry and identify line-symmetric figures.

● 4.MD.C.5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement. 4.MD.C.5a. 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. 4.MD.C.5b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.	MP.2 Reason abstractly and quantitatively. Critical Thinking and Problem Solving Creativity and Innovation	Concept(s): ● Angles are formed by two rays sharing a common endpoint and result from the rotation of one ray around the endpoint. ● Angle Measurement: An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees. Students are able to: ● describe an angle as measured with reference to a circle with the center of the circle being the common endpoint of the rays. ● explain a 'one-degree angle' and its relation to a circle; a "degree" is defined as 1/360 (one degree angle) of the entire circle. Learning Goal 4: Explain angles as geometric shapes formed by two rays sharing a common endpoint and explain the relationship between a one-degree angle, a circle, and angle measure.
● 4.MD.C.6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	MP.2 Reason abstractly and quantitatively. MP.5 Use appropriate tools strategically. Critical Thinking and Problem Solving Creativity and Innovation ICT Literacy	Concept(s): No new concept(s) introduced Students are able to: ● measure angles in whole-number degrees. ● given an angle measure, sketch the angle. Learning Goal 5: Measure angles in whole number degrees using a protractor and sketch angles of specific measures.

● 4.MD.C.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.	MP.1 Make sense of problems and persevere in solving them. MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation	Concept(s): ● Angle measures may be added; when an angle is decomposed into non-overlapping parts, the angle measure of the whole (original angle) is the sum of the angle measures of the parts. Students are able to: ● add and subtract to find unknown angles on a diagram in real world and mathematical problems. ● write an equation with a symbol for the unknown angle measure.

		Learning Goal 6: Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems using a symbol for an unknown angle measure.
● 4.OA.A.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. *(benchmarked)	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation Communication and Collaboration	Concept(s): ● Proper use of the equal sign. ● Improper use of the equal sign (e.g. 3 + 7 = 10 – 5 = 5 is incorrect). Students are able to: ● solve multi-step word problems involving any of the four operations. ● solve multi-step word problems involving interpretation (in context) of a remainder. ● write equations to represent multi-step word problems, using a letter to represent the unknown quantity. ● explain why an answer is reasonable. ● use mental computation and estimation strategies to determine whether an answer is reasonable. Learning Goal 7: Write and solve each equation (including any of the four operations) in order to solve multi-step word problems, using a letter to represent the unknown; interpret remainders in context and assess the reasonableness of answers using mental computation with estimation strategies.

● 4.NBT. B.4. Fluently add and subtract multi-digit whole numbers using the standard algorithm. [Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]*(benchmarked)	MP.7 Look for and make use of structure. Critical Thinking and Problem Solving Creativity and Innovation	Concept(s): No new concept(s) introduced Students are able to: ● add using the standard algorithm with accuracy and efficiency ● subtract using the standard algorithm with accuracy and efficiency Learning Goal 8: Fluently add and subtract multi-digit whole numbers using the standard algorithm

21st Century Culminating Standards:

Content Area -: 21st Century Life and Careers

21st Century Life and Careers Standards

Career Ready Practices:

☒ 9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a)

☒ 9.4.5.CI.4: Research the development process of a product and identify the role of failure as a part of the creative process (e.g., W.4.7, 8.2.5.ED.6)

☐ 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2)

them to

☒ 9.4.5.CT.2: Identify a problem and list the types of individuals and resources

☒ 9.4.5.DC.1: Explain the need for and use of copyrights

☒ 9.4.5.DC.3: Distinguish between digital images that can be reused freely and those that have copyright restrictions.

☐ 9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology (e.g., 8.1.5.NI.2)

☐ 9.1.5.CR.1: Compare various ways to give back and relate

your strengths, interests, and other personal factors.

(e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1)

☒ 9.1.5.EG.3: Explain the impact of the economic system on one's personal financial goals.

☒ 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

☐ 9.1.5. EG.5: Identify sources of consumer protection and assistance..

☒ 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3)

Unit 4 Grade 4- Geometry and Measurement

District/School Formative Assessment Plan	District/School Summative Assessment Plan	Benchmark Assessment	Alternative Assessment
Released item sets https://sites.google.com/site/releaseditemsets/	formative assessment material- Engageny.org under their New York State Mathematics Curriculum	Materials: https://www.engageny.org/sites/default/files/resource/attachments/g4-m1-full-module.pdf	NC 3-5 Instructional and Assessment Tasks for the CCSS in Mathematics

http://3-5cctask.ncdpi.wikispaces.net/Fourth+Grade+Tasks

Benchmarks

Chapter tests

Performance tasks

End of Year Assessments Extended projects

PARCC
Renaissance/STAR

Map Testing

DRA

Benchmark Tests within EnVision/GoMath/Eureka Math/iReady

State Testing Results
Teacher Created Assessments Performance Based

Assessments Extension Projects

 Key:

Georgia Formative Assessment Tasks
https://www.georgiastandards.org/Georgia-Standards/Frameworks/4th_Math-Unit-7.pdf

Classwork

Exit tickets

White boards

Individual and group work

Math journals

Study Island
http://www.studyisland.com/

Prodigy
www.prodigygame.com/

Common Core Sheets
http://www.commoncoresheets.com

Focus Mathematical Concepts- Geometry and Measurement

Prerequisite skills:
3.G.A.1
1.G.A.2
4.G.A.1
4.MD.C.5
1.OA.D.8
3.OA.D.8

3.NBT.A.2

Common Misconceptions:
Students are confused as to which number to use when determining the measure of an angle using a protractor because most protractors have a double set of numbers. Students should have multiple experiences estimating and comparing angles to the Benchmark 90° or right angle. They should explain their reasoning by deciding first if the angle appears to be an angle that is less than the measure of a right angle (90°) or greater than the measure of a right angle (90°). If the angle appears to be less than 90°, it is an acute angle and its measure ranges from 0° to 89°. If the angle appears to be an angle that is greater than 90°, it is an obtuse angle and its measures range from 91° to 179°. Ask questions about the appearance of the angle to help students in deciding which number to use. Some protractors have a protective edge along the bottom. Zero degrees begins about 1 4 of an inch above the bottom edge. Students often to not take this into account and therefore will have in accurate measures of angles.

Students believe a wide angle with short sides may seem smaller than a narrow angle with long sides. Students can compare two angles by tracing one and placing it over the other. Students will then realize that the length of the sides does not determine whether one angle is larger or smaller than another angle. The measure of the angle does not change.

Some children may think that there can only be one line of symmetry for an object. Encourage them to try folding shapes in more than one way. Giving students multiple copies of the same shapes could help avoid confusion. Coloring one side of the line one color and the other side of the line a different color may aid in seeing multiple lines. In essence the student is seeing if the shape can be folded into 1 2 halves.

Number Fluency:
4.NBT.B.4 Add/Subtract 1,000,000

District/School Tasks District/School Primary and Supplementary Resources

PARCC released items
https://prc.parcconline.org/assessments/parcc-released-items

PARCC practice tests
https://parcc.pearson.com/practice-tests/math/

Math release set folder- contains two Word docs
https://sites.google.com/site/releaseditemsets/home/math-release-1

NC tasks/assessments
http://3-5cctask.ncdpi.wikispaces.net/

Framework for 21st Century Learning

http://www.p21.org/our-work/p21-framework

NJDOE-21st Century Life and Careers

http://www.state.nj.us/education/aps/cccs/career/

Arizona flip book

http://www.katm.org/flipbooks/4%20FlipBook%20Final%20CCSS%202014.pdf

 Key:

North Carolina wikispaces

http://maccss.ncdpi.wikispaces.net/Elementary

Georgia Department of Education Grade 4

https://www.georgiastandards.org/Georgia-Standards/Pages/Math-K-5.aspx

Waggle
http://www.gogetwaggle.com

Math Aids http://www.math-aids.com

Super Teacher Worksheets
http://www.superteacherworksheets.com

IXL
http://www.ixl.com

Kahoot
http://www.getkahoot.com

Multiplication.com
http://www.multiplication.com

Technology Connections:

http://www.prometheanplanet.com/en-us/Resources/Item/105178/lines-and-angles

Lines and Angles: This activity can be used with an ActivSlate and Smartboard to discuss lines and angles. It can be used as a mini-lesson for this task or additional practice.

Essential Questions

What is an angle?

How can angles be combined to create other angles?

How can we measure angles using wedges of a circle?

How can we use the relationship of angle measures of a triangle to solve problems?

How do we measure an angle using a protractor?

How does a circle help with angle measurement?

How does a turn relate to an angle?

What do we actually measure when we measure an angle?

What does half rotation and full rotation mean?

How are geometric objects different from one another?

How are quadrilaterals alike and different?

How are symmetrical figures created?

How are triangles alike and different?

How can angle and side measures help us to create and classify triangles?

How can shapes be classified by their angles and sides?

How can the types of sides be used to classify quadrilaterals?

How can triangles be classified by the measure of their angles?

What is symmetry?

How can you determine the lines of symmetry in a figure?

How do you determine lines of symmetry? What do they tell us?

What are the mathematical conventions and symbols for the geometric objects that make up certain figures?

What are the properties of quadrilaterals?

What are the properties of triangles?

What properties do geometric objects have in common?

Special Education Students English Language Learners Students at Risk of School Failure Gifted and Talented Students Students with 504 Plans

- Provide a checklist for long, detailed tasks
- Use concrete examples of concepts before teaching the abstract
- Highlight important concepts to be learned in text of material
- Provide concrete examples for homework/class work assignments
- Give additional presentations by varying the methods using repetition, simpler explanations and modeling
- Give written directions to supplement verbal directions
- Familiarize student with new vocabulary before beginning lesson
- Utilize visual aids and graphic organizers
- Utilize manipulative, hands-on activities
- Provide graph paper for computation
- Additional time to complete activities/assignments/projects/assessments
- Modify or provide an option for alternative
- Use enVision Spanish Resources
- Provide text to speech for math problems
- Use of translation dictionary or software
- Confer frequently
- Adapt a Strategy-Adjusting strategies for ESL students: http://www.teachersfirst.com/content/esl/adaptstrat.cfm
- Familiarize student with new vocabulary before beginning lesson
- Utilize visual aids and graphic organizers
- Utilize manipulative, hands-on activities
- Additional Support Materials/ Online resources
- Guided Notes or copy of teacher notes
- Review prerequisite skills
- http://www.wida.us/standards/elp.aspx
- Tiered interventions following RTI framework
- RTI Intervention Bank
- NJDOE resources
- Utilize online resources such as www.tenmarks.com
- EnVision K-5 intervention supports
- Modify activities/assignments/projects/assessments
- Provide an option for alternative activities/assignments/projects/assessments
- Provide higher-order questioning and discussion opportunities
- Utilize exploratory connections to higher grade concepts
- Modify Content
- Adjust Pacing of Content
- Small Group Enrichment
- Individual Enrichment
- Higher-Level Text
- Provide whole group enrichment explorations
- Teach cognitive and methodological skills
- Use center, stations, or contracts
- Organize integrated problem-solving simulations
- Propose interest-based extension activities
- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Provide a checklist for long, detailed tasks
- Use concrete examples of concepts before teaching the abstract
- Highlight important concepts to be learned in text of material
- Provide concrete examples for homework/class work assignments
- Give additional presentations by varying the methods using repetition, simpler explanations and modeling
- Give written directions to supplement verbal directions
- Familiarize student with new vocabulary before beginning lesson
- Utilize visual aids and graphic organizers
- Utilize manipulative, hands-on activities
- Provide graph paper for computation
- Additional time to complete activities/assignments/projects/assessments
- Modify or provide an option for alternative

activities/assignments/projects/assessments

- Small Group Instruction/Intervention/Remediation
- Individual

Intervention/Remediation
● Additional Support Materials/ Online resources
● Guided Notes or copy of teacher notes
● Review prerequisite skills
● After School Tutoring
● Chunk activities/assignments/projects/assessments into manageable units
● Allow student to receive reading text in various forms (written, verbal, audio) r on a lower reading level
● Allow student to make test corrections or retake assessment
● Adjust Pacing of Content
● See IEPs of students for specific modifications

Vocabulary Ongoing Modifications
● Propose independent projects based on individual interests ● Additional Support Materials/ Online resources
● After school clubs
● Tiered centers
● Tiered assignments

activities/assignments/projects/assessments
● Small Group Instruction/Intervention/Remediation
● Individual Intervention/Remediation
● Additional Support Materials/ Online resources
● Guided Notes or copy of teacher notes
● Review prerequisite skills ● After School Tutoring
● Chunk activities/assignments/projects/assessments into manageable units
● Allow student to receive reading text in various forms (written, verbal, audio) r on a lower reading level
● Allow student to make test corrections or retake assessment ● Adjust Pacing of Content ● See 504 plan for specific accommodations

Building the language of mathematics Georgia Department of Education Grade 4 Intervention Table https://www.georgiastandards.org/Georgia-Standards/Pages/Math-K-5.aspx

http://maccss.ncdpi.wikispaces.net/file/view/2014+Building+Vocabulary.pdf http://www.ixl.com/math/grade-4/parallel-perpendicular-intersecting This online activity discusses parallel, perpendicular and intersecting lines. It can be used for additional practice or remediation purposes.

http://www.prometheanplanet.com/en-us/Resources/Item/53894/points-line-segments-rays-and-lines Points, Line Segments, Rays and Lines: This activity can be used with an ActivSlate and Smartboard to discuss points, line segments, rays, and lines. It can be used for a mini lesson, additional practice or for remediation purposes.

Triumph Learning – Common Core Performance Coach

Differentiated centers

Extra time on task

Limited # of items

Manipulatives

Mathematical games

Task Cards

Vocabulary Cards

ELL:

http://www.wida.us/standards/elp.aspx

NJ Model Curriculum:

https://www.state.nj.us/education/bilingual/curriculum/

Achieve the Core:

https://achievethecore.org/aligned/ccss-aligned-materials-for-ell-students/

Instructional Best Practices and Exemplars

Angles are geometric shapes composed of two rays that are infinite in length. Students can understand this concept by using two rulers held together near the ends. The rulers can represent the rays of an angle. As one ruler is rotated, the size of the angle is seen to get larger. Ask questions about the types of angles created. Responses may be in terms of the relationship to right angles. Introduce angles as acute (less than the measure of a right angle) and obtuse (greater than the measure of a right angle). Have students draw representations of each type of angle. They also need to be able to identify angles in two dimensional figures.

Students can also create an angle explorer (two strips of cardboard attached with a brass fastener) to learn about angles. Students can use the corner of a sheet of paper as a benchmark for a right angle. They can use a right angle to determine relationships of other angles.

Students can and should make geometric distinctions about angles without measuring or mentioning degrees. Angles should be classified in comparison to right angles, such as greater than, less than, or the same size as a right angle. Students can use the corner of a sheet of paper as a benchmark for a right angle. They can use a right angle to determine relationships of other angles. Symmetry When introducing line of symmetry, provide examples of geometric shapes with and without lines of symmetry.

Shapes can be classified by the existence of lines of symmetry in sorting activities. This can be done informally by folding paper, tracing, creating designs with tiles or investigating reflections in mirrors. With the use of a dynamic geometric program, students can easily construct points, lines and geometric figures. They can also draw lines perpendicular or

parallel to other line segments.

When introducing line of symmetry, provide examples of geometric shapes with and without lines of symmetry. Shapes can be classified by the existence of lines of symmetry in sorting activities. This can be done informally by folding paper, tracing, creating designs with tiles or investigating reflections in mirrors. With the use of a dynamic geometric program, students can easily construct points, lines and geometric figures. They can also draw lines perpendicular or parallel to other line segments.

Two-dimensional shapes are classified based on relationships of angles and sides. Students can determine if the sides are parallel or perpendicular, and classify accordingly. Characteristics of rectangles (including squares) are used to develop the concept of parallel and perpendicular lines. The characteristics and understanding of parallel and perpendicular lines are used to draw rectangles. Repeated experiences in comparing and contrasting shapes enable students to gain a deeper understanding about shapes and their properties. Informal understanding of the characteristics of triangles is developed through angle measures and side length relationships. Triangles are named according to their angle measures (right, acute or obtuse) and side lengths (scalene, isosceles or equilateral). These characteristics are used to draw triangles.

Interdisciplinary Connections Technology Integration

● Language Arts - Interactive Student Notebook ● Language Arts- reading comprehension (decoding words,

vocabulary study), problem solving (“problem of the day”, word problems, identifying important information), writing (“writing to explain” mathematical thinking)

- Language Arts- Students will use reading comprehension skills to problem solve and effectively explain their mathematical thinking in written form using mathematical terms
- Language Arts: Students will connect everyday vocabulary to strengthen their understanding of mathematical terms ● Science- representing data, discovering patterns, reading temperature to analyze climates
- Science- utilizing measuring tools to create model, utilizing measurement tools to measure results of an experiment, analyzing data to form new theories, choosing the “best” way to represent data, using data to prove a theory
- Science: Students will collect and analyze data and make calculations involving measurements and other data across all modules (Life Science, Physical Science, Earth Science ● Social Studies- understand how to read dates properly problems
- **8.1.5.A.1** Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving
- **8.1.5.A.3** Use a graphic organizer to organize information about problem or issue.
- **8.2.5.C.4** Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.
- **8.2.5.D.3** Follow step by step directions to assemble a product or solve a problem