

Math - Grade 5

Unit #1

Title: Fluency with Whole Numbers and Decimals

Pacing: 70 days

Stage 1- Desired Results

Established Goals/NJSLS Standards

- **5.OA.A.1.** Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- **5.OA.A.2.** Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.
- **5.NBT.A.1.** Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $1/10$ of what it represents in the place to its left.
- **5.NBT.A.2.** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
- **5.NBT.A.3.** Read, write, and compare decimals to thousandths.
- **5.NBT.A.3a.** Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.
- **5.NBT.A.3b.** Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.
- **5.NBT.A.4.** Use place value understanding to round decimals to any place.
- **5.NBT.B.5.** Fluently multiply multi-digit whole numbers using the standard algorithm.
- **5.NBT.B.6.** Find whole-number quotients of whole numbers with up to four-digit dividends and two-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.
- **5.NBT.B.7.** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
- **5.NF.B.3.** Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret $3/4$ as the result of dividing 3 by 4, noting that $3/4$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $3/4$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?

| Enduring Understandings <i>Students will understand...</i> | Essential Questions <i>Students will consider...</i> |
|--|--|
| <ul style="list-style-type: none"> ● Math is everywhere in the world around us. ● Applying math concepts helps me be successful and better understand the world around me. ● Multi-digit whole numbers can be computed fluently. ● Any two whole numbers have a greatest common factor and a least common multiple. ● Any number can be expressed as its prime factorization. ● Numerical expressions can be evaluated using order of operations and grouping symbols. ● Estimation is helpful in solving division problems accurately. ● Division can be represented and solved using various strategies. ● Quotients can be written using remainders or fractions. ● There is a relationship based on powers of ten between the different place value positions. ● Base ten blocks are a very helpful tool in understanding decimals as well as decimal addition and subtraction. ● Decimal multiplication and division can be modeled using hundredths grids and base ten blocks. ● A variety of strategies can be used to multiply and divide decimals. ● I can add a zero to the end of my decimal dividend to find the quotient without a remainder. | <ul style="list-style-type: none"> ● How does understanding math help me understand the world around me? ● Why do I need math? ● Why is math important? ● How can you describe the relationship between two place value positions? ● How can properties help me solve problems? ● How can I use exponents to represent powers of ten? ● How is multiplication used to solve division problems? ● How do I use division in my everyday life? ● How can I use estimation to be more successful at division? ● What strategies can I use to divide whole numbers? ● How can I model division? ● What does the remainder mean when solving a division problem and how do I represent it in the quotient? ● How do I describe the relationship between different decimal place value positions? ● How do base ten blocks help me better understand decimals? ● How do I solve decimal addition and subtraction problems using place value and represent these problems using a model? ● How does estimation help me make sure my answer is reasonable? ● How do I use decimals in my everyday life? ● How can I use a model to represent and solve decimal multiplication and division problems? ● How do I multiply and divide decimals using various strategies? ● How does estimation help me make sure my answer is reasonable? ● How do I write a decimal quotient without using a remainder? |
| Knowledge <i>Students will know...</i> | Academic Vocabulary |
| <ul style="list-style-type: none"> ● multiplication facts, modeling multiplication, arrays, place value of multi-digit numbers, patterns, add/subtract/multiply multi-digit numbers, factors/multiples ● meaning of division, representing division using models, division facts, estimate with 1 digit divisors, multiply multi digit numbers, place value, basic fraction skills ● two digit addition and subtraction, word form/expanded form, converting fractions and decimals ● meaning of multiplication, place value, standard/expanded form, multiply 3 digit numbers | <ul style="list-style-type: none"> ● Commutative Property, Associative Property, Identity Property, Distributive Property, evaluate, exponent, factor, product, inverse operation, order of operations, grouping symbols (parentheses, brackets, braces), numerical expression, period, base ● estimation, compatible numbers, product, quotient, dividend, divisor, remainder, partial quotient, fraction, mixed number, numerator, denominator ● tenth, hundredth, thousandth, round, sequence, term, benchmark, estimate ● factor, product, quotient, power of ten, expanded form, dividend, divisor, quotient |

Skills

Students will be able to...

- Demonstrate understanding of place value.
- Read, write, and represent whole numbers through the hundred millions place value.
- Use properties of operations to solve problems.
- Write and evaluate repeated factors in exponent form.
- Multiply numbers by powers of ten using mental math and patterns.
- Multiply 1 and 2 digit numbers using partial products.
- Solve division problems using inverse operations and the Distributive Property.
- Model the Distributive Property using an area model to solve problems.
- Write, interpret, and evaluate numerical expressions using order of operations and grouping symbols.

- Estimate quotients using place value and compatible numbers.
- Divide 3 and 4 digit dividends by 1 and 2 digit divisors.
- Model division using base ten blocks.
- Interpret the remainder of a division problem and demonstrate the best way to write the quotient, as a remainder or fraction.

- Model, read, and write decimals out to the thousandths place.
- Round decimals to any place.
- Model decimal addition and subtraction with base ten blocks.
- Add and subtract decimals using place value and use estimation to check answers.
- Identify, describe, and create numerical patterns with decimals.
- Solve real world problems using decimals.
- Find patterns in products and quotients when multiplying and dividing by powers of ten.
- Represent and solve decimal multiplication and division using a model.
- Estimate decimal products and quotients.
- Multiply decimals using expanded form and place value.
- Divide decimals using standard algorithms.
- Solve real world problems using decimals.

21ST Century/ Interdisciplinary Themes

Global Awareness
Financial, Business, & Entrepreneurial Literacy
 Civic Literacy
 Environmental Literacy
 Health Literacy

21st Century Skills

Creativity & Innovation
Communication & Collaboration
Media Literacy
Critical Thinking & Problem Solving
Information Literacy
Information, Communication, & Technology
Life & Career Skills

Stage 2- Assessment Evidence

| <i>Formative Assessments</i> | <i>Student Self-Assessment</i> | <i>Common Assessments</i> |
|---|--|---|
| <ul style="list-style-type: none">● Lesson quick checks (Exit tickets)● Mid-chapter assessment● IXL● Study Island● Performance Tasks● Projects | <ul style="list-style-type: none">● Homework● Self rating scales● Kahoot | <ul style="list-style-type: none">● Go Math Chapter 1-5 Tests |

Stage 3- Learning Plan

Suggested Learning Activities

- Vocabulary Builders
- Quizlet
- Notecards
- Vocabulary Bingo
- Create Graphic Organizer- Inverse Operations
- Place Value Activities
- Property Graphic Organizers
- Base Ten Activities
- Pattern Activities
- Centers- Pick What Problem Goes with Each Expression
- Graphic Organizer- Compatible Numbers

Resources/Instructional Materials

(articles, novels, websites, books, magazines, art, media)

- Manipulatives- Base ten blocks
- Graphic organizers, interactive notebooks, graph paper, multiplication chart, hundredths grid, place value chart
- Technology assisted instruction, calculator (to check work only)

Technology Resources

- <https://www-k6.thinkcentral.com>
- IXL
- Kahoot
- Quizlet Live
- Brain Pop
- Study Island
- Kahn Academy

Accommodations & Modifications ***for Spec. Ed., ELL, GT, & At Risk Students***

- Allow oral responses
- Allow verbalization before writing
- Use audio materials when necessary
- Modify homework assignments
- Read tests aloud
- Provide math manipulatives as necessary
- Restate, reword, clarify directions
- Re-teach concepts using small groups
- Provide educational “breaks” as necessary
- Expanding time for free reading
- Chunking Content
- Calculator
- Use mnemonic devices
- Provide a cueing system
- Untimed and/or extended test taking time
- Shorten assignments to focus on mastery concept
- Leveled Reading Materials
- Acronyms
- Graphic Organizers
- Notes Provided
- Check agenda book for parent(s) communication
- Read directions aloud
- Assignment, Project, and Assessment Modification Based on Individual Student Needs
- Speech to Text/Text to Speech Features in Google Apps
- Technology assisted instruction
- Preferential seating utilized
- Redirect student(s) as necessary
- Student choice for project or approach to assignment
- Inquiry-Based Learning
- Genius Hour

Adapted from: Wiggins, Grant and J. McTighe. (1998). *Understanding by Design*. Association for Supervision and Curriculum Development

Math - Grade 5

Unit #2

Title: Operations with Fractions

Pacing: 40 days

Stage 1- Desired Results

Established Goals/NJSLS Standards

- **5.OA.A.2.** Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.
- **5.NF.A.1.** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, $2/3 + 5/4 = 8/12 + 15/12 = 23/12$ (in general, $a/b + c/d = (ad + bc)/bd$).
- **5.NF.A.2.** Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result $2/5 + 1/2 = 3/7$, by observing that $3/7 < 1/2$.
- **5.NF.B.3.** Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret $3/4$ as the result of dividing 3 by 4, noting that $3/4$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $3/4$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?
- **5.NF.B.4.** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- **5.NF.B.4a.** Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)
- **5.NF.B.4b.** Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
- **5.NF.B.5.** Interpret multiplication as scaling (resizing), by:
 - **5.NF.B.5a.** Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
 - **5.NF.B.5b.** Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
- **5.NF.B.6.** Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- **5.NF.B.7.** Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.
- **5.NF.B.7a.** Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$.
- **5.NF.B.7b.** Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$.
- **5.NF.B.7c.** Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $1/3$ -cup servings are in 2 cups of raisins?

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| <p>Enduring Understandings <i>Students will understand...</i></p> | <p>Essential Questions <i>Students will consider...</i></p> |
| <ul style="list-style-type: none"> ● Math is everywhere in the world around us, especially fractions. ● Applying math concepts helps me be successful and better understand the world around me. ● Fraction addition and subtraction can be represented using models. ● Common denominators are essential when adding and subtracting fractions. ● The size of the product depends on the size of the two factors, whether they are less than or greater than one. ● Area and number line models can be used to represent fraction multiplication, and diagrams can be used to model fraction division. ● Quotients can be written as fractions and mixed numbers when there is a remainder. | <ul style="list-style-type: none"> ● How does understanding math help me understand the world around me? ● Why do I need math? ● How do I use fractions in my everyday life? ● How can I represent fraction addition and subtraction using models? ● How do equivalent fractions help me add and subtract fractions? ● Why do I need a common denominator to add and subtract fractions? ● Why is it important to rename the first mixed number at times when subtracting mixed numbers? ● How does the size of the product compare to the size of one of the factors in the problem? ● How can a model represent fraction multiplication and division? ● What is the relationship between fractions and division? ● How can you write a quotient using fractions when there is a remainder? ● How do I multiply and divide fractions? |
| <p>Knowledge <i>Students will know...</i></p> | <p>Academic Vocabulary</p> |
| <ul style="list-style-type: none"> ● Create equivalent fractions, write fractions in simplest form, model fractions, find multiples, common multiples, add/subtract fractions with like denominators, ● find and compare parts of a group, find equivalent fractions, multiply and divide whole numbers, area. | <ul style="list-style-type: none"> ● Sum, difference, benchmark, common denominator, simplest form, improper fraction, mixed number, renaming ● denominator, numerator, product, quotient, simplest form, mixed number |
| <p>Skills <i>Students will be able to...</i></p> | |
| <ul style="list-style-type: none"> ● Estimate fraction sums and differences. ● Represent fraction addition and subtraction using models. ● Write equivalent fractions by finding the common denominator. ● Add and subtract fractions and mixed numbers using equivalent fractions. ● Calculate the difference between two mixed numbers using renaming. ● Identify, describe, and create numerical patterns using fractions. ● Model the fractional part of a group, the product of a fraction and a whole number, and the product of two fractions. ● Multiply fractions, whole numbers, and mixed numbers using models and the standard algorithm. ● Calculate the area when given fractional dimensions. ● Divide whole numbers and fractions. ● Interpret a fraction as a division problem. ● Translate a quotient into a mixed number. ● Represent fraction division by drawing a diagram. | |

| 21 ST Century/ Interdisciplinary Themes | 21 st Century Skills |
|--|---|
| Global Awareness <u>Financial, Business, & Entrepreneurial Literacy</u> Civic Literacy Environmental Literacy Health Literacy | <u>Creativity & Innovation</u> <u>Communication & Collaboration</u> <u>Media Literacy</u> <u>Critical Thinking & Problem Solving</u> <u>Information Literacy</u> <u>Information, Communication, & Technology</u> <u>Life & Career Skills</u> |

Stage 2- Assessment Evidence

| <i>Formative Assessments</i> | <i>Student Self-Assessment</i> | <i>Common Assessments</i> |
|--|--|---|
| <ul style="list-style-type: none"> ● Lesson quick checks (Exit tickets) ● Mid-Chapter assessment ● IXL ● Study Island ● Project- “Let’s Get Cooking” ● Performance Tasks | <ul style="list-style-type: none"> ● Homework ● Self Rating Scales ● Kahoot | <ul style="list-style-type: none"> ● Go Math Chapter 6-8 Tests |

Stage 3- Learning Plan

Suggested Learning Activities

- KWL- Fractions
- Build Vocabulary- Quizlet
- Fraction Strip Activities
- Estimation- Number Lines and Benchmarks
- Making Equivalent Fractions Challenge
- Equivalent Fraction- Sort
- Memory Game- Finding Equivalent Fractions
- Fraction Bingo
- Fraction Scavenger Hunt
- Stations- Patterns in Algebra (involving fractions)
- Stations- Problem Solving Addition and Subtraction with Fractions
- Math Mats- Find Part of a Group (multiplying a whole number and fraction)
- Model Multiplication Activities
- Venn Diagram Activity- Factors and Multiples
- Comparing Factors and Products Activity
- Model Dividing Fractions Activities
- “Let’s Get Cooking” cumulative fraction project

Resources/Instructional Materials
(articles, novels, websites, books, magazines, art, media)

- Manipulatives- fraction strips, fraction circles, chips
- Graphic organizers, interactive notebooks, technology assisted instruction, number lines, calculator (to check work only)
- <https://www-k6.thinkcentral.com>
- IXL
- Kahoot
- Quizlet Live
- Brain Pop
- Study Island
- Kahn Academy
- Vocabulary Cards

Technology Resources

- <https://www-k6.thinkcentral.com>
- IXL
- Kahoot
- Quizlet Live
- Brain Pop
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- Kahn Academy

Accommodations & Modifications
for Spec. Ed., ELL, GT, & At Risk Students

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| <ul style="list-style-type: none">● Allow oral responses● Allow verbalization before writing● Use audio materials when necessary● Modify homework assignments● Read tests aloud● Provide math manipulatives as necessary● Restate, reword, clarify directions● Re-teach concepts using small groups● Provide educational “breaks” as necessary● Expanding time for free reading● Chunking Content● Calculator | <ul style="list-style-type: none">● Use mnemonic devices● Provide a cueing system● Untimed and/or extended test taking time● Shorten assignments to focus on mastery concept● Leveled Reading Materials● Acronyms● Graphic Organizers● Notes Provided● Check agenda book for parent(s) communication● Read directions aloud | <ul style="list-style-type: none">● Assignment, Project, and Assessment Modification Based on Individual Student Needs● Speech to Text/Text to Speech Features in Google Apps● Technology assisted instruction● Preferential seating utilized● Redirect student(s) as necessary● Student choice for project or approach to assignment● Inquiry-Based Learning● Genius Hour |
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Math - Grade 5

Unit # 3

Title: Geometry and Measurement

Pacing: 40 days

Stage 1- Desired Results

Established Goals/NJSLS Standards

- **5.OA.B.3.** Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.
- **5.MD.A.1.** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
- **5.MD.B.2.** Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$). Use operations on fractions for this grade to solve problems involving information presented in line plots.
- **5.MD.C.3.** Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
- **5.MD.C.3a.** A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.
- **5.MD.C.3b.** A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
- **5.MD.C.4.** Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and non-standard units.
- **5.MD.C.5.** Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
- **5.MD.C.5a.** Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
- **5.MD.C.5b.** Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems.
- **5.MD.C.5c.** Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.
- **5.G.A.1.** Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
- **5.G.A.2.** Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.
- **5.G.B.3.** Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.
- **5.G.B.4.** Classify two-dimensional figures in a hierarchy based on properties.

| Enduring Understandings <i>Students will understand...</i> | Essential Questions <i>Students will consider...</i> |
|---|---|
| <ul style="list-style-type: none"> ● Math is everywhere in the world around us, especially measurement and shapes. ● Applying math concepts helps me be successful and better understand the world around me. ● Line plots are helpful in organizing data and calculating averages. ● Line graphs illustrate data over time and can be used to analyze experimental and real world data. ● Coordinate planes can illustrate the relationship between two numerical patterns by using one pattern as the x-coordinate and the other pattern as the y-coordinate. ● Applying math concepts helps me be successful and better understand the world around me. ● I can use the relationship between customary units to make conversions and solve problems. ● I can use the relationship between metric units to make conversions and solve problems. ● I can re-write decimal division problems using powers of ten to help me solve the problem. ● All two and three dimensional shapes have properties that help classify them. ● I can develop the formula for volume of a rectangular prism by using what I know about unit cubes its dimensions. | <ul style="list-style-type: none"> ● How does understanding math help me understand the world around me? Why do I need math? ● How do I use patterns and graphs in my everyday life? ● How can line plots help you solve problems, especially calculating average? ● How can I use a coordinate plane to graph and identify points? ● Why are line graphs important and how are they made and used? ● What is the relationship between two numerical patterns? ● How can you use ordered pairs to graph two numerical patterns on a coordinate plane? ● How do I use measurement in my everyday life? ● What is the relationship between the different customary units of measurement? ● What is the relationship between the different metric units of measurement? ● How can I use powers of ten to solve decimal division problems? ● How do I use geometry in my everyday life? ● How do I classify two and three dimensional shapes? ● How do I find volume of rectangular prisms? ● What is the relationship between the three dimensions and its volume in a rectangular prism and how can I use this to derive the formula for volume? |
| Knowledge <i>Students will know...</i> <ul style="list-style-type: none"> ● How to create bar graphs, extend patterns ● use a ruler, multiply and divide by powers of ten, divide whole numbers, divide with a decimal in the dividend ● find perimeter and area, multiply three factors. | Academic Vocabulary <ul style="list-style-type: none"> ● data, line plot, ordered pair, origin, x-axis, y-axis, x-coordinate, y-coordinate, coordinate, plane, interval, line graph, scale ● foot, inch, mile, yard, capacity, cup, fluid ounce, gallon, pint, quart, ounce, pound, ton, weight, mass, customary, metric, centi-, milli-, deci-, deka-, kilo-, gram, meter, liter, elapsed time, dividend, divisor, quotient, powers of ten ● congruent, heptagon, nonagon, polygon, regular polygon, decagon, hexagon, octagon, pentagon, quadrilateral, equilateral, isosceles, scalene, right, acute, obtuse, parallel, perpendicular, parallelogram, trapezoid, rectangle rhombus, base, lateral face, prism, pyramid, pentagonal prism, pentagonal pyramid, octagonal prism, hexagonal prism, decagonal prism, polyhedron, volume, unit cube, cubic unit |

Skills

Students will be able to...

- Construct and use line plots with fractions to solve problems
- Graph and identify points on a coordinate plane using ordered pairs
- Analyze and display data using a line graph
- Use two rules to generate a numerical pattern and identify the relationship between the corresponding terms in the pattern
- Graph the relationship between two numerical patterns on a coordinate plane

- Compare, contrast, and convert customary units of length, capacity, and weight
- Compare, contrast, and convert metric units of length, capacity, and weight
- Solve multi-step problems using measurement conversions
- Convert units of time to solve elapsed time problems
- Divide decimals with both dividend and divisor being a decimal number
- Re-write decimal problems using powers of ten
- Translate a quotient into a decimal

- Identify and classify polygons
- Identify and construct triangles based on their properties
- Classify and compare quadrilaterals based on their properties
- Identify, describe, and classify three-dimensional shapes
- Understand how unit cubes are used and use them to build rectangular prisms
- Calculate the volume of rectangular prisms
- Develop and use formula for volume
- Find the volume of combined rectangular prisms

21ST Century/ Interdisciplinary Themes

21st Century Skills

Global Awareness
 Financial, Business, & Entrepreneurial Literacy
 Civic Literacy
 Environmental Literacy
 Health Literacy

Creativity & Innovation
Communication & Collaboration
 Media Literacy
Critical Thinking & Problem Solving
 Information Literacy
 Information, Communication, & Technology
 Life & Career Skills

Stage 2- Assessment Evidence

Formative Assessments

Student Self-Assessment

Common Assessments

- Lesson quick checks (Exit tickets)
- Mid-Chapter assessments
- IXL
- Study Island
- Measurement and Data Menu Choice Board
- Geometry Choice Board
- Performance Tasks
- Ghost Project

- Homework
- Self Rating Scales
- Kahoot
- Quizlet Live
- Vocabulary Cards

- Go Math Chapter 9-11 Tests

Stage 3- Learning Plan

Learning Activities

- Vocabulary Builders
- Memory
- Quizlet
- Vocabulary Scavenger Hunt
- Create Line Plots Activities
- Battleship Head to Head Challenge
- Ghost Project (Plotting Points)
- Measurement and Data Menu Choice Board
- Geoboards- Shape Investigation
- Geometry Choice Board
- Graphing Data Activities
- Pattern Activities
- Graph and Analyze Relationships Activities
- Create Graphic Organizers for Geometry Vocabulary
- Regular Polygon or Not Activity
- Name That Polygon Activity
- Wanted Poster
- Three Dimensional Shape Sorting Activity
- Volume Activities
- Create Prisms from Given Volume Activity
- Unit Cube Composed Figures Investigation

Resources/Instructional Materials

(articles, novels, websites, books, magazines, art, media)

- Kahoot
- Quizlet
- Brain Pop
- IXL.com
- Vocabulary Cards
- Vocabulary Bingo
- Vocabulary Scavenger Hunt
- 3 Dimensional Shapes
- Unit Cubes
- Graph Paper
- Dry Erase Boards
- Paper cups
- Thermometers
- Stopwatch
- water/ ice cubes
- Graphic Organizers
- Rulers, Protractors
- Scissors, Rectangular Prism Nets, Boxes

graphic organizer, interactive notebook, calculator, technology assisted instruction, manipulatives- appropriate sized cups, etc., graph paper

Technology Resources

- <https://www-k6.thinkcentral.com>
- IXL.com
- Kahoot
- Quizlet Live
- Brain Pop
- Study Island
- Kahn Academy

Accommodations & Modifications for ELL, Spec Ed., At Risk, and Gifted Students

- | | | |
|--|--|---|
| <ul style="list-style-type: none">● Allow oral responses● Allow verbalization before writing● Use audio materials when necessary● Modify homework assignments● Read tests aloud● Provide math manipulatives as necessary● Restate, reword, clarify directions● Re-teach concepts using small groups● Provide educational “breaks” as necessary● Chunking Content● Calculator | <ul style="list-style-type: none">● Use mnemonic devices● Provide a cueing system● Untimed and/or extended test taking time● Shorten assignments to focus on mastery concept● Acronyms● Graphic Organizers● Notes Provided● Check agenda book for parent(s) communication● Read directions aloud | <ul style="list-style-type: none">● Assignment, Project, and Assessment Modification Based on Individual Student Needs● Speech to Text/Text to Speech Features in Google Apps● Technology assisted instruction● Preferential seating utilized● Redirect student(s) as necessary● Student choice for project or approach to assignment● Inquiry-Based Learning |
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Math - Grade 5

Unit # 4

Title: Getting Ready for Grade 6

Pacing: 30 days

Stage 1- Desired Results

Established Goals/NJSLS Standards

Grade 5 Skills - Reinforced:

- **5.NBT.A.3b** Read, write, and compare decimals to thousandths. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.
- **5.NF.B.7c** Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.
- **5.NBT.B.6** Find whole-number quotients of whole numbers with up to four-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.
- **5.G.A.1** Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinate correspond (e.g. x-axis and x-coordinate, y-axis and y-coordinate).
- **5.OA.A.2** Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.
- **5.NBT.A.3b** Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.
- **5.MD.B.2.** Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$). Use operations on fractions for this grade to solve problems involving information presented in line plots.

Grade 6 Skills - To be Introduced:

- **6.NS.C.7b** Understand ordering of rational numbers. Write, interpret, and explain statements of order for rational numbers in real world contexts.
- **6.NS.B.4** Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
- **6.RP.A.3c** Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means $30/100$ times the quantity); solve problems involving finding the whole, given a part and the percent.
- **6.NS.A.1** Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.
- **6.RP.A.1** Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
- **6.RP.A.2** Understand the concept of a unit rate a/b associated with a ration $a:b$ with $b \neq 0$, and use rate language in the context of a ration relationship.
- **6.RP.A.3b** use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. Solve unit rate problems including those involving unit pricing and constant speed.

- **6.NS.C.5** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g, temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real world contexts, explaining the meaning of 0 in each situation.
- **6.EE.A.2c** Write, read, and evaluate expressions in which letters stand for numbers. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
- **6.EE.B.8** Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
- **6.G.A.3** Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
- **6.G.A.1** Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
- **6.SP.B.5c** Summarize numerical data sets in relation to their context, such as by: Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
- **6.SP.B.4** Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

Enduring Understandings

Students will understand...

- Math is everywhere in the world around us.
- Applying math concepts helps me be successful and better understand the world around me.
- Understand the place value system.
- Familiar with finding factors.
- Fractions, decimals, and percents are related.
- Use ratio to compare two things.
- Graphing points on the coordinate plane to solve real-world and mathematical problems.
- Write and evaluate numerical expressions.
- How finding the area of a rectangle relates to finding the area of a parallelogram.
- Analyze data using median, mode, average.
- Use histograms to display and analyze data.

Essential Questions

Students will consider...

- How can you compare decimals, fractions, and mixed numbers on a number line?
- How can you factor numbers using a factor tree?
- How can you express real world quantities as percents and use them to solve problems?
- How can you express decimals as percents and percents as decimals?
- How can you convert between fractions, decimals, and percents?
- How do you divide a fraction by a whole number?
- How can you express real world quantities as ratios?
- How can you determine if two ratios are equivalent?
- How can you find rates and unit rates?
- How can you solve problems involving distance, rate and time?
- How can you use positive and negative numbers to represent real world quantities?
- How can you write and evaluate expressions?
- How can you use inequalities to solve problems?
- How can you plot polygons on a coordinate grid?
- How can you find the area of a parallelogram?
- How can you describe a set of data using median and mode?
- How can you find the average of a set of values?
- How can you use a histogram to organize data?
- How can you analyze data in a histogram?

| Knowledge <i>Students will know...</i> | Academic Vocabulary |
|--|--|
| <ul style="list-style-type: none"> ● Compare decimals, fractions, and mixed numbers. ● Convert between fractions, decimals, and percents. ● Write ratios and find equivalent ratios. ● Find prime factors of a number. ● Solve problems involving distance, rate, and time. ● Write and evaluate expressions. ● Find area of parallelogram. ● Find mean, median, average of a data set. ● Analyze data displayed in a histogram. | <ul style="list-style-type: none"> ● decimals, fractions, mixed number, factor tree, percents, ratio, equivalent fraction, equivalent ratio, rate, unit rate, integer, opposite, expressions, inequalities, polygons, coordinate grid, area, parallelograms, median, mode, average, histogram |
| Skills <i>Students will be able to...</i> | |
| <ul style="list-style-type: none"> ● Compare decimals, fractions, and mixed numbers on a number line. ● Order decimals, fractions, and mixed numbers on a number line. ● Factor numbers using a factor tree. ● Express real world quantities as percents and use them to solve problems. ● Express decimals as percents and percents as decimals. ● Convert between fractions, decimals, and percents. ● Divide a fraction by a whole number. ● Express real world quantities as ratios. ● Determine if two ratios are equivalent. ● Find rates and unit rates. ● Solve problems involving distance, rate, and time. ● Understand positive and negative numbers, and use them to represent real world quantities. ● Write and evaluate expressions. ● Understand inequalities and use them to solve problems. ● Plot polygons on a coordinate grid. ● Find the area of parallelograms. ● Summarize a data set by using median and mode. ● Find the average of a group of values. ● Make a histogram to organize data. ● Analyze data in a histogram. | |
| 21ST Century/ Interdisciplinary Themes | 21st Century Skills |
| Global Awareness Financial, Business, & Entrepreneurial Literacy Civic Literacy Environmental Literacy Health Literacy | Creativity & Innovation Communication & Collaboration Media Literacy Critical Thinking & Problem Solving Information Literacy Information, Communication, & Technology Life & Career Skills |

Stage 2- Assessment Evidence

Formative Assessments

- Lesson quick checks (Exit tickets)
- Mid-Chapter Assessments
- IXL
- Study Island

Student Self-Assessment

- Homework
- Self Rating Scale
- Kahoot
- Quizlet

Common Assessments

- GoMath Getting Ready for Grade 6 Tests
- Unit Assessment

Stage 3- Learning Plan

Learning Activities

- Fraction and Decimal Comparison Activity
- Understanding a Number Line Activity
- Ordering Fractions and Decimals on a Number Line Post It Note Activity
- Modeling Percents Using Base Ten Blocks
- Connecting Percentages and Decimal Equivalents
- Model Dividing Fractions
- Ratio Activity
- Calculating Rates- Jumping Jack Activity
- Distance-Rate-Time Triangle
- Integer Activities
- Expressions Vs. Equations Venn Diagram
- Graphic Organizer- Inequalities
- Plotting Polygons on Coordinate Grids
- Draw and Construct Area of Parallelograms
- Central Tendency Activities
- Conduct Surveys and Create Histograms
- Stations- Analyzing Histograms

Resources/Instructional Materials

(articles, novels, websites, books, magazines, art, media)

- Kahoot
- Quizlet Live
- Brain Pop
- IXL
- WhiteBoards
- Number Lines
- 10x10 grids
- two-color counters
- grid paper
- calculators

Technology Resources

- <https://www-k6.thinkcentral.com>
- IXL
- Kahoot
- Quizlet Live
- Brain Pop
- Kahn Academy

Accommodations & Modifications from ELL, Spec Ed, At Risk, and Gifted Students

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