

Board Approved August 2017

DEPARTMENT: MathematicsCOURSE: 6th Grade

Week	Marking Period 1	Week	Marking Period 3
1	Pre-Test/Numeration	21	Properties of Two-Dimensional Figures
2	Numeration	22	Properties of Two-Dimensional Figures
3	Variables, Expressions, and Properties	23	Ratios, Rates, and Proportions
4	Variables, Expressions, and Properties	24	Ratios, Rates, and Proportions
5	Operations with Decimals	25	Solving Proportions
6	Operations with Decimals	26	Solving Proportions
7	Solving Equations	27	Understanding Percent
8	Solving Equations	28	Understanding Percent
9	Number and Fraction Concepts	29	Understanding Percent
10	Number and Fraction Concepts	30	NJ ASK REVIEW
Week	Marking Period 2	Week	Marking Period 4
11	Decimals, Fractions, and Mixed Numbers	31	Equations and Graphs
12	Decimals, Fractions, and Mixed Numbers	32	Equations and Graphs
13	Adding and Subtracting Fractions and Mixed Numbers	33	Measurement
14	Adding and Subtracting Fractions and Mixed Numbers	34	Measurement
15	Multiplying Fractions and Mixed Numbers	35	Perimeter and Area
16	Multiplying Fractions and Mixed Numbers	36	Perimeter and Area
17	Dividing Fractions and Mixed Numbers	37	Volume and Surface Area
18	Dividing Fractions and Mixed Numbers	38	Volume and Surface Area
19	Integers	39	Data and Graphs
20	Integers	40	Data and Graphs

Math 6

Time Frame	8 days
Topic	
Topic 1: Numeration	
Essential Questions	
<ul style="list-style-type: none">• How do you use the base-ten numeration system to record numbers? What role does place value play?• What are the different ways you can classify and represent numbers?• What are some ways that numbers, measures, numerical expressions, algebraic expressions, and equations can be represented without changing the value?• What are the different ways numbers, expressions, measures, and objects can be compared to other numbers, expressions, measures, and objects?• How can we use rules of arithmetic and algebra with notions of equivalence to transform equations and inequalities so solutions can be found?• When multiplying and dividing numbers, is there a predictable relationship between powers of ten and decimal point location?• What are the different ways mathematics content and practices can be applied to solve problems?• How can whole numbers and decimals be written, compared, and ordered?	
Enduring Understandings	
<ul style="list-style-type: none">• Our number system is based on groups of ten. Whenever we get 10 in one place value, we move to the next greater place value.• Decimal place values are just an extension of whole number place values to numbers less than one.• Numbers can be used to tell how many.• Place values (10, 100, 1000, and so on) can be represented using exponents. Numbers can be broken apart using place value and represented in different ways.• Place value can be used to compare and order numbers.• The value of an equation containing unknowns can be true or false depending on the replacement values of the unknowns.• Patterns can be used to determine the location of the decimal point in the product when multiplying a decimal by 10, 100, or 1000.• Some problems can be solved by generating a list of outcomes and organizing that list in a systematic way so all outcomes are accounted for.	
Alignment to NJSLs	
6.NS.3, 6.EE.1	
Key Concepts and Skills	
<p><u>Vocabulary</u>: expanded form, million, billion, trillion, base, exponent, power, exponential form, decimal</p> <ol style="list-style-type: none">1. Place value<ul style="list-style-type: none">• Students will read and write numbers to trillions in standard, expanded, and word form.• Students will give the values of certain digits in a number2. Comparing and Ordering Whole Numbers<ul style="list-style-type: none">• Students will use place value to compare and order whole numbers.3. Exponents and Place Value	

Math 6

- Students will write powers as products and evaluate, write expressions in exponential form.
 - Students will write numbers in expanded form using exponents.
4. Decimal Place Value
 - Students will give the place value of a given digit in a decimal number.
 - Students will write decimals in expanded and short-word form.
 5. Multiplying and Dividing by 10, 100, and 1,000
 - Students will use place value and patterns to multiply and divide by powers of 10.
 6. Comparing and Ordering Decimals
 - Students will use place value to compare and order decimals.
 7. Problem Solving: Make an Organized List
 - Students will solve word problems by making organized lists.

Learning Activities

- Number Cube Activity
- Place-Value Chart
- Powers of Ten Chart
- Place Value Investigation
- “Ancient Civilizations in Today’s World” – pg. 7
- “Toss and Talk” Activities
- “Teamwork” Activities
- “Display the Digits” Activities
- “Quick Questions” Activities
- “Think Together” Activities

Assessments

- Daily Practice Problems
- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
- Teacher-made Quizzes and Tests
- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy		Media Literacy		

Interdisciplinary Connections

Social Studies

Technology Integration

8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- ELMO, calculators, computers, responders

Math 6

Time Frame	8 Days
Topic	
Topic 2: Variables, Expressions, and Properties	
Essential Questions	
<ul style="list-style-type: none">• How can mathematical situations and structures be translated and represented abstractly using variables, expressions, and equations?• What are the properties of 1 and 0, and how do the rules of these numbers apply to arithmetic and algebra?• What are the algorithms for each of the operations with rational numbers?• How can patterns be used to identify a relationship between two quantities?• How can mathematics content and practices be applied to solve problems?• What are algebraic expressions and how can they be written and evaluated?	
Enduring Understandings	
<ul style="list-style-type: none">• Some mathematical situations and structures can be translated and represented using a variable in an algebraic expression.• The value of an algebraic expression can be found by replacing the variable(s) with given number(s) and doing the calculation that results• You can add (or multiply) two numbers in any order. Three numbers can be grouped and added (or multiplied) in any order. $0 + a = a$ and $1 \times a = a$ for any number a.• There is an agreed upon order in which operations are carried out in a numerical expression.• The Distributive Property of Multiplication over Addition lets you multiply a sum by multiplying each addend separately and then finding the sum of the products.• There is more than one way to do a mental calculation. Properties of operations make some calculations easy to do mentally.• Some quantities have a mathematical relationship; the value of one quantity can be found if you know the value of the other quantity. Patterns can sometimes be used to identify a relationship between two quantities.• Some problems can be solved by recording and organizing data in a table and by finding and using numerical patterns in the table.	
Alignment to NJSL	
6.EE.2, 6.EE.2.a, 6.EE.2.b, 6.EE.2.c, 6.EE.3, 6.EE.6, 6.NS.2	
Key Concepts and Skills	
<p><u>Vocabulary</u> – variable, algebraic expression, coefficient, Commutative Property of Addition, Commutative Property of Multiplication, Associative Property of Addition, Associative Property of Multiplication, Identity Property of Addition, Identity Property of Multiplication, order of operations, Distributive Property, evaluate, substitution, input/output table</p> <ol style="list-style-type: none">1. Using Variables to Write Expressions<ul style="list-style-type: none">• Students will write numerical expressions with variables to represent relations expressed verbally.2. Properties of Operations<ul style="list-style-type: none">• Students will give missing addends and factors in equations and state the property used.3. Order of Operations<ul style="list-style-type: none">• Students will evaluate numeric or algebraic expressions with three or more numbers and	

Math 6

up to three variables. Expressions may include parenthesis and exponents.

- Students will use the correct order of operations to evaluate the expression.
4. The Distributive Property
 - Students will use the Distributive Property to evaluate expressions and to compute mentally.
 5. Mental Math
 - Students will evaluate expressions, using mental math strategies and properties of operations, and justify the steps used to compute mentally.
 6. Evaluating Expressions
 - Students will evaluate algebraic expressions using substitution.
 7. Using Expressions to Describe Patterns
 - Students will identify missing numbers in a pattern and write an algebraic expression to describe the pattern.
 8. Problem Solving: Make a Table
 - Students will make and use tables to solve word problems.

Learning Activities

- Number Cube Activity
- Place-Value Chart
- Powers of Ten Chart
- Place Value Investigation
- “Ancient Civilizations in Today’s World” – pg. 7
- “Toss and Talk” Activities
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- “Think Together” Activities

Assessments

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- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy		Media Literacy		

Interdisciplinary Connections

Social Studies

Technology Integration

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Math 6

Time Frame	10 days
Topic	
Topic 3: Operations with Decimals	
Essential Questions	
<ul style="list-style-type: none">• How are sums, differences, products, and quotients involving decimals estimated and found?• How can we estimate numerical calculations by replacing numbers with other numbers that are close and easy to compute with mentally?• How can we use equivalence to transform calculations into simpler ones?• What are the algorithms for each of the operations with rational numbers?• How can we use rules of arithmetic and algebra with notions of equivalence to transform equations and inequalities so solutions can be found?• How can numbers, measures, numerical expressions, algebraic expressions, and equations be represented to have the same value?• What are the different ways mathematics content and practices can be applied to solve problems?	
Enduring Understandings	
<ul style="list-style-type: none">• Rounding is a process for finding the multiple of 10, 100, etc. or of 0.1, 0.01, etc. closest to a given number.• Standard addition and subtraction algorithms break calculations into simpler calculations using place value. Answers to the simpler calculation are used to give the final sum or difference.• The standard multiplication algorithm involving decimals is an extension of the standard algorithm for multiplying whole numbers.• The sharing interpretation of division can be used to model the standard division algorithm.• The standard division algorithm involving decimals is an extension of the standard algorithm for dividing whole numbers.• There is an agreed upon order for which operations in a numerical expression are performed.• The value of an equation containing unknowns can be true or false depending on the replacement values of the unknowns.• Variables are used to represent numbers in mathematical expressions, equations, and inequalities.• Numbers can be substituted for variables to make an equation or inequality true.• A number divided by a decimal can be represented as an equivalent calculation using place value to change the divisor to a whole number.• Some problems can be solved by first finding and solving a sub-problem and then using that answer to solve the original problem.	
Alignment to NJSLs	
6.NS.2, 6.NS.3, 6.EE.5, 6.EE.6, 6.EE.2.c	
Key Concepts and Skills	
<p><u>Vocabulary:</u> estimate, compatible numbers, inequality</p> <ol style="list-style-type: none">1. Estimating Sums and Differences<ul style="list-style-type: none">• Students will estimate the sums or differences of addition and subtraction expressions that involve decimals.2. Adding and Subtracting<ul style="list-style-type: none">• Students will find sums and differences of decimals with a variety of whole-number and decimal places.3. Estimating Products and Quotients	

Math 6

- Students will estimate products and quotients of whole numbers and decimals in a variety of ways.
- 4. Multiplying Decimals
 - Students will find products of whole numbers and decimals to ten thousandths.
- 5. Dividing Whole Numbers
 - Students will divide whole numbers by 1-digit divisors
- 6. Diving by a Whole Number
 - Students will find quotients where the dividend and/or the quotient is a decimal.
- 7. Dividing Decimals
 - Students will find quotients of two decimals.
- 8. Evaluating Expressions
 - Students will use the order of operations to evaluate expressions with whole numbers and decimals.
- 9. Solutions for Equations and Inequalities
 - Students will substitute numeric values for variables to evaluate expressions and to find solutions for equations and inequalities.
- 10. Problem Solving: Multiple-Step Problems
 - Students will solve multi-step word problems.

Learning Activities

- “Toss and Talk” Activities
- “Teamwork” Activities
- “Display the Digits” Activities
- “Think Together” Activities
- “Quick Questions” Activities
- “Tic Tac Toe” Activities
- “Clip and Cover” Activities
- “Problem Solving: Draw a Picture” Activity
- Move between fraction strip models, grid models, and numerical forms for both fractions and decimal numbers.
- Read and write fractions and decimal numbers
- Extend understanding of fractions and decimals to include place values greater than hundredths
- Develop ways to find a decimal between any two given decimals
- Represent fractions and decimals with hundredths grid
- Use representations to find approximate or exact decimal equivalents for fraction benchmarks

Assessments

- Daily Practice Problems
- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
- Teacher-made Quizzes and Tests
- Homework

Math 6

Time Frame	9 days
Topic	
Topic 4: Solving Equations	
Essential Questions	
<ul style="list-style-type: none">• What procedures can be used to solve equations?• Which properties, for a given set of numbers, are always true?• How can we use rules of arithmetic and algebra that can be used with the notions of equivalence to transform equations and inequalities so solutions can be found?• How can mathematics content and practices be applied to solve problems?	
Enduring Understandings	
<ul style="list-style-type: none">• The same number can be added or subtracted from both sides of an equation and not change the equality. Multiplying or dividing both sides of an equation by the same nonzero number does not change the equality.• Solving an equation involves finding the value of the unknown that makes the equation true. There is more than one way to solve an equation.• Information in a problem can often be shown using a picture and used to understand and solve the problem. Some problems can be solved by writing and completing a number sentence or equation.	
Alignment to NJSLS	
6.EE.3, 6.EE.4, 6.EE.5, 6.EE.6, 6.EE.7, 6.NS.2	
Key Concepts and Skills	
<p>Vocabulary: equation, Addition Property of Equality, Subtraction Property of Equality, Multiplication Property of Equality, Division Property of Equality, inverse relationship</p> <ol style="list-style-type: none">1. Properties of Equality<ul style="list-style-type: none">• Students will use the properties of equality to balance equations.2. Solving Addition and Subtraction Equations<ul style="list-style-type: none">• Students will use inverse operations to isolate the variable and solve one-step addition and subtraction equations.3. Problem Solving: Draw a Picture and Write an Equation<ul style="list-style-type: none">• Students will draw pictures that represent information given in problems.4. Solving Multiplication and Division Equations<ul style="list-style-type: none">• Students will solve one-step multiplication and division equations.	
Learning Activities	
<ul style="list-style-type: none">• “Toss and Talk” Activities• “Teamwork” Activities• “Display the Digits” Activities• “Think Together” Activities• “Quick Questions” Activities• “Tic Tac Toe” Activities• “Clip and Cover” Activities• “Problem Solving: Draw a Picture” Activity	
Assessments	

Math 6

- Daily Practice Problems
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21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy		Media Literacy		

Interdisciplinary Connections

Social Studies

Technology Integration

8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- ELMO, computers, responders

Math 6

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy		Media Literacy		

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Math 6

Time Frame	8 days
Topic	
Topic 5: Number and Fraction Concepts	
Essential Questions	
<ul style="list-style-type: none">• How can numbers be broken apart into factors?• How can fractions be represented and simplified?• How can numbers be used, classified, and represented in different ways?• What are real numbers? What are the properties of real numbers?• What are some ways that numbers, measures, numerical expressions, algebraic expressions, and equations can be represented without changing the value?• How can relationships and generalizations be made for mathematical situations to predict future outcomes?• How can mathematical expressions and equations be used to tell how members in one set are related to members in a second set?• What are the different ways mathematics content and practices can be applied to solve problems?	
Enduring Understandings	
<ul style="list-style-type: none">• Every counting number can be divided by 1 and itself. Some counting numbers can be also divided by other numbers.• For a given counting number, the product of that number and any other counting number is divisible by both numbers.• Every positive integer (except 1) can be represented as a product of one or more prime numbers in exactly one way disregarding the order of the other factors.• There is exactly a greatest number that divides evenly each of two whole numbers. Sometimes that number is 1.• A fraction describes the division of a whole number into equal parts.• A fraction is relative to the size of a whole.• The same fractional amount can be represented by an infinite set of different but equivalent fractions.• Equivalent fractions are found by multiplying or dividing the numerator and denominator by the same nonzero number.• A fraction can be expressed in its simplest form by dividing the numerator and denominator by common factors, including the greatest common factor, until there are no common factors other than 1.• Some real-world quantities have a mathematical relationship• Commonalities in attributes of objects or situations can be found and used to make generalizations about relationships.	
Alignment to NJSLs	
6.NS.4	
Key Concepts and Skills	

Math 6

Vocabulary: multiple, divisible, prime number, composite number, prime factorization, greatest common factor, fraction, numerator, denominator, equivalent fractions, simplest form, conjecture

1. Factors, Multiples, and Divisibility

- Students will use divisibility rules to find factors and multiples of whole numbers.

2. Prime Factorization

3. Greatest Common Factor

4. Understanding Fractions

5. Equivalent Fractions

6. Fractions in Simplest Form

7. Problem Solving: Make and Test Conjectures

Learning Activities

- “Toss and Talk” Activities
- “Teamwork” Activities
- “Display the Digits” Activities
- “Think Together” Activities”
- “Quick Questions” Activities
- “Tic Tac Toe” Activities
- “Clip and Cover” Activities
- “Problem Solving: Draw a Picture” Activity
- Play the factor game to practice finding factors of whole numbers
- Analyze the Factor Game strategies to introduce prime and composite numbers
- Play the Product Game to explore multiples
- Use a Venn Diagram to classify multiples, factors, LCM, and GCF

Assessments

- Daily Practice Problems
- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
- Teacher-made Quizzes and Tests
- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy		Media Literacy		

Interdisciplinary Connections

Social Studies

Technology Integration

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Math 6

Time Frame	9 days
Topic	
Topic 6: Decimals, Fractions, and Mixed Numbers	
Essential Questions	
<ul style="list-style-type: none">• What are real numbers? What are the properties of real numbers?• How are decimals and fractions related?• What are some ways that numbers, measures, numerical expressions, algebraic expressions, and equations can be represented without changing the value?• What are the different ways mathematics content and practices can be applied to solve problems?	
Enduring Understandings	
<ul style="list-style-type: none">• A fraction describes the division of a whole into equal part, and it can be interpreted in more than one way depending on the whole to be divided.• A decimal is another name for a fraction.• Mixed numbers can also be represented using decimals.• Fractional amounts greater than 1 can be represented in different ways.• Whole number amounts can be represented as fractions.• When the numerator and denominator are equal, the fraction is equal to 1.• Information in a problem can be shown by drawing a picture or a diagram that can be used to understand and solve the problem.	
Alignment to NJSL	
6.NS.3	
Key Concepts and Skills	
<p><u>Vocabulary:</u> proper fraction, improper fraction, mixed number, terminating decimal, repeating decimal</p> <ol style="list-style-type: none">1. Fractions and Division<ul style="list-style-type: none">• Students will use fractions to represent division• Students will locate and place fractions on a number line2. Fractions and Decimals<ul style="list-style-type: none">• Students will identify and write equivalent fractions and decimals.3. Improper Fractions and Mixed Numbers<ul style="list-style-type: none">• Students will write improper fractions as mixed numbers and mixed numbers as improper fractions.• Students will place improper fractions and mixed numbers on a number line.4. Decimal Forms of Fractions and Mixed Numbers<ul style="list-style-type: none">• Students will find equivalent decimals for fractions and mixed numbers• Students will changed terminating decimals to fractions and mixed numbers5. Problem Solving: Draw a Picture<ul style="list-style-type: none">• Students will draw pictures that represent information in given problems.	
Learning Activities	

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- Circle Model Activity
- Factoid Activity
- Number Line Activities
- “Teamwork” Activities
- “Display the Digits” Activities
- “Tic Tac Toe” Activities
- Fraction Strips Activities
- Students use the benchmark values of 0, $\frac{1}{2}$, and 1 to estimate the size of fractions and to compare fractions.
- Students will begin to explore how to express the shaded area of grids and fraction strips as both fractions and decimals.

Assessments

- Daily Practice Problems
- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
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- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
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Interdisciplinary Connections

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Math 6

Time Frame	8 days
Topic	
Topic 7: Adding and Subtracting Fractions and Mixed Numbers	
Essential Questions	
<ul style="list-style-type: none">• What are the standard procedures for estimating and finding sums and differences of fractions and mixed numbers?• What are the algorithms for each of the operations with rational numbers?• What are the different ways that numbers can be classified and represented?• How can we estimate numerical calculations by replacing numbers with other numbers that are close and easy to compute with mentally?• How can the rules of arithmetic and algebra be used with the notions of equivalence to transform equations and inequalities so solutions can be found?• How can mathematics content and practices be applied to solve problems?	
Enduring Understandings	
<ul style="list-style-type: none">• Adding or subtracting fractions with like denominators is similar to adding or subtracting whole numbers. Add or subtract the numerators and write the sum or difference over the common denominator.• To add or subtract with unlike denominators, change to an equivalent calculation with like denominators.• One way to add or subtract mixed numbers is to add or subtract the fractional parts and then the whole number parts. Sometimes whole numbers or fractions need to be renamed.• All nonzero whole numbers have common multiples, including at least one. Sometimes the least common multiple of two numbers is one of the numbers.• Sums and Differences of Mixed Numbers can be estimated by rounding each mixed number to the nearest whole number.• Equations can be transformed into equivalent equations and solved using properties of equality and inverse relationships.• Recording information in a table can help you understand and solve some problems.	
Alignment to NJSLs	
6.NS.4, 6.RP.1	
Key Concepts and Skills	
<p><u>Vocabulary</u> – like denominators, common multiples, least common multiple (LCM), unlike denominators, least common denominator (LCD)</p> <ol style="list-style-type: none">1. Adding and Subtracting: Like Denominators<ul style="list-style-type: none">• Students will add and subtract fractions with like denominators and give the answer in simplest form.2. Least Common Multiple<ul style="list-style-type: none">• Students will find common multiples and the least common multiple (LCM) of a set of numbers.3. Adding and Subtracting: Unlike Denominators<ul style="list-style-type: none">• Students will find equivalent fractions with the LCD to add and subtract fractions with unlike denominators and give the answer in simplest form.	

Math 6

4. Estimating Sums and Differences of Mixed Numbers
 - Students will estimate sums and differences of fractions and mixed numbers by rounding to the nearest whole number.
5. Adding Mixed Numbers
 - Students will find the sums of mixed numbers with and without renaming.
6. Subtracting Mixed Numbers
 - Students find the difference of mixed numbers with and without renaming.
7. Problem Solving: Make a Table

Students will make and use tables to solve word problems.

Learning Activities

- Circle Activities
- Factoid Activities
- “Tic Tac Toe” Activities
- “Clip and Cover” Activities
- “Problem Solving: Draw a Picture” Activity
- Estimation of Sums & Digits Activities
- “Quick Questions” Activities
- “Toss and Talk” Activities
- “Teamwork” Activities
- “Display the Digits” Activities
- Discover a pattern about addition and subtraction problems that are grouped into categories based on how they are solved to write a rule for addition and subtraction of fractions

Assessments

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- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
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Interdisciplinary Connections

Social Studies

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- ELMO, calculators, computers

Math 6

Time Frame	8 days
Topic	
Topic 8: Multiplying Fractions and Mixed Numbers	
Essential Questions	
<ul style="list-style-type: none">• What are standard procedures for estimating and finding products of fractions and mixed numbers?• What are the meanings and relationships between addition, subtraction, multiplication, and division? How is each operation related to other operations?• How can we estimate numerical calculations by replacing numbers with other numbers that are close and easy to compute with mentally?• What are the algorithms for each of the operations with rational numbers?• How can mathematics content and practices be applied to solve problems?	
Enduring Understandings	
<ul style="list-style-type: none">• The product of a fraction, x/y, and a whole number can be interpreted as dividing the whole into y parts and then taking x of those parts.• Products involving fractions can be interpreted as finding the area of a rectangle. When multiplying two fractions that are both less than 1, the product is smaller than either fraction.• Rounding and compatible numbers can be used to estimate the product of fractions or mixed numbers.• The product of a fraction and a whole number can be found by dividing the whole number by the denominator and then multiplying by the numerator.• The product of two fractions can be found by writing the product of the numerators over the product of the denominators.• The product of two mixed numbers can be found by first changing the mixed number to improper fractions, and then multiplying the improper fractions.• Some problems can be solved first by finding and solving a sub-problem(s) and then using that answer(s) to solve the original problem.	
Alignment to NJSL	
6.6.NS.A.1	
Key Concepts and Skills	

Math 6

Vocabulary: No new vocabulary.

1. Multiplying a Fraction and a Whole Number
 - Students will use different methods to multiply fractions by whole numbers.
2. Estimating Products
 - Students will use compatible numbers and rounding to estimate with fractions.
3. Multiplying Fractions
 - Students will find the product of two fractions.
4. Multiplying Mixed Numbers
 - Students will find the product of two mixed numbers.
5. Problem Solving: Multiple Step Problems
 - Students will solve multiple-step word problems.

Learning Activities

- “Clip and Cover” Activities
- “Teamwork” Activities
- “Problem Solving: Draw a Picture” Activity
- Factoid Activity
- Explore equivalent forms as a strategy to multiply fractions and mixed numbers

Assessments

- Daily Practice Problems
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21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy		Media Literacy		

Interdisciplinary Connections

Science

Technology Integration

8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- ELMO, calculators, computers

Time Frame	8 days
Topic	
Topic 9: Dividing Fractions and Mixed Numbers	
Essential Questions	

Math 6

- How can we estimate numerical calculations by replacing numbers with other numbers that are close and easy to compute with mentally?
- What are the meanings and relationships between addition, subtraction, multiplication, and division? How is each operation related to other operations?
- What are the different algorithms for each of the operations with rational numbers?
- How can we use rules of arithmetic and algebra with notions of equivalence to transform equations and inequalities so solutions can be found?
- What are the different ways mathematics content and practices can be applied to solve problems?

Enduring Understandings

- Rounding and compatible numbers can be used to estimate the quotient of mixed numbers.
- When dividing by a fraction that is less than 1, the quotient is greater than the dividend.
- The division of a whole number by a fraction can be interpreted in different ways.
- A division expression with a fraction divisor can be changed to an equivalent multiplication expression.
- The quotient of two mixed numbers can be found by changing the mixed numbers to improper fractions, then changing the division expression to an equivalent multiplication expression.
- Equations with fractions and mixed numbers can be solved using properties of equality and inverse operations.
- Some problems can be solved by identifying elements that repeat in a predictable way.

Alignment to NJSLs

6.NS.1, 6.NS.6, 6.EE.7

Key Concepts and Skills

Vocabulary: reciprocals

1. Understanding Division of Fractions
 - Students will make and use models to divide by fractions and to divide fractions.
2. Dividing a Whole Number by a Fraction
 - Students will use the inverse relationship between multiplication and division to help them understand how to divide by a fraction.
3. Dividing Fractions
 - Students will use multiplication to divide fractions.
4. Estimating Quotients
 - Students will estimate quotients of mixed numbers using compatible numbers and rounding.
5. Dividing Mixed Numbers
 - Students will find the quotients of divisions involving mixed numbers.
6. Solving Equations
 - Students will solve one-step linear equations in one variable involving fractions and mixed numbers.
7. Problem Solving: Look for a Pattern
 - Students will solve problems by looking for a pattern.

Learning Activities

- Divide whole numbers by fractions to decide how many pizzas can be made with

Math 6

given amounts of cheese

- Divide fractions by whole numbers to determine equal shares
- Divide to find the number of bows that can be made with given amounts of ribbon
- Write a rule for division of fractions based on patterns about division problems that are grouped into categories
- Fraction strips activity with partners
- Students work in groups to explore fraction division. Use fraction strips to solve problems like: How can you divide four cakes among five people evenly?
- Students demonstrate their understanding of division of fractions on a test by drawing a picture to show that " $1 \frac{1}{2} \div \frac{1}{2}$ " means: How many halves are there in $1 \frac{1}{2}$?
- “Keep Change Flip” method for division of fractions. Does order matter? Use calculators to check answers.
- “Problem Solving” – pg. 203
- “Toss and Talk” Activities • “Quick questions”

Assessments

- Daily Practice Problems
- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
- Teacher-made Quizzes and Tests
- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy		Media Literacy		

Interdisciplinary Connections

Science

Technology Integration

8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- ELMO, calculators, computers

Math 6

Time Frame	10 days
Topic	
Topic 10: Integers	
Essential Questions	
<ul style="list-style-type: none">• How are integers related to whole numbers?• How can integers be added, subtracted, multiplied, and divided?• How can two- and three-dimensional objects with or without curved surfaces be described, classified, and analyzed?	
Enduring Understandings	
<ul style="list-style-type: none">• Numbers that are the same distance from 0 on the number line are opposites.• Integers are the counting numbers, their opposites, and zero.• Numbers to the right of 0 are positive and numbers to the left of 0 are negative.• A number to the right of another number on a number line is the greater number.• Each rational number can be associated with a unique point on the number line.• Addition and subtraction of integers can be modeled as moves on the number line.• Patterns show why rules for adding and subtracting integers make sense.• Patterns show why rules for multiplying and dividing integers make sense.• The inverse relationship between multiplication and division can show why rules for dividing integers make sense.• Absolute value is used to define the distance from a number to zero, regardless of whether the number is positive or negative.• The Cartesian Coordinate System is a scheme that uses two perpendicular number lines intersecting at zero to tell the location of points in the plane.	
Alignment to NJSLS	
6.NS.5, 6.NS.6, 6.NS.6.a, 6.NS.6.b, 6.NS.6.c, 6.NS.7, 6.NS.7.a, 6.NS.7.b, 6.NS.7.c, 6.NS.7.d, 6.NS.8, 6.G	
Key Concepts and Skills	

Math 6

Vocabulary: opposites, integers, absolute value, rational number, coordinate plane, x-axis, y-axis, quadrants, ordered pair, origin

1. Understanding Integers
 - Students will read, write, and use positive and negative integers.
2. Comparing and Ordering Integers
 - Students will compare and order integers.
3. Rational Numbers on a Number Line
 - Students will locate, compare, and order rational numbers on a number line.
4. Adding Integers
 - Students will add integers using a number line and the rules for adding integers.
5. Subtracting Integers
 - Students will subtract integers using a number line and the rules for subtracting integers.
6. Multiplying Integers
 - Students will multiply integers using patterns and rules for multiplying integers.
7. Dividing Integers
 - Students will divide integers using the relationship between multiplication and division and the rules for dividing integers.
8. Absolute Value
 - Students will compare and order absolute values.
9. Graphing Points on a Coordinate Plane
 - Students will identify and graph points on a coordinate plane.
10. Problem Solving: Use Reasoning
 - Students will use reasoning to solve problems.
 - Students will draw polygons in the coordinate plane when given the coordinates of their vertices, and will find the lengths of the polygons' sides.

Learning Activities

- Show students examples of negative numbers. Explain that the negative sign indicates that a number is less than zero.
- Mention that negative amounts of money often indicate debt, or money owed.
- Introduce negative integer number lines and teach students how to graph positive and negative integers.
- To help students understand the concept of opposite integers, discuss what opposite means in contexts other than math. Have students generate a list of opposite terms. Then have students name some pairs of opposite integers.
- Have students write the integers being compared on sticky notes and arrange them on a large number line on the board. Students will explain why they placed their number in the spot they chose.
- Use the number line to introduce absolute value as distance from zero.

Math 6

- “Clip and Cover” Activities
- “Time Zone Fun” Activity
- “Quick Questions” Activities
- “Division Patterns” Activity
- “Teamwork” Activity

Assessments

- Daily Practice Problems
- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
- Teacher-made Quizzes and Tests
- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy	X	Media Literacy		

Interdisciplinary Connections

Social Studies, Business

Technology Integration

8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- ELMO, calculators, computers

Time Frame	10 days
Topic	
Topic 11: Properties of Two-Dimensional Figures	
Essential Questions	
<ul style="list-style-type: none"> • How can two- and three-dimensional objects with or without curved surfaces be described, classified, and analyzed? • How many ways can objects in space be transformed and how can those transformations be described and analyzed mathematically? • How can mathematics content and practices be applied to solve problems? 	
Enduring Understandings	
<ul style="list-style-type: none"> • Point, line, line segment, ray, and plane are the core attributes of space objects. Lines can be classified by their relationship to other lines. • An angle is formed by two intersecting lines or by two different rays with a common endpoint. Angles can be classified by their size. • Some pairs of angles have special relationships based on their relative positions or their measures. • Polygons can be described and classified by their sides and angles. The angles of a triangle can form a straight line so the sum of the measures of the angles is 180 degrees. • Polygons can be described and classified by their sides and angles. A quadrilateral can be broken into two triangles. So the sum of the measure of the angles of a quadrilateral is 360 degrees. • A circle is a set of all points in the plane an equal distance from a given point. Some attributes of circles have special names (e.g. radius). • Shapes in the plane can be translated to another position in the plane. The translated image is the same size and shape as the original figure. • Some shapes can be reflected across one or more lines passing through the shape so the shape folds onto itself exactly. • Some problems can be solved by recording and organizing data in a table and by finding and using numerical patterns in the table. 	
Alignment to NJSL	
6.EE.9	
Key Concepts and Skills	
<p><u>Vocabulary</u>: point, line, ray, intersecting lines, plane, parallel lines, perpendicular lines, line segment, congruent line segments, midpoint, vertex, straight angle, acute angle, obtuse angle, right angle, vertical angles, adjacent angles, complementary angles, supplementary angles, congruent angles, acute triangles, right triangle, obtuse triangle, equilateral triangle, isosceles triangle, scalene triangle, trapezoid, parallelogram, rectangle, rhombus, square, circle, diameter, radius, chord, central angle, arc, sector congruent figures, translation, reflection, glide reflection, rotation, rotational symmetry, reflection symmetry, line of symmetry</p>	
1. Basic Geometric Ideas	

Math 6

- Students will identify examples of important geometric terms relating to two-dimensional figures.
2. Measuring and Drawing Angles
 - Students will measure and draw angles and classify them according to their measure.
 3. Angle Pairs
 - Students will identify and find the measures of vertical, adjacent, complementary, and supplementary angles
 4. Triangles
 - Students will identify and classify triangles using sides and angle measures.
 5. Quadrilaterals
 - Students will identify and classify quadrilaterals using the relationships of sides and angle measures.
 6. Circles
 - Students will identify parts of a circle, such as the center, a radius, a diameter, a chord, a sector, a semicircle, and a central angle and the relationships among them.
 7. Transformations and Congruence
 - Students will determine whether figures are congruent and whether a pair of congruent figures is related by a transformation.
 8. Symmetry
 - Students will identify and make symmetrical figures and draw lines of symmetry.
 9. Problem Solving: Make a Table and Look for a Pattern

Students will solve problems by making a table and finding numerical patterns in the table.

Learning Activities

- Sort manipulatives according to properties they observe and describe properties
- Explore the symmetries of triangles, quadrilaterals, and other polygons
- Manipulate polygons to decide which shapes will tile a surface
- Estimate angles by comparing them to 90 degree angle benchmark
- Develop angle sense using rotations of 30 and 45 degrees and their multiples
- Practice using an angle ruler to measure angles
- Analyze the effects of measurement error
- Explore patterns among angles created when two or more parallel lines are cut by a transversal
- Use patterns to make a general rule about the relationship between the number of sides and the angle sum of regular and irregular polygons
- Use Geometer's Sketchpad to explore properties of angles
- "Going Digital" Activity – pg. 273
- "Tic Tac Toe" Activities
- "Put Away Your Protractor" Activity
- "Angle Pairs" Activity
- "Team Work" Activities

Assessments

- Daily Practice Problems

Math 6

- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
- Teacher-made Quizzes and Tests

- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy	X	Media Literacy		

Interdisciplinary Connections

Social Studies

Technology Integration

8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- ELMO, computers, Geometer's Sketchpad

Math 6

Time Frame	8 days
Topic	
Topic 12: Ratios, Rates, and Proportions	
Essential Questions	
<ul style="list-style-type: none">• What are ratios and rates and how are they used in solving problems?• What is a proportion and what role does a ratio play in a proportion?• What is a constant ratio?• When are situations proportional?• How can numbers, expressions, measures, and objects be compared to other numbers, expressions, measures, and objects?• What are the different ways mathematics content and practices can be applied to solve problems?	
Enduring Understandings	
<ul style="list-style-type: none">• A ratio is a special relationship between two quantities where for every x units of one quantity there are y units of another quantity. The quantities being compared in a ratio are called terms.• In a proportional relationship there are an infinite number of ratios equal to the lowest terms or constant ratio. Equal ratios can be found by multiplying both terms by the same non-zero number.• A rate is a special ratio that compares two quantities with different units of measure.• A unit rate is a rate that compares a quantity to one unit of another quantity.• A formula is a common relationship between quantities expressed as an equation.• A special proportional relationship involves distance (d), rate (r), and time (t). The formula showing this relationship is $d = r \times t$.• Rates are easily compared when each is expressed as a unit rate.• Information in a problem can often be shown using a picture to understand and solve the problem.	
Alignment to NJSLs	
6.RP.1, 6.RP.2, 6.RP.3, 6.RP.3.b, 6.EE.9	
Key Concepts and Skills	
<p><u>Vocabulary</u>: ratio, terms, proportion, rate, unit rate, formula</p> <ol style="list-style-type: none">1. Understanding Ratios<ul style="list-style-type: none">• Students will express comparisons as ratios in three ways (a/b, a to b, a:b).2. Equal Ratios and Proportions<ul style="list-style-type: none">• Students will find equal ratios and determine if two ratios form a proportion.3. Understanding Rates and Unit Rates<ul style="list-style-type: none">• Students will find the unit rate for a given rate.	

Math 6

4. Comparing Rates

- Students will compare and use rates to identify the better buy or the lower rate.

5. Distance, Rate and Time

- Students will use a formula to solve problems involving distance, rate, and time.

6. Problem Solving: Draw a Picture

- Students will draw pictures that represent information given in problems.

Learning Activities

- Newspaper Activity – Ratio of words to sentences
- Students begin to see a ratio as both the comparison of two quantities and as a number in its own right. They are challenged to find ratios that are frequently used such as \$0.65 per pound and 55 miles per hour.
- “Think Together” Activity
- “Ratios, Rates, Proportions” Activity – pg.19
- “Mixed Problem Solving” Science Activity
- “Understanding Rates and Unit Rates”
- Explore how you can use the average speed to find distance and time
- “Toss and Talk” Activity
- “Problem Solving: Draw a Picture” Activity

Assessments

- Daily Practice Problems
- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
- Teacher-made Quizzes and Tests
- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy	X	Media Literacy		

Interdisciplinary Connections

Science, Business

Technology Integration

8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- ELMO, calculators, computers, responders

Math 6

Time Frame	8 days
Topic	
Topic 13: Solving Proportions	
Essential Questions	
<ul style="list-style-type: none">• What procedures can be used to solve proportions?• What is proportionality and what does it involve?• How many equal ratios are there in a proportional relationship?• How can we use proportions in problem solving situations?	
Enduring Understandings	
<ul style="list-style-type: none">• Some proportion problems can be solved by generating equal ratios using multiplication and division.• Some proportion problems can be solved by finding and using the common factor that relates the terms.• Some proportion problems can be solved by finding and using the unit amount.• Tape diagrams and double number line diagrams can be used to show ratio relationships and be used to reason about solutions to problems.• Equivalent ratios can be represented in a table, and the pairs of values can be plotted on the coordinate plane.• Equal ratios are used in map scales and scale drawings.	
Alignment to NJCLS	
6.RP.3, 6.RP.3.a, 6.RP.3.b, 6.RP.2, 6.RP.3, 6.RP.3.a, 7.G.1	
Key Concepts and Skills	
<u>Vocabulary:</u> scale drawing, scale	
<ol style="list-style-type: none">1. Using Ratio Tables<ul style="list-style-type: none">• Students will use ratio tables and common factors to solve proportions2. Using Unit Rates<ul style="list-style-type: none">• Students will find unit rates to solve proportions3. Applying Ratios<ul style="list-style-type: none">• Students will use tape diagrams and double number line diagrams to solve ratio proportions4. Problem Solving: Writing to Explain<ul style="list-style-type: none">• Students will explain solutions to word problems involving proportions5. Ratios and Graphs<ul style="list-style-type: none">• Students will use tables and graphs to represent equivalent ratios6. Maps and Scale Drawings<ul style="list-style-type: none">• Students will use maps and scale drawings to solve problems	
Learning Activities	

Math 6

- Penny Activity
- Design a floor plan on a centimeter grid paper
- Group work – Design a teen recreation center
- Scale drawings activity
- “Social Studies Statue of Liberty” Project
- “Clip and Cover” Activity
- “Display the Digits” Activity
- “Think Together” Activity
- “Going Digital” Activity
- “Tic Tac Toe” Activity
- “Toss and Talk” Activity
- “Factoid” Activity
- Use ratio tables to find ratios that are equivalent

Assessments

- Daily Practice Problems
- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
- Teacher-made Quizzes and Tests
- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy	X	Media Literacy		

Interdisciplinary Connections

Social Studies, Science, Business

Technology Integration

8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

Math 6

Time Frame	11 days
Topic	
Topic 14: Understanding Percent	
Essential Questions	
<ul style="list-style-type: none">• What is the meaning of percent?• How can percent be estimated and found?• What is proportionality and what does it involve?• What are the different ways to represent numbers that have the same value?• How can numbers be approximated?	
Enduring Understandings	
<ul style="list-style-type: none">• A percent is a special kind of ratio in which a part is compared to a whole number with 100 parts. The whole number is 100%.• Percents are relative to the size of a whole.• Finding percents of a whole is like finding a fractional part of a whole. You can find the percent of a number by changing the percent to a decimal and multiplying or using a proportion.• The whole can be found when you are given a percent and a part. A number line and a proportion can be used to help solve for the missing whole.• A part of a whole or a part of a set can be represented by a fraction, decimal, or percent.• Some percents can be approximated by simple fractions and used to estimate the percent of a number.• Answers to problems should always be checked for reasonableness, and this can be done different ways.	
Alignment to NJSLs	
6.RP.3, 6.RP.3.c	
Key Concepts and Skills	
<u>Vocabulary:</u> percent	
<ol style="list-style-type: none">1. Understanding Percent<ul style="list-style-type: none">• Students will interpret percents as parts of a hundred.2. Fractions, Decimals, and Percents<ul style="list-style-type: none">• Students will find equivalent forms of fractions, decimals, and percents3. Percents Greater Than 100 and Less Than 1<ul style="list-style-type: none">• Students will interpret percentages greater than 1 and less than 1 as part of a hundred and express them in equivalent decimal and fraction forms.4. Estimating Percent<ul style="list-style-type: none">• Students will use compatible numbers to estimate percents of numbers and to determine what percent one number is of another.5. Finding the Percent of a Number	

Math 6

- Students will find the percent of a number and determine what percent one number is of another.
6. Applying Percents: Finding the Whole
- Students will find the whole in problems where they are given the percent and a corresponding part.
7. Problem Solving: Reasonableness
- Students will learn how to check to see if their answer is reasonable.

Learning Activities

- Decide if it is better to take a discount of 20% and then add 7% sales tax or add the sales tax first and then take a 20% discount. Then determine what is a better deal: 45% off an item or 25% off that same item and then take an additional 20% off the reduced price.
- Students spend \$1000 by selecting items from a catalog. They must compute sales tax and consider it in deciding what they will buy.
- Surface Area of the Earth Project – pg. 343
- “Understanding Percent” worksheet
- Students will make flash cards of the percent benchmarks and fraction equivalents
- “Toss and Talk” activities
- “Think Together” activities
- “Display the Digits” activities
- “Can you turn the light on” activity
- “Clip and Cover” activities
- “Going Digital” activity
- “Teamwork” activities

Assessments

- Daily Practice Problems
- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
- Teacher-made Quizzes and Tests
- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy	X	Media Literacy		

Interdisciplinary Connections

Science

Technology Integration

8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- ELMO, calculators, computers

Math 6

Time Frame	9 days
Topic	
Topic 15: Equations and Graphs	
Essential Questions	
<ul style="list-style-type: none">• How can equations be graphed?• What patterns can be found in the graphs of equations?• What is proportionality and what does it involve?• How can number sense be used to estimate solutions to equations?• How can we use rules of arithmetic, algebra, and equivalence to transform equations into equations that can be solved?• How can mathematics content and practices be applied to solve problems?	
Enduring Understandings	
<ul style="list-style-type: none">• Equations can be transformed into equivalent equations and solved using properties of equality and inverse operations.• A solution to an inequality is a value that makes the inequality true.• Number sense can be used to estimate solutions to some equations.• Patterns can sometimes help identify the relationship between quantities, and an equation can be written describing the relationship.• Graphs of relationships in the form $y = ax$ and $y = x + a$ (a is a real number) are straight lines. The graph of $y = ax$ passes through the origin. The graph of $y = x + a$ does not pass through the origin, unless $a = 0$.• Graphs of relationships in the form $y = ax + b$ (a and b are real numbers) are straight lines. If b is not zero, they do not pass through the origin.• Some problems can be solved using objects to act out the actions in the problems. Some problems can be solved by reasoning about the conditions in the problems.• Use SmartBoard to illustrate graphs and variations of the graphs above	
Alignment to NJSLs	
6.EE.5, 6.EE.8, 6.EE.9, 7.EE.4.a	
Key Concepts and Skills	
<p><u>Vocabulary:</u> T-table, linear equation, independent variable, dependent variable</p> <ol style="list-style-type: none">1. Equations with More Than One Operation<ul style="list-style-type: none">• Students will solve simple two-step equations involving multiplication or division and addition or subtraction.2. Pattern and Equations<ul style="list-style-type: none">• Students will use rules and functions to find missing values in tables.• Students will write a rule and an equation that tells how to find one value of a function when another value is known. Equations involve one operation.3. More Patterns and Equations<ul style="list-style-type: none">• Students will use rules and functions to find missing values in tables.• Students will write a rule and an equation that tells how to find one value of a function when another value is known. Equations involve two operations.	

Math 6

4. Graphing Equations
 - Students will graph proportional relationships ($y = ax$) and relationships involving addition ($y = x + a$).
5. Graphing Equations with More Than One Operation
 - Students will graph linear relationships involving more than one operation ($y = ax + b$)
6. Understanding Inequalities
 - Students will solve an inequality by finding all the values that make it true.
7. Problem Solving: Act It Out and Use Reasoning
 - Students will solve problems by using objects to model the problem and draw conclusions

Learning Activities

- Students explore inequality situations such as: I have \$150. How many more weeks would I need to save my \$15 allowance to buy a stereo that costs \$200? They represent the relationship as an inequality, both in words and in symbols, and use play money, base ten blocks, graphs, or trial and error to solve the problem.
- Students determine how much money is earned hourly for a job mowing lawns or babysitting. They find the amount earned for working different numbers of hours. They organize the data in chart or table form. They look for a pattern and write simple equations; for example, the sentence for babysitting or mowing lawns, I get \$5 per hour. translates into the equation $E = 5 \times h$ (Earnings equal five times the number of hours worked).
- Students will explore positive and negative coordinates by making a 4-column chart (3 for x-values and 2 for y-values) and identify what happens when each coordinate is negative or positive.
- “Rules for Undoing” Activity
- “Pattern Mastermind” Activity
- “Fill in the Blanks” Activity
- “Clip and Cover” Activities
- “Toss and Talk” Activities
- “Display the digits” Activities
- “Understanding Inequalities” worksheet
- “Going Digital” Activity
- Hammerhead Sharks Activity – pg. 371

Assessments

- Daily Practice Problems
- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
- Teacher-made Quizzes and Tests
- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy		Media Literacy		

Interdisciplinary Connections

Science

Math 6

Technology Integration

8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- ELMO, calculators, computers, Smart Board

Time Frame	8 days
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Topic

Topic 16: Measurement

Essential Questions

- How can customary and Metric measurements be converted to other units?
- How are customary and Metric units related?

Enduring Understandings

- Measurements can be represented in equivalent ways using different units.
- Relationships exist that enable you to convert between units by multiplying or dividing.
- The smaller the units on the scale of a measuring instrument, the more precise the measurement is.
- Time can be expressed using different units that are related to each other.
- The time between the start and end of an event is called elapsed time and can be calculated.
- Some problems can be solving by reasoning about conditions in the problem.

Alignment to NJSLs

6.RP.3.d

Key Concepts and Skills

Vocabulary: capacity, meter, gram, liter, kilo-, centi-, milli-

1. Converting Customary Measures
 - Students change between customary units of length, weight, and capacity.
2. Converting Metric Measures
 - Students change between metric units of length, mass, and capacity.
3. Units of Measure and Precision
 - Students use both customary and metric units to measure with precision.
4. Relating Customary and Metric Measures
 - Students convert between customary and metric measures of length, capacity, and weight/mass.
5. Elapsed Time
 - Students will add and subtract units of time to find elapsed times.
6. Problem Solving: Use Reasoning
 - Students use reasoning to draw conclusions and solve problems.

Learning Activities

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- Use a meter stick with millimeter markings to measure line segments and linear objects to the nearest tenth of a centimeter, tenth of a decimeter, and tenth of a meter; use the kilometer to describe experience-related travel distances; and apply the following equivalences: 100 cm = 1 m, 10 dm = 1 m, and 1000 m = 1 km.
- Recognize and apply the following relationships: 1 meter is a little more than a yard, 1 kilometer is a little more than 1/2 mile, 1 kilogram is a little more than 2 pounds, 2.5 cm is about 1 inch, and 1 liter is a little more than 1 quart.
- State application for each metric unit which they have basic familiarity, from areas such as commerce, industry, science, and the arts.
- “Teamwork” activities
- “Clip and Cover” activities
- “Quick Questions” activities • “Toss and Talk” activities
- Mountains Project - pg. 399

Assessments

- Daily Practice Problems
- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
- Teacher-made Quizzes and Tests
- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy		Media Literacy		

Interdisciplinary Connections

Science, Culinary Arts

Technology Integration

8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- ELMO, calculators, computers

Time Frame	8 days
Topic	
Topic 17: Perimeter and Area	
Essential Questions	
<ul style="list-style-type: none"> • What are the meanings of perimeter and area? • How can the perimeter and area of certain shapes be found? 	
Enduring Understandings	
<ul style="list-style-type: none"> • The distance around a figure is its perimeter. Formulas exist for finding the perimeter of 	

Math 6

some polygons and some formulas may be represented in more than one way.

- The measure of a region inside a shape is called area, and area can be found using square units. The areas of some irregular shapes can be found by decomposing the shape into polygons for which formulas exist for finding area.
- The formula for the area of a parallelogram is derived from the formula for area of a rectangle. The formula for the area of a triangle is derived from the formula for area of a parallelogram.
- The perimeter of a circle is called its circumference, and a formula exists for finding the circumference. The ratio of any circumference of any circle to its diameter is a constant value called pi.
- A circle can be broken apart and arranged to approximate a parallelogram, which can be used to generate the formula for the area of a circle.

Alignment to NJSL

6.EE.2.c, 7.G.4, 6.G.4

Key Concepts and Skills

Vocabulary: perimeter, area, circumference

1. Perimeter
 - Students select and use appropriate units, tools, and/or formulas to measure and solve problems involving the perimeter of regular and irregular polygons.
2. Areas of Rectangles and Irregular Figures
 - Students find the area of rectangles and irregular figures.
3. Area of Parallelograms and Triangles
 - Students develop and use the formulas for the areas of parallelograms and triangles.
4. Circumference
 - Students use the concept of pi and approximations of it in formulas to estimate and find the circumference, diameter, or radius of a circle when given one of these dimensions.
5. Area of a Circle
 - Students use the dimensions of a circle and pi to estimate and find the area of a circle.
6. Problem Solving: Use Objects
 - Students use objects to solve problems that focus on geometric relationships.

Learning Activities

- “Easy as Pi” activity
- “Around the Classroom” activity
- Use grid paper for understanding of the formulas for area of a parallelogram, triangle, and rectangle, and how they are all related.
- Planets Project – pg. 425
- “Display the Digits” activities
- “Toss and Talk” activities
- “Design Patterns” worksheet
- “Tic Tac Toe” activities

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- “Going Digital” activity
- “Write to explain” activity

Assessments

- Daily Practice Problems
- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
- Teacher-made Quizzes and Tests
- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy		Media Literacy		

Interdisciplinary Connections

Science, Writing

Technology Integration

8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- ELMO, calculators, computers, Geometer’s Sketchpad

Time Frame

7 days

Topic

Topic 18: Volume and Surface Area

Essential Questions

- What is the meaning of volume and how can volume be found?
- What is the meaning of surface area and how can surface area be found?
- How can the volume of certain figures be found?
- How can you describe and classify two and three dimensional objects with or without curved surfaces?
- How can you quantify and measure certain objects?
- What are the different ways mathematics content and practices can be applied to solve problems?

Enduring Understandings

- A polyhedron is a three-dimensional figure made of flat surfaces. The shapes of these flat surfaces and the way they are connected at edges and vertices determine the characteristics of the polyhedron.
- Formulas for finding the area of polygons can be used to find the surface area of some solids.
- Volume is a measure of the amount of space inside a solid figure. Volume can be measured by counting the number of cubic units needed to fill a three-dimensional object.
- The volume of rectangular prisms with fractional edge lengths can be determined in the same

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way as volume of rectangular prisms with whole-number edge lengths.

- Some problems can be solved by using objects to act out the actions in the problem. Some problems can be solved by reasoning about the conditions in the problems.

Alignment to NJCCSS

6.G.2, 6.G.4

Key Concepts and Skills

Vocabulary: volume, polyhedron, faces, edge, vertex, cylinder, sphere, cone, prism, pyramid, net

- Students will classify polyhedrons and identify vertices, edges, and faces.
- Students will identify a polyhedron from its net and draw top, side, and front views.
- Students will find the surface area of a rectangular prism, a triangular prism, and a square pyramid by adding areas of faces or by using a formula.
- Students will find the volume of a rectangular prism by using a formula.
- Students will find the volume of a rectangular prism with fractional edge lengths.
- Students will use objects and reasoning to find the surface area and volume of solid figures.

Learning Activities

- Factoid Activity
- Classifying Polyhedron Activity – pg. 454 – 457
- Surface Area Activity – pg. 458 – 460
- Volume of Rectangular Prism Activity – pg. 462 – 463
- Volume with Fractional Edge Length Activity – pg. 464 - 465
- “Teamwork” activities
- “Display the Digits” worksheet
- “Tic Tac Toe” activities
- “Problem Solving: Use Objects and Reasoning” activity
- “Write to explain” activity
- Drawing nets activity

Assessments

- Daily Practice Problems
- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
- Teacher-made Quizzes and Tests
- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy		Media Literacy		

Interdisciplinary Connections

Social Studies

Technology Integration

8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- ELMO, calculators, computers

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Time Frame	9 days
Topic	
Topic 19: Data and Graphs	
Essential Questions	
<ul style="list-style-type: none">• How can graphs be used to represent data and answer questions?• What are the different ways that data can be represented?• What are the different numerical measures that data sets?• How do you determine which numerical measure is the most appropriate to use to analyze a given data set?• What are the different ways mathematics content and practices can be applied to solve problems?	
Enduring Understandings	
<ul style="list-style-type: none">• Statistical questions anticipate variability in the data. These questions can be answered by collecting and analyzing data. The question to be answered determines the data that needs to be collected.• Each type of graph is most appropriate for certain kinds of data. A histogram uses bars to compare continuous numerical data grouped into intervals.• Box plots are useful for plotting data above a number line. Box plots show the spread for each quarter of the data.• A set of data collected to answer a statistical question has a distribution, which can be described by its center, spread, and overall shape.• Different measures can be used to describe the center of a numerical data set. Each measure is most appropriate depending on characteristics of the data.• A measure of variability describes how the values in a data set vary using a single number.• The best descriptor of the center of numerical data is determined by the nature of the data and the question to be answered. Organizing data makes it easier to find measures of central tendency.• A set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.• Some problems can be solved by using reasoning first to arrive at what the answer might be. Through additional reasoning, the correct answer can be found.	
Alignment to NJSLs	
6.SP.1, 6.SP.2, 6.SP.3, 6.SP.4, 6.SP.5, 6.SP.5.a, 6.SP.5.b, 6.SP.5.c, 6.SP.5.d	
Key Concepts and Skills	
<p><u>Vocabulary:</u> statistical question, data distribution, outlier, mean, average, range, median, mode, frequency table, histograms, box plot, quartiles, absolute deviation, interquartile range (IQR), mean absolute deviation</p> <ul style="list-style-type: none">• Students will determine whether a question is a statistical question or not, and display data sets using dot plots and bar graphs.• Students will describe data distributions by looking at their center, spread, and overall	

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shape.

- Students will find the mean of data sets.
- Students will find the median, mode, and range of data sets.
- Students will make and use frequency tables and histograms.
- Students will learn how to interpret and make a box plot.
- Students will use mean absolute deviation and interquartile range (IQR) to measure variability within a data distribution.
- Students will decide which measure of central tendency most accurately describes a given data set, and they recognize inappropriate uses of statistical measures.
- Students will summarize data based on its center, spread, and overall shape.
- Students will solve problems using the *Try, Check, and Revise* strategy.

Learning Activities

- Factoid Activity
- “Teamwork” activities
- “Quick Questions” Activity
- “Toss and Talk” worksheet
- “Think Together” Activity
- “Going Digital” Activity
- “Problem Solving: Use Objects and Reasoning” activity
- “Write to explain” activity
- Finding the Mean of Data Sets Activity – pg. 480 – 481
- Median, Mode, and Range Activity – pg. 482 – 483
- Frequency Table and Histogram Activity – pg. 484 – 486
- Box Plot Activity – pg. 488 – 489
- Try, Check, and Revise Activity – pg. 500 - 501

Assessments

- Daily Practice Problems
- Participation in Cooperative Learning Activities
- Observation Assessment
- Project-based Assessment
- Teacher-made Quizzes and Tests
- Homework

21st Century Skills

X	Creativity	X	Critical Thinking	X	Communication	X	Collaboration
X	Life & Career Skills	X	Information Literacy	X	Media Literacy		

Interdisciplinary Connections

Science

Technology Integration

8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- ELMO, calculators, computers