

Subject Area: Mathematics Grade Level: 6		Student Paced Time Frame:
Unit Name: Operations - Fractions	Big Ideas - Course 1 Modeling Real Life	5 weeks
Unit Rationale: <p>Students will need to make sense of problems and persevere in solving them. This will include the necessity to construct viable arguments and critique the reasoning of others. Students will need to use appropriate tools strategically. Number sentences and problem solving situations will include fractions, whole numbers, and mixed numbers.</p>		
Content: <ul style="list-style-type: none"> • Compute quotients of fractions. • Construct visual fraction models to represent quotients and explain the relationship between multiplication and division of fractions. • Solve real-world problems involving quotients of fractions and interpret the solutions in the context given. • Fluently add, subtract, multiply and divide multi-digit decimals and whole numbers using standard algorithms. • Use positive and negative numbers to describe quantities in real-world situations. 		
Enduring Understandings: <ul style="list-style-type: none"> • Students will be able to reason abstractly and quantitatively. • Students will attend to precision. • Students will model with mathematics. 		
Skills:		

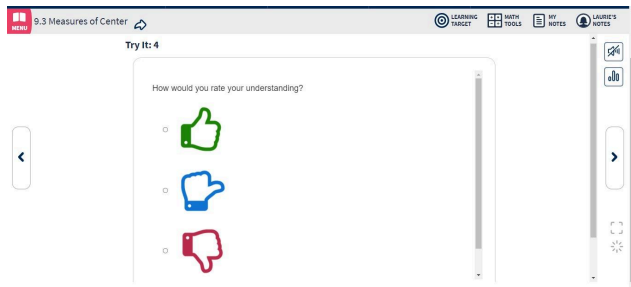
- Students will examine the relationships of the digits in numerators and denominators.
- Students will compare and order fractions.
- Students will solve real-world problems using fractions.

New Jersey Social and Emotional Learning Competencies:

Self-Awareness, Self-Management, Social Awareness, Responsible Decision-Making, Relationship Skills

Activities:

- **Thumbs Up:** Infused in every online lesson presentation tool through Big Ideas website Dynamic Classroom. This technique asks students to indicate the extent to which they understand a concept, procedure, or even the direction of activity. This allows students to communicate their feelings with respect to a specific success criterion.



- **ELL Support:** English language learners strategies infused in every lesson of Big Ideas Teaching Edition

ELL Support

Have students work in groups to complete the exercises. Remind them to use the process described in Example 1 as they collaborate.

Beginner: Write out the equation. For example, $2 \times 2 \times 2 = 2^3$.

Intermediate: Describe the equation. For example, "Two times two times two equals two to the third power."

Advanced: Explain the functions of bases, exponents, and powers.

- Sample

- **Test Taking Strategies** page T38 - Big Ideas -
Teacher led discussions prior to each chapter test.
Designed to reduce student stress and improve test taking abilities.

Test-Taking Strategies

Remind students to quickly look over the entire test before they start so that they can budget their time. They should not spend too much time on any single problem. Urge students to try to work on a part of each problem, because partial credit is better than no credit. When they receive their tests, students should jot down simple examples of finding the greatest common factor and least common multiple on the back of the test. By doing this, they will not become confused when they are under pressure. Teach students to use the **Stop and Think** strategy before answering. **Stop** and carefully read the problem, and **Think** about what the answer should look like.

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☰ Social Emotional Well Being Activities - All Units

New Jersey Student Learning Standards:

Understand fraction reasoning to solve problems.

- 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. *For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. In general, $(a/b) \div (c/d) = (ad/bc)$ How much chocolate will each person get if 3 people share $1\frac{1}{2}$ lb of chocolate equally? How many $3/4$ -cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square*

mi.?

- 2) Fluently divide multi-digit numbers using the standard algorithm.
- 3) 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, 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.

Assessment:

Benchmark - Renaissance: Fall, Winter, Spring

Whole class review games

Exit tickets

Ready to Go On Activity

* Formative Assessment

- Online Quiz (Big Ideas Website)- Teacher selected (based on students needs and abilities)
- Web based (Big Ideas) lesson presentation followed by web based Self Assessment Concepts and Skills and Self Assessment for Problems Solving
- Online (Big Ideas Website) - classwork and homework problems - providing automatic results on accuracy to students and teacher

* Summative Assessment - Chapter Test

- Paper tests - Version A, Version B, or Alternative Assessment (based on students needs and abilities)
- Online Test (Big Ideas Website)- Teacher selected problems (based on students needs and abilities)

Alternative Assessment(s)- Teacher created and determined

Accomodations:

Paper based and pdf worksheets (Big Ideas)

- Cumulative practice
- Vocabulary practice
- Prerequisite skills practice
- Extra practice
- Reteach
- Enrichment and Extension
- Puzzle time

Web based practice and assessments

- Practice problems
 - Adjustable time
 - Calculator - 4 function, scientific, or graphing
 - Stepped out video examples
 - Answer check - 0,1,2,3,4,5, or Unlimited
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 - Randomize - recalculates the values for each question so students are not given the same assessment
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ELL (ESL) Support

- English language learners strategies infused in Big Ideas Teacher Edition
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Virtual Manipulatives

Digital Examples

Skills Trainer - online (Big Ideas) interactive tool for skills practice - used for remediation or enrichment

8.1 Technology, 9.1 21st-Century Life & Career Skills and/or Financial Literacy; AND Activities/Lesson(s):

8.1.5.NI.1: Develop models that successfully transmit and receive information using both wired and wireless methods.

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<https://www.state.nj.us/education/aps/cccs/career/>

9.1 21st-Century Life & Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

A. Critical Thinking and Problem Solving

9.1.8.A.1 Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills.

9.1.8.A.2 Implement problem-solving strategies to solve a problem in school or the community.

9.1.8.A.3 Summarize strategies used by various organizations and agencies to solve problems that impact communities, and compare them with strategies used by similar organizations in another state or country.

9.1.8.A.4 Design and implement a project management plan using one or more problem-solving strategies.

B. Creativity and Innovation

9.1.8.B.1 Use multiple points of view to create alternative solutions.

9.1.8.B.2 Assess data gathered to solve a problem for which there are varying perspectives (e.g., cross-cultural, gender-specific, generational), and determine how the data can best be used to design multiple solutions.

C. Collaboration, Teamwork, and Leadership

9.1.8.C.1 Determine an individual's responsibility for personal actions and contributions to group activities.

9.1.8.C.2 Demonstrate the use of compromise, consensus, and community building strategies for carrying out different tasks, assignments, and projects.

9.1.8.C.3 Model leadership skills during classroom and extra-curricular activities.

Subject Area: Math	Grade Level: 6	Student Paced Time Frame:
Unit Name: Rational Numbers		3 weeks
Unit Rationale:		

Students will need to make sense of problems and persevere in solving them. This will include the necessity to construct viable arguments and critique the reasoning of others. Students will need to use appropriate tools strategically. Number sentence and problem solving situations will include decimals. Numbers will be plotted on the four quadrants of the coordinate grid.

Content:

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Use inequality symbols to make comparisons.
- Construct viable arguments and critique the reasoning of others.
- Represent polygons on a coordinate plane.
- Use spreadsheets when working with data sets with a large quantity of data points.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Enduring Understandings:

- The symbolic language of algebra is used to communicate and generalize the patterns in mathematics.
- Algebraic representation can be used to generalize patterns and relationships.
- There is an established order for expressions to be solved/simplified.
- Variables can be used in an algebraic expression to represent an unknown value.

Skills:

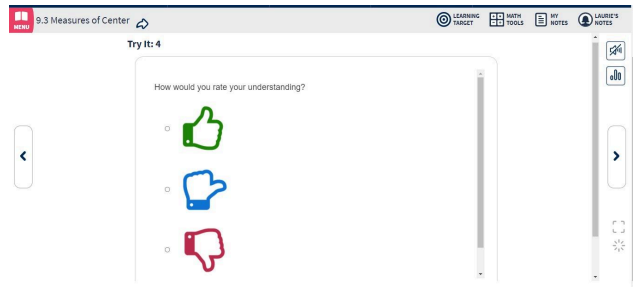
- Students will recognize positive and negative numbers in an expression.
- Students will simplify expressions with positive and negative numbers..
- Students will plot numbers accurately on four quadrants of the coordinate grid.
- Students will solve real-world problems using positive and negative numbers.

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Self-Awareness, Self-Management, Social Awareness, Responsible Decision-Making, Relationship Skills

Activities:

- **Thumbs Up:** Infused in every online lesson presentation tool through Big Ideas website Dynamic Classroom. This technique asks students to indicate the extent to which they understand a concept, procedure, or even the direction of activity. This allows students to communicate their feelings with respect to a specific success criterion.



- **ELL Support:** English language learners strategies infused in every lesson of Big Ideas Teaching Edition

ELL Support

Have students work in groups to complete the exercises. Remind them to use the process described in Example 1 as they collaborate.

Beginner: Write out the equation. For example, $2 \times 2 \times 2 = 2^3$.

Intermediate: Describe the equation. For example, "Two times two times two equals two to the third power."

Advanced: Explain the functions of bases, exponents, and powers.

- Sample

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- Sample

☰ Social Emotional Well Being Activities - All Units

New Jersey Student Learning Standards:

1. 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.
2. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
 - a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.
 - b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
 - c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
3. Understand ordering and absolute value of rational numbers.
 - a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.*
 - b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write $-3^{\circ}\text{C} > -7^{\circ}\text{C}$ to express the fact that -3°C is warmer than -7°C .*

- c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of -30 dollars, write $|-30| = 30$ to describe the size of the debt in dollars.*
- d. Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.*
4. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

Assessment:

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 9.1 21st-Century Life & Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

A. Critical Thinking and Problem Solving

9.1.8.A.1 Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills.
 9.1.8.A.2 Implement problem-solving strategies to solve a problem in school or the community.
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 9.1.8.A.4 Design and implement a project management plan using one or more problem-solving strategies.

B. Creativity and Innovation

9.1.8.B.1 Use multiple points of view to create alternative solutions.
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C. Collaboration, Teamwork, and Leadership

9.1.8.C.1 Determine an individual's responsibility for personal actions and contributions to group activities.
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 9.1.8.C.3 Model leadership skills during classroom and extra-curricular activities.

Subject Area: Math	Grade Level: 6	Student Paced Time Frame:
Unit Name: Expressions		3 Weeks

Unit Rationale:

Students will write and simplify expressions. Students will solve word problems using expressions. Students will generate equivalent expressions using properties of all operations. All of the content presented at this grade level has connections to the standards for mathematical practices.

Content:

- Students will use mathematical language to identify parts of an expression.
- Students will write and evaluate numerical expressions involving whole number exponents.
- Students will read, write, and evaluate expressions in which letters stand for numbers. This will include formulas that arise from real-world contexts.
- Students will apply the properties of operations to generate equivalent expressions.
- Students will identify if two expressions are equivalent.
- Students will find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two numbers less than or equal to 12.

Enduring Understandings:

- There are many ways to represent a number.
- The problem in front of you is a member of a larger class of problems.
- Understanding develops through experience.

Skills:

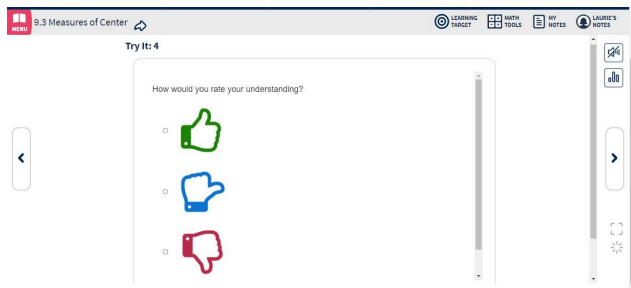
- Students will make sense of problems and persevere in solving them.
- Students will reason abstractly and quantitatively.
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- Students will model with mathematics.
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- Sample

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 [Social Emotional Well Being Activities - All Units](#)

New Jersey Student Learning Standards:

Write and evaluate numerical expressions involving whole number exponents.

Read, write, and evaluate expressions in which letters stand for numbers.

- a. Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract y from 5" as $5 - y$.
- b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. For example, describe the expression $2(8 + 7)$ as a product of two factors; view $(8 + 7)$ as both a single entity and a sum of two terms.
- c. 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). For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.
- d. Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.
- e. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number y stands for.
- f. 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. For example, express $36 + 8$ as $4(9 + 2)$.

Assessment:

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Subject Area: Math	Grade Level: 6	Student Paced Time Frame:
Unit Name: Equations and Inequalities		6 Weeks
<p>Unit Rationale:</p> <p>Students will use variables to represent real-world context over time. <i>All of the content presented at this grade level has connections to the standards for mathematical practices.</i></p>		
<p>Content:</p> <ul style="list-style-type: none"> • Students will make sense of problems and persevere in solving them. • Students will reason abstractly and quantitatively. • Students will construct viable arguments and critique the reasoning of others. • Students will model with mathematics. • Students will use appropriate tools strategically. • Students will attend to precision. 		

- Students will look for and make use of structure.
- Students will look for and express regularity in repeated reasoning.

Enduring Understandings:

- Real-world situations can be represented symbolically and graphically.
- Algebraic expressions and equations generalize relationships from specific cases.
- A problem solver understands what has been done, knows why the process was appropriate, and can support it with reasons and evidence.

Skills:

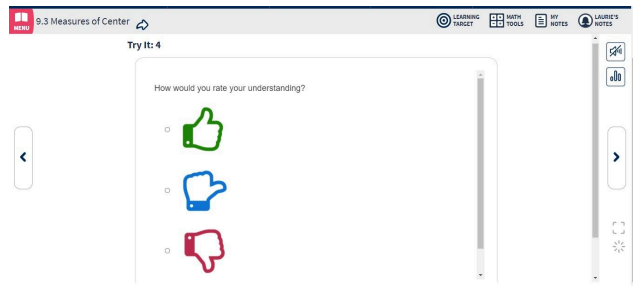
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☰ Social Emotional Well Being Activities - All Units

New Jersey Student Learning Standards:

- a. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the

equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

- b. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
- c. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.
- d. 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.
- e. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

Assessment:

Benchmark - Renaissance: Fall, Winter, Spring

Whole class review games

Exit tickets

Ready to Go On Activity

* Formative Assessment

- Online Quiz (Big Ideas Website)- Teacher selected (based on students needs and abilities)
- Web based (Big Ideas) lesson presentation followed by web based Self Assessment Concepts and Skills and Self Assessment for Problems Solving
- Online (Big Ideas Website) - classwork and homework problems - providing automatic results on accuracy to students and teacher

* Summative Assessment - Chapter Test

- Paper tests - Version A, Version B, or Alternative Assessment (based on students needs and abilities)
- Online Test (Big Ideas Website)- Teacher selected problems (based on students needs and abilities)

Alternative Assessment(s)- Teacher created and determined

Accomodations:

Paper based and pdf worksheets (Big Ideas)

- Cumulative practice
- Vocabulary practice
- Prerequisite skills practice
- Extra practice
- Reteach
- Enrichment and Extension
- Puzzle time

Web based practice and assessments

- Practice problems
 - Adjustable time
 - Calculator - 4 function, scientific, or graphing
 - Stepped out video examples
 - Answer check - 0,1,2,3,4,5, or Unlimited
- Tests and quizzes
 - Adjustable time
 - Prevent or Allow late submission
 - Release for review by teacher or upon submission
 - Randomize - recalculates the values for each question so students are not given the same assessment
 - Scramble- rearranges questions so students are not given the same assessment

ELL Support

- English language learners strategies infused in Big Ideas Teacher Edition
- Online- Big Ideas Multi-Language Glossary
- Dynamic Student eBook and Dynamic Student Edition includes English and Spanish audio

Big Ideas Video Tutorials

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Virtual Manipulatives

Digital Examples

Skills Trainer - online (Big Ideas) interactive tool for skills practice - used for remediation or enrichment

8.1 Technology, 9.1 21st-Century Life & Career Skills and/or Financial Literacy; AND Activities/Lesson(s):

8.1.5.NI.1: Develop models that successfully transmit and receive information using both wired and wireless methods.

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8.1.8.CS.1: Recommend improvements to computing devices in order to improve the ways users interact with the devices and

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8.1.8.DA.4: Transform data to remove errors and improve the accuracy of the data for analysis.

8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.

9.1 21st-Century Life & Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

A. Critical Thinking and Problem Solving

9.1.8.A.1 Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills.

9.1.8.A.2 Implement problem-solving strategies to solve a problem in school or the community.

9.1.8.A.3 Summarize strategies used by various organizations and agencies to solve problems that impact communities, and compare them with strategies used by similar organizations in another state or country.

9.1.8.A.4 Design and implement a project management plan using one or more problem-solving strategies.

B. Creativity and Innovation

9.1.8.B.1 Use multiple points of view to create alternative solutions.

9.1.8.B.2 Assess data gathered to solve a problem for which there are varying perspectives (e.g., cross-cultural, gender-specific, generational), and determine how the data can best be used to design multiple solutions.

C. Collaboration, Teamwork, and Leadership

9.1.8.C.1 Determine an individual's responsibility for personal actions and contributions to group activities.

9.1.8.C.2 Demonstrate the use of compromise, consensus, and community building strategies for carrying out different tasks, assignments, and projects.

9.1.8.C.3 Model leadership skills during classroom and extra-curricular activities.

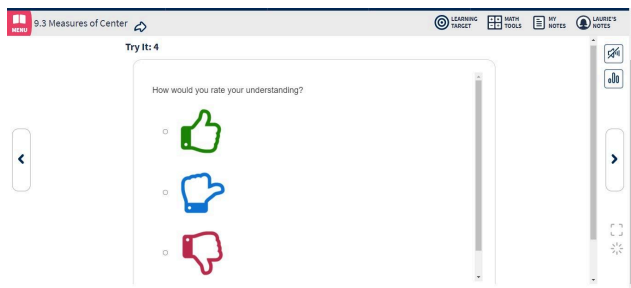
Subject Area: Math	Grade Level: 6	Student Paced Time Frame:
Unit Name: Ratio and Proportions		5 Weeks
<p>Unit Rationale:</p> <p>Students will apply the previously learned fraction skills to the concepts of ratios and proportions. Students will develop real-life situations for the applications of ratios and proportions. Students will solve problems by applying the concepts of ratios and proportions.</p>		
<p>Content:</p> <ul style="list-style-type: none"> ● To understand the concept of a ratio. ● To use ratio language to describe a ratio relationship between two quantities. ● To understand the concept of a unit rate a/b associated with a ratio $a:b$ with b not equal to 0. ● To use rate language in the context of a ratio relationship. ● To understand ratio concepts and use ratio reasoning to solve problems. ● To use ratio and rate reasoning to solve real-world mathematical problems. ● To solve ratio problems by reasoning with the use of tables of equivalent ratios, tape diagrams, double line diagrams, or equations. ● To make tables with whole number measurements. ● To find missing values in tables. 		
<p>Enduring Understandings:</p> <ul style="list-style-type: none"> ● Proportional relationships express how quantities change relationship to each other. ● To determine when to use proportional comparisons to solve problems. ● A problem solver understands what has been done, knows why the process is appropriate. 		
<p>Skills:</p> <ul style="list-style-type: none"> ● Students will express comparisons as rates or ratios. ● Students will use ratios to solve problems. ● Students will recall and demonstrate the steps to simplify fractions. ● Students will reason abstractly and quantitatively. ● Students will attend to precision. ● Students will solve real-world problems using rates, ratios, and proportions. 		

New Jersey Social and Emotional Learning Competencies:

Self-Awareness, Self-Management, Social Awareness, Responsible Decision-Making, Relationship Skills

Activities:

- **Thumbs Up:** Infused in every online lesson presentation tool through Big Ideas website Dynamic Classroom. This technique asks students to indicate the extent to which they understand a concept, procedure, or even the direction of activity. This allows students to communicate their feelings with respect to a specific success criterion.



- **ELL Support:** English language learners strategies infused in every lesson of Big Ideas Teaching Edition

ELL Support

Have students work in groups to complete the exercises. Remind them to use the process described in Example 1 as they collaborate.

Beginner: Write out the equation. For example, $2 \times 2 \times 2 = 2^3$.

Intermediate: Describe the equation. For example, "Two times two times two equals two to the third power."

Advanced: Explain the functions of bases, exponents, and powers.

- Sample

- **Test Taking Strategies** page T156 - Big Ideas -
Teacher led discussions prior to each chapter test.

Designed to reduce student stress and improve test taking abilities.

Test-Taking Strategies

Remind students to quickly look over the entire test before they start so that they can budget their time. They should not spend too much time on any single problem. Urge students to try to work on a part of each problem, because partial credit is better than no credit. When they receive their tests, students should jot down simple examples of finding the greatest common factor and least common multiple on the back of the test. By doing this, they will not become confused when they are under pressure. Teach students to use the **Stop** and **Think** strategy before answering. **Stop** and carefully read the problem, and **Think** about what the answer should look like.

- Sample

☰ Social Emotional Well Being Activities - All Units

New Jersey Student Learning Standards:

A. Understand ratio concepts and use ratio reasoning to solve problems.

1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*
2. Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."¹*
3. 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.
 - a. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
 - b. Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*

- c. 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.
- d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

Assessment:

Benchmark - Renaissance: Fall, Winter, Spring

Whole class review games

Exit tickets

Ready to Go On Activity

* Formative Assessment

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Accomodations:

Paper based and pdf worksheets (Big Ideas)

- Cumulative practice
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- Extra practice
- Reteach
- Enrichment and Extension
- Puzzle time

Web based practice and assessments

- Practice problems
 - Adjustable time

- Calculator - 4 function, scientific, or graphing
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9.1 21st-Century Life & Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

A. Critical Thinking and Problem Solving

- 9.1.8.A.1 Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills.
- 9.1.8.A.2 Implement problem-solving strategies to solve a problem in school or the community.
- 9.1.8.A.3 Summarize strategies used by various organizations and agencies to solve problems that impact communities, and compare them with strategies used by similar organizations in another state or country.
- 9.1.8.A.4 Design and implement a project management plan using one or more problem-solving strategies.

B. Creativity and Innovation

- 9.1.8.B.1 Use multiple points of view to create alternative solutions.
- 9.1.8.B.2 Assess data gathered to solve a problem for which there are varying perspectives (e.g., cross-cultural, gender-specific, generational), and determine how the data can best be used to design multiple solutions.

C. Collaboration, Teamwork, and Leadership

- 9.1.8.C.1 Determine an individual's responsibility for personal actions and contributions to group activities.
- 9.1.8.C.2 Demonstrate the use of compromise, consensus, and community building strategies for carrying out different tasks, assignments, and projects.
- 9.1.8.C.3 Model leadership skills during classroom and extra-curricular activities.

Subject Area: Math	Grade Level: 6	Student Paced Time Frame:
Unit Name: Geometry & Measurement		5 Weeks

Unit Rationale:

Students will develop geometric models to describe spatial relationships. Students will determine how geometric shapes and objects are classified. Students will apply geometric skills to solve real-world problems.

Content:

- To find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes to solve real world or mathematical problems.
- To represent three dimensional figures using nets made of rectangles and triangles, and use the nets to find the surface area of the figures in the context of solving real world problems.
- To find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes. Show that the volume is the same as it would be if found by multiplying the edge lengths.
- To draw polygons in the coordinate plane given the coordinates of the vertices and use the coordinates to solve real-world distance, perimeter, and area problems.
- To display numerical data in plots on the number line (including dot plots, histograms, and box plots) and summarize in relation to their context.

Enduring Understandings:

- Geometry and spatial sense offer ways to interpret and reflect on our physical environment.
- Analyzing geometric relationships develops reasoning and justification skills.

Skills:

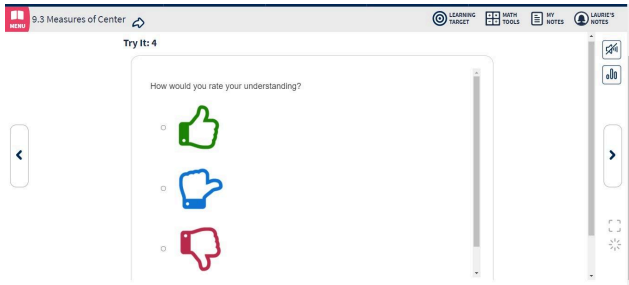
- To make sense of problems and persevere in solving them.
- To reason abstractly.
- To model with mathematics.
- Students will attend to precision.

New Jersey Social and Emotional Learning Competencies:

Self-Awareness, Self-Management, Social Awareness, Responsible Decision-Making, Relationship Skills

Activities:

- **Thumbs Up:** Infused in every online lesson presentation tool through Big Ideas website Dynamic Classroom. This technique asks students to indicate the extent to which they understand a concept, procedure, or even the direction of activity. This allows students to communicate their feelings with respect to a specific success criterion.



- **ELL Support:** English language learners strategies infused in every lesson of Big Ideas Teaching Edition

ELL Support

Have students work in groups to complete the exercises. Remind them to use the process described in Example 1 as they collaborate.

Beginner: Write out the equation. For example, $2 \times 2 \times 2 = 2^3$.

Intermediate: Describe the equation. For example, "Two times two times two equals two to the third power."

Advanced: Explain the functions of bases, exponents, and powers.

- Sample

- **Test Taking Strategies** page T338 - Big Ideas -
Teacher led discussions prior to each chapter test.
Designed to reduce student stress and improve test taking abilities.

Test-Taking Strategies

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- Sample

☰ Social Emotional Well Being Activities - All Units

New Jersey Student Learning Standards:

A. Solve real-world and mathematical problems involving area, surface area, and volume.

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.
2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l w h$ and $V = B h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
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.
4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Assessment:

Benchmark - Renaissance: Fall, Winter, Spring

Whole class review games

Exit tickets

Ready to Go On Activity

* Formative Assessment

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Alternative Assessment(s)- Teacher created and determined

Accomodations:

Paper based and pdf worksheets (Big Ideas)

- Cumulative practice
- Vocabulary practice
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- Extra practice
- Reteach
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- Puzzle time

Web based practice and assessments

- Practice problems
 - Adjustable time
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Virtual Manipulatives

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9.1 21st-Century Life & Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

A. Critical Thinking and Problem Solving

9.1.8.A.1 Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills.

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9.1.8.A.4 Design and implement a project management plan using one or more problem-solving strategies.

B. Creativity and Innovation

9.1.8.B.1 Use multiple points of view to create alternative solutions.

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9.1.8.C.1 Determine an individual's responsibility for personal actions and contributions to group activities.

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9.1.8.C.3 Model leadership skills during classroom and extra-curricular activities.

Subject Area: Math	Grade Level: 6	Student Paced Time Frame:
Unit Name: Statistics and Probability		6 Weeks
Unit Rationale: Students will develop an understanding of statistical variability. Students will be able to summarize and describe distributions. Students will be able to solve real-world problems using statistics and probability.		
Content: <ul style="list-style-type: none">• Students calculate, compare, and interpret measures of center and variability in a data set to answer a statistical question.• Students will use given data to determine median and mean.• Understanding will be applied to problem solving.• Students will determine the interquartile range of a set of data.• Students will investigate absolute deviation of a set of data.• Students will investigate and determine overall patterns.		

- Solve real-world problems and interpret the solutions in the context given.

Enduring Understandings:

- The way that data is collected, organized and displayed influences interpretation.
- The probability of an event's occurrence can be predicted with varying degrees of confidence.

Skills:

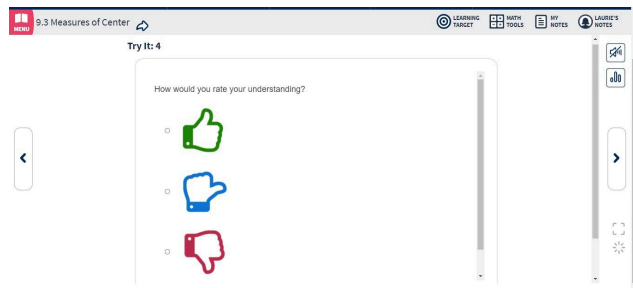
- To make sense of problems and persevere in solving them.
- To reason abstractly.
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Activities:

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ELL Support

Have students work in groups to complete the exercises. Remind them to use the process described in Example 1 as they collaborate.

Beginner: Write out the equation. For example, $2 \times 2 \times 2 = 2^3$.

Intermediate: Describe the equation. For example, "Two times two times two equals two to the third power."

Advanced: Explain the functions of bases, exponents, and powers.

- Sample

- **Test Taking Strategies** page T450 & T496 - Big Ideas -
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Designed to reduce student stress and improve test taking abilities.

Test-Taking Strategies

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- Sample

☰ Social Emotional Well Being Activities - All Units

New Jersey Student Learning Standards:

Develop understanding of statistical variability.

1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*
2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
 - B. Summarize and describe distributions.
4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
5. Summarize numerical data sets in relation to their context, such as by:
 - a. Reporting the number of observations.
 - b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
 - c. 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.
 - d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Assessment:

Benchmark - Renaissance: Fall, Winter, Spring

Whole class review games

Exit tickets

Ready to Go On Activity

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9.1.8.C.1 Determine an individual's responsibility for personal actions and contributions to group activities.
 9.1.8.C.2 Demonstrate the use of compromise, consensus, and community building strategies for carrying out different tasks, assignments, and projects.
 9.1.8.C.3 Model leadership skills during classroom and extra-curricular activities.

Subject Area: Math	Grade Level: 6	Student Paced Time Frame:
Unit Name: Famous Mathematician Project	LGBTQ - multinational - multicultural mathematicians math/history project	1 Week
<p>Unit Rationale:</p> <p>Students will research famous mathematicians, including members of the LGBTQ community. Students are able to present historical facts about the life of one famous mathematician and the contributions of this person to the field of mathematics.</p>		

Content:

- Photograph or Drawing of a Mathematician
- Vital Statistics: name, lifespan, birthplace, age at death
- Three historic world events that occurred during his/her life
- Education
- Marital and Family Status
- Occupations
- Three Contributions to Mathematics
- Two interesting events from his/her life
- Quote Attributed to Your Mathematician

Project link: [☰ Grade 6 -Math -LGBTQ 2021](#)

PL 2019, c.006 (S1569 2R)

C.18A:35-4.35 History of disabled and LGBT persons included in middle school curriculum.

Assessment:

Rubric Guided Assessment- Project Presentation and Ratio Table completion

9.1 21st-Century Life & Career Skills and/or Financial Literacy and Technology 8.1:

8.1.5.NI.1: Develop models that successfully transmit and receive information using both wired and wireless methods.

8.1.5.NI.2: Describe physical and digital security measures for protecting sensitive personal information.

8.1.8.CS.1: Recommend improvements to computing devices in order to improve the ways users interact with the devices and

8.1.8.CS.4: Systematically apply troubleshooting strategies to identify and resolve hardware and software problems in computing systems.

8.1.8.DA.4: Transform data to remove errors and improve the accuracy of the data for analysis.

8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.

9.1 21st-Century Life & Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

A. Critical Thinking and Problem Solving

9.1.8.A.1 Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills.

9.1.8.A.2 Implement problem-solving strategies to solve a problem in school or the community.

9.1.8.A.3 Summarize strategies used by various organizations and agencies to solve problems that impact communities, and compare them with strategies used by similar organizations in another state or country.

9.1.8.A.4 Design and implement a project management plan using one or more problem-solving strategies.

B. Creativity and Innovation

9.1.8.B.1 Use multiple points of view to create alternative solutions.

9.1.8.B.2 Assess data gathered to solve a problem for which there are varying perspectives (e.g., cross-cultural, gender-specific, generational), and determine how the data can best be used to design multiple solutions.

C. Collaboration, Teamwork, and Leadership

9.1.8.C.1 Determine an individual's responsibility for personal actions and contributions to group activities.

9.1.8.C.2 Demonstrate the use of compromise, consensus, and community building strategies for carrying out different tasks, assignments, and

projects.

9.1.8.C.3 Model leadership skills during classroom and extra-curricular activities.

New Jersey Student Learning Standards:

A. Understand ratio concepts and use ratio reasoning to solve problems.

1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*
2. Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."¹*
3. 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.
 - a. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
 - b. Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*
 - c. 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.
 - d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

NJSLS-Social Studies interdisciplinary connections

- 6.2.12.HistoryCC.1.a: Determine the extent to which various technologies, (e.g., printing, marine compass, cannonry, Arabic numerals) derived from Europe's interactions with Islam and Asia provided the necessary tools for European exploration and conquest
 - 6.2.12.EconET.3.a: Determine how, and the extent to which, scientific and technological changes, transportation, and new forms of energy brought about social, economic, and cultural changes in the world.
 - 6.2.8.HistoryCA.3.a: Evaluate the importance and enduring legacy of the major achievements of Greece, Rome, India, and China over time.
- 6.2.8.EconGE.3.a: Explain how classical civilizations used technology and innovation to enhance agricultural/ manufacturing output and commerce, to expand military capabilities, to improve life in urban areas, and to allow for greater division of labor.

6.1.5.HistoryUP.1: Describe the reasons various groups, voluntarily and involuntarily, immigrated to New Jersey and America, and cite evidence from multiple perspectives to describe the challenges they encountered.

6.1.2.HistoryCC.3: Make inferences about how past events, individuals, and innovations affect our current lives.