



Semester A Summary:

In this course, students will learn, practice, and apply the fundamental skills and strategies that will help them grow into strong mathematical thinkers. Daily instruction supports student learning of core math concepts and development of procedural fluency regarding addition and subtraction of rational numbers, multiplication and division of rational numbers, unit rates and proportions, using proportional relationships, algebraic expressions, one- and two-step equations, and multi-step equations. Students are encouraged to use visual representations of their thinking to bridge their understanding between the concrete and abstract, allowing patterns and mathematical principles to come to life. Peer Model videos throughout provide illustrations of a peer learning how to use and apply the target mathematical skill using a real-world example. 21st Century instruction further illustrates the connection of mathematical concepts to the real world while supporting students' development of skills, knowledge, and expertise they must master to succeed in life and work. Mathematical discussion prompts encourage students to revise misunderstanding, uncover nuances in application, make connections to prior knowledge, identify patterns, and engage with vocabulary. Students are encouraged to listen critically, critique the reasoning of others, and justify their own solutions. The courses are designed to support a growth mindset regarding math and encourage students to engage in productive struggle; instructional materials explicitly and frequently remind students that mistakes are opportunities for learning and acquiring new skills. Together the course elements ensure the student grows as a mathematical thinker and masters the skills to succeed in life and work.

Semester A Outline

1. Math 7 A Course Overview

1. Math 7 A Course Overview

2. Add & Subtract Rational Numbers

1. Introduction to Rational Numbers

- In this section, you will describe rational numbers as a quotient of integers where the divisor cannot be zero.
- In this section, you will place rational numbers in order on a number line.
- In this section, you will compare positive and negative rational numbers in various forms.

2. Add Rational Numbers

- In this section, you will describe adding rational numbers using a number line where the rational number is positive or negative.
- In this section, you will add positive and negative integers.

3. Add Fractions & Decimals

- In this section, you will add positive and negative fractions, using properties of operations.
- In this section, you will use properties of operations to add positive and negative rational numbers written as decimals.

4. Applications of Adding Rational Numbers

- In this section, you will interpret the sums of rational numbers in the context of real-world problems.
- In this section, you will solve real-world problems involving addition with rational numbers.

5. Subtract Rational Numbers

- In this section, you will describe subtraction of rational numbers as adding the additive inverse: $p - q = p + (-q)$.
- In this section, you will identify the absolute value of rational numbers.
- In this section, you will show that the distance between any two rational numbers on a number line is the absolute value of the difference of the numbers.

6. Subtract Fractions & Decimals

- In this section, you will subtract positive and negative rational numbers written as fractions.
- In this section, you will subtract positive and negative rational numbers.

7. Applications of Subtracting Rational Numbers

- In this section, you will describe real-world contexts using differences of rational numbers.
- In this section, you will solve one-step real-world problems involving subtraction with rational numbers.
- In this section, you will apply the principle that the distance between two rational numbers on the number line is the absolute value of their difference in a real-world context.

8. Opposites Make Zero

- In this section, you will show that a number and its opposite have a sum of zero.
- In this section, you will describe situations in which opposite quantities combine to make zero.

9. Add & Subtract Rational Numbers Apply

10. Add & Subtract Rational Numbers Review

11. Add & Subtract Rational Numbers Unit Test

3. Multiply & Divide Rational Numbers

1. Multiply Rational Numbers

- In this section, you will determine whether the product of two rational numbers is negative or positive.
- In this section, you will multiply positive and negative integers and explore the properties of operations for multiplication.

2. Multiply Fractions & Decimals

- In this section, you will multiply positive and negative rational numbers written as fractions, using the Commutative and Associative Properties of Multiplication.
- In this section, you will multiply positive and negative rational numbers written as decimals, using the Commutative and Associative Properties of Multiplication.

3. Multiply Fractions & Decimals Discussion

4. Multiply Fractions & Decimals Discussion

5. Applications of Multiplying Rational Numbers

- In this section, you will interpret the meaning of multiplying rational numbers in real-world situations.
- In this section, you will solve real-world problems by multiplying rational numbers.

6. Divide Rational Numbers
 - In this section, you will divide positive and negative integers to find the sign of the quotient.
 - In this section, you will divide positive and negative integers using the properties of operations for division.
7. Divide Decimals & Fractions
 - In this section, you will divide positive and negative decimal rational numbers efficiently.
 - In this section, you will divide positive and negative rational numbers written as fractions.
8. Decimals as Rational Numbers
 - In this section, you will convert decimals to fractions.
9. Write Fractions as Decimals
 - In this section, you will convert rational numbers to their decimal equivalents using long division.
 - In this section, you will show that when you have a rational number it can be written as a terminating or repeating decimal.
10. Applications of Dividing Rational Numbers
 - In this section, you will use real-world situations to interpret quotients.
 - In this section, you will solve real-world problems by dividing rational numbers.
11. Multiply & Divide Rational Numbers
 - In this section, you will multiply and divide positive and negative rational numbers.
 - In this section, you will solve multi-step real-world problems with multiplication and division.
12. Multiply & Divide Rational Numbers Apply
13. Multiply & Divide Rational Numbers Review
14. Multiply & Divide Rational Numbers Unit Test

4. Unit Rates & Proportions

1. Unit Rates & Proportions Introduction
2. Ratios
 - In this section, you will express ratios as a part-to-part and part-to-whole relationship.
 - In this section, you will determine if two ratios are of equivalence to one another.
3. Unit Rates
 - In this section, you will apply the use of a unit rate to solve real-world settings.
4. Unit Rates with Ratios of Fractions
 - In this section, you will divide fractions by multiplying the inverse.
 - In this section, you will compute unit rates associated with ratios of fractions involving length, area, and other quantities.
5. Proportional Relationships in Tables
 - In this section, you will identify the constant of proportionality from a data table of a real-world setting.
 - In this section, you will determine whether two quantities are in a proportional relationship by testing for equivalent ratios in a data table.
6. Review of the Coordinate Plane & Slope
 - In this section, you will graph points from a data table.
 - In this section, you will find the slope of a line using any two points on a

graph.

7. Graphs of Proportional Relationships

- In this section, you will identify the constant of proportionality (or unit rate) from a graph.
- In this section, you will decide whether two quantities are in a proportional relationship based on a graph.

8. Graph Proportional Relationships

- In this section, you will draw graphs to represent proportional relationships.
- In this section, you will explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation graphed.

9. Graph Proportional Relationships Discussion

10. Graph Proportional Relationships Discussion

11. Equations of Proportional Relationships

- In this section, you will identify the constant of proportionality from a direct variation equation that represents a real-world or mathematical problem.
- In this section, you will write a direct variation equation to represent a proportional relationship.

12. Compare Proportions from Descriptions & Tables

- In this section, you will compare two proportional relationships from their verbal descriptions.
- In this section, you will compare two different proportional relationships using tables.

13. Compare Proportions from Graphs & Equations

- In this section, you will compare two different proportional relationships using graphs.
- In this section, you will compare two different proportional relationships using equations.

14. Unit Rates & Proportions Apply

15. Unit Rates & Proportions Review

16. Unit Rates & Proportions Unit Test

5. Use Proportional Relationships

1. Use Proportional Relationships Introduction

2. Solve Ratio Problems with Proportions

- In this section, you will use unit rates in proportional relationships to solve ratio problems.

3. Solve Mixture Problems with Proportions

- In this section, you will use proportional relationships to solve multi-step ratio problems involving mixtures.

4. Solve Percent Problems with Proportions

- In this section, you will use proportional relationships to solve multi-step percent problems involving tax and gratuities.
- In this section, you will use the percentage error formula to find the percentage error of a problem.

5. Convert Measurements with Proportions

- In this section, you will use proportional relationships to convert units that are in the same measurement system (imperial or metric).
- In this section, you will use proportional representation to convert units that are in different measurement systems (imperial to metric or vice versa).

6. Using Proportional Relationships Portfolio

7. Proportions & Scale Factors

- In this section, you will learn to identify the scale factor from a diagram

showing both an original image and a representation of that image.

- In this section, you will reproduce a scale drawing using a different scale.

8. Use Proportional Relationships Apply
9. Use Proportional Relationships Review
10. Use Proportional Relationships Unit Test

6. Algebraic Expressions

1. Algebraic Expressions Introduction
2. Evaluate Algebraic Expressions
 - In this section, you will evaluate algebraic expressions containing rational numbers and whole number exponents at specified values of their variables.
3. Simplify Algebraic Expressions
 - In this section, you will use properties of operations to simplify linear expressions by combining like terms.
 - In this section, you will use properties of operations to simplify linear expressions with fractional coefficients by combining like terms.
4. The Distributive Property & Algebraic Expressions
 - In this section, you will use the distributive property to expand linear expressions with integer coefficients.
 - In this section, you will use the Distributive Property to expand linear expressions with fractional coefficients.
5. Factor Algebraic Expressions
 - In this section, you will find the greatest common factor of the coefficients in an algebraic expression.
 - In this section, you will use properties of operations to factor linear expressions with rational coefficients.
6. Add and Subtract Algebraic Expressions
 - In this section, you will use the properties of operations to add linear expressions together.
 - In this section, you will use the properties of operations to subtract linear expressions.
7. Add, Subtract, Factor, & Expand Expressions
 - In this section, you will apply multiple properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients.
8. Algebraic Expressions Portfolio
 - In this section, you will explain the relationship between two forms of a linear expression.
 - In this section, you will explain the relationships between different forms of linear expressions.
9. Algebraic Expressions Apply
10. Algebraic Expressions Review
11. Algebraic Expressions Unit Test

7. One- & Two-Step Equations

1. One- & Two-Step Equations Introduction
2. Solve Equations with Addition and Subtraction
 - In this section, you will fluently solve equations in the form $x + p = q$ and $x - p = q$, where p and q are specific integers.
 - In this section, you will solve equations in the form $x + p = q$ and $x - p = q$, where p and q are specific rational numbers, including fractions.
3. Problem Solving with Addition and Subtraction
 - In this section, you will represent real-world problems with equations in the form $x + p = q$ and $x - p = q$, where p and q are specific rational numbers,

including fractions.

- In this section, you will solve real-world problems that can be represented with equations in the form $x + p = q$ and $x - p = q$, where p and q are specific rational numbers.

4. Solve Equations with Multiplication and Division

- In this section, you will fluently solve equations in the form $px = q$ and $\frac{x}{p} = q$, where p does not equal zero and p and q are specific integers.
- In this section, you will fluently solve equations in the form $px = q$ and $\frac{x}{p} = q$, where p does not equal zero and p and q are specific rational numbers, including fractions.

5. Problem Solving with Multiplication and Division

- In this section, you will represent real-world problems with equations in the form $px = q$ and $\frac{x}{p} = q$, where p does not equal zero and p and q are specific rational numbers.
- In this section, you will solve real-world problems with equations in the form $px = q$ and $\frac{x}{p} = q$, where p does not equal zero and p and q are specific rational numbers.

6. Solve Two-Step Equations

- In this section, you will fluently solve equations of the form $px + q = r$ and $px - q = r$, where p , q , and r are specific integers.
- In this section, you will fluently solve equations of the form $px + q = r$ and $px - q = r$, where p , q , and r are specific rational numbers, including fractions.

7. Problem Solving with Two-Step Equations

- In this section, you will represent real-world problems in the form $px + q = r$ where p , q , and r are specific rational numbers, and x is a variable.
- In this section, you will solve real-world problems in the form $px + q = r$, where p , q , and r are specific rational numbers.

8. Compare Solution Methods for Two-Step Equations

- In this section, you will use arithmetic equations in the form $px + q = r$ or $px - q = r$ to solve real-world problems.
- In this section, you will use algebra to solve equations in the form of $px + q = r$ or $px - q = r$ and compare the solution to the arithmetic solution.

9. One- & Two-Step Equations Apply

10. One- & Two-Step Equations Review

11. One- & Two-Step Equations Unit Test

8. Multi-Step Equations

1. Multi-Step Equations Introduction

2. Steps to Solve a Multi-Step Equation

- In this section, you will identify the steps needed to solve multi-step linear equations.
- In this section, you will justify the steps needed to solve multi-step linear equations.

3. Equations with Parentheses

- In this section, you will solve equations in which an integer is multiplied by an expression inside parentheses.

4. Equations with Parentheses, Decimals, & Fractions

- In this section, you will solve equations of the form $p(x + q) = r$ and $p(x - q) = r$, where p , q , and r are specific rational numbers, including fractions.
- In this section, you will solve equations of the form $p(x + q) = r$ and $p(x - q) =$

r , where p , q , and r are specific rational numbers, including decimals.

- 5. Problem Solving with Multi-Step Equations
 - In this section, you will represent real world problems in the form of an equation, $p(x \pm q) = r$, where p , q , and r are rational numbers.
 - In this section, you will solve real-world problems leading to an equation in the form $p(x \pm q) = r$, where p , q , and r are rational numbers.
- 6. Compare Solution Methods for Multi-Step Equations
 - In this section, you will use arithmetic to determine what calculations must be performed to find the missing value for real-world problems that can be represented by an equation of the form $p(x \pm q) = r$.
 - In this section, you will compare an algebraic solution with an arithmetic solution, identifying the sequence of operations used in each approach for real-world problems that can be represented by an equation in the form of $p(x \pm q) = r$.
- 7. Determine Reasonableness of Solutions
 - In this section, you will reason effectively using mental computation and estimation.
- 8. Multi-Step Equations Apply
- 9. Multi-Step Equations Review
- 10. Multi-Step Equations Unit Test

Semester B Summary:

In this course, the student will learn, practice, and apply the fundamental skills and strategies that will help them grow into strong mathematical thinkers. Daily instruction supports student learning of core math concepts and development of procedural fluency regarding inequalities; angle pairs; triangles; area and perimeter; surface area; volume; probability; and statistics. Students are encouraged to use visual representation of their thinking to bridge their understanding between the concrete and abstract, allowing patterns and mathematical principles to come to life. Peer Model videos throughout provide illustrations of a peer learning how to use and apply the target mathematical skill using a real-world example. 21st Century instruction further illustrates the connection of mathematical concepts to the real world while supporting students' development of skills, knowledge, and expertise they must master to succeed in work and life. Mathematical discussion prompts encourage students to revise misunderstanding, uncover nuances in application, make connections to prior knowledge, identify patterns, and engage with vocabulary. Students are encouraged to listen critically, critique the reasoning of others, and justify their own solutions. The course is designed to support a growth mindset regarding math and encourages students to engage in productive struggle; instructional materials explicitly and frequently remind students that mistakes are opportunities for learning and acquiring new skills. Together the course elements ensure the student grows as a mathematical thinker and masters the skills to succeed in work and life.

Semester B Outline

- 1. **Math 7 B Course Overview**
 - 1. Math 7 B Course Overview
- 2. **Inequalities**
 - 1. Inequalities Introduction
 - 2. Solve Addition Inequalities
 - In this section, you will solve linear inequalities that require one addition or

- one subtraction step to solve.

- In this section, you will graph the solution to linear inequalities that require addition or subtraction to solve, using a number line.

3. Solve Multiplication and Division Inequalities

- In this section, you will solve linear inequalities that require one multiplication or one division step to solve.
- In this section, you will solve multiplication and division inequalities and then graph the solutions.

4. Solve Two-Step Inequalities

- In this section, you will graph the solutions to two-step inequalities.

5. Applications of Inequalities

- In this section, you will write two-step inequalities for real-world and mathematical problems.

- In this section, you will solve linear inequalities.

6. Solutions to Real-World Inequality Problems

- In this section, you will graph the solutions to real-world problems that can be represented by inequalities on number lines.
- In this section, you will solve real-world problems using inequalities and interpret the solutions in the context of the problems.

7. Inequality Problems Discussion

8. Solutions to Real-World Inequality Problems Discussion

9. Inequalities Apply

10. Inequalities Review

11. Inequalities Unit Test

3. Linear Equations

1. Linear Equations Introduction

2. Proportional Linear Equations

- In this section, you will determine the slope of a proportional relationship.
- In this section, you will write the equation of a proportional relationship in the form $y = mx$.

3. Graph Proportional Equations

- In this section, you will graph a proportional linear equation given the slope and an ordered pair.
- In this section, you will graph a proportional linear equation using $y = mx$.

4. Additive Linear Equations

- In this section, you will determine the y -intercept, b , in an additive relationship between two quantities.
- In this section, you will write an equation in the form $y = x + b$ for an additive relationship between two quantities.

5. Graph Additive Linear Equations

- In this section, you will graph an additive linear equation given the y -intercept and an ordered pair.
- In this section, you will graph an additive linear equation given the equation $y = x + b$.

6. Compare Lines from Descriptions & Tables

- In this section, you will compare two different additive linear relationships using verbal descriptions.
- In this section, you will compare two different additive linear relationships using tables.

7. Compare Lines from Graphs & Equations

- In this section, you will compare two different additive linear relationships

using equations.

- In this section, you will compare two different additive linear relationships using graphs.

8. Linear Equations Apply

9. Linear Equations Review

10. Linear Equations Unit Test

4. Exponents

1. Exponents Introduction

2. Product Rule of Exponents

- In this section, you will explore and develop an understanding of the Product Rule of Exponents.
- In this section, you will apply the Product Rule of Exponents to simplify and form equivalent numerical expressions.

3. Quotient Rule of Exponents

- In this section, you will explore and develop an understanding of the Quotient Rule of Exponents.
- In this section, you will apply the Quotient Rule of Exponents to simplify and form equivalent numerical expressions.

4. Zero Power Rule of Exponents

- In this section, you will develop the Power of Zero Rule of Exponents.
- In this section, you will apply the Power of Zero Rule of Exponents to mathematical problems.

5. Negative Exponents

- In this section, you will develop the Negative Power Rule for exponents.
- In this section, you will use the Negative Power Rule of exponents to write equivalent expressions.

6. Writing in Scientific Notation

- In this section, you will write very large and very small numbers in scientific notation.
- In this section, you will convert very large and very small numbers written in scientific notation to standard notation.

7. Compare and Order Numbers in Scientific Notation

- In this section, you will compare numbers written in scientific notation.
- In this section, you will order numbers written in scientific notation.

8. Determine Perfect Square Roots

- In this section, you will determine square roots of perfect squares.

9. Exponents Apply

10. Exponents Review

11. Exponents Unit Test

5. Triangles and Quadrilaterals

1. Types of Quadrilaterals

- In this section, you will classify quadrilaterals based on their properties.
- In this section, you will compare and contrast quadrilaterals based on their properties.

2. Quadrilateral Measurements

- In this section, you will find the missing side lengths of a quadrilateral.
- In this section, you will find the unknown angle measurements of a quadrilateral.

3. Similar Figures

- In this section, you will determine whether two figures are similar or not.
- In this section, you will use the properties of similarity to find unknown side

lengths or angle measures in two similar triangles.

- In this section, you will use the properties of similarity to find missing measurements in two similar quadrilaterals.

4. Scale Drawings

- In this section, you will use scale factor to determine an unknown side length or angle measurement given a diagram of two similar triangles.
- In this section, you will use the scale factor to determine an unknown side length or angle measure when given a scale drawing and a full-sized quadrilateral.

5. Translations

- In this section, you will translate a right triangle in the coordinate plane.
- In this section, you will translate a rectangle in the coordinate plane.

6. Translations Prompt

7. Translations Discussion

8. Reflections

- In this section, you will reflect right triangles in the coordinate plane.
- In this section, you will reflect a rectangle in the coordinate plane.

9. Triangles and Quadrilaterals Apply

10. Triangles and Quadrilaterals Review

11. Triangles and Quadrilaterals Unit Test

6. Area and Perimeter

1. Area and Perimeter Introduction

2. Area of Rectangles & Triangles

- In this section, you will use formulas to calculate the area of rectangles and squares.
- In this section, you will learn to use the formula for finding the area of a triangle.

3. Length and Area in Scale Drawings

- In this section, you will compute actual lengths from scale drawings of geometric figures.
- In this section, you will compute actual areas from scale drawings of geometric figures.

4. Circumference & Area of Circles

- In this section, you will use the formula for the circumference of a circle to strategically solve problems.
- In this section, you will describe the proportional relationship between the diameter and circumference of a circle and explain that the unit rate (constant of proportionality) is π .
- In this section, you will use the formula for the area of a circle to solve problems.

5. Circumference & Area Portfolio

6. Area and Perimeter Apply

7. Area and Perimeter Review

8. Area and Perimeter Unit Test

7. Surface Area and Volume

1. Surface Area Introduction

2. Prisms

- In this section, you will identify the bases, faces, edges, and vertices of rectangular and triangular prisms.
- In this section, you will describe the two-dimensional figures that result from slicing right rectangular and triangular prisms.

3. Surface Area of Cubes & Rectangular Prisms

- In this section, you will break apart cubes and rectangular prisms into two-dimensional shapes to find the formula for the surface area of cubes and rectangular prisms.
- In this section, you will solve problems involving surface area of cubes and right rectangular prisms.

4. Surface Area of Cylinders

- In this section, you will find the surface area of a right circular cylinder using nets.
- In this section, you will solve problems involving the surface area of cylinders.

5. Applications of Surface Area

- In this section, you will solve real-world problems involving surface area of rectangular prisms, including cubes.
- In this section, you will use real-world problems to find the surface area of a right circular cylinder.

6. Volume of Prisms

- In this section, you will use the formulas for volume of cubes appropriately.
- In this section, you will use the formula for volume of right rectangular prisms appropriately.

7. Volume of Cylinders

- In this section, you will solve volume problems of right circular cylinders.

8. Applications of Volume

- In this section, you will solve real-world problems involving the volume of composite three-dimensional objects.
- In this section, you will use real-world problems to find the volume of right circular cylinders.

9. Surface Area and Volume Apply

10. Surface Area and Volume Review

11. Surface Area and Volume Unit Test

8. Probability

1. Probability Introduction

2. Probability Basics

- In this section, you will define *probability* as a ratio between 1 and 0 that compares the number of outcomes in an event to all outcomes in the sample space. You will become familiar with the basic terminologies of probability.
- In this section, you will describe the probability of a chance event as having a greater likelihood of occurring when the probability is greater.

3. Experimental Probability

- In this section, you will predict the approximate relative frequency given the probability of a chance event.
- In this section, you will justify why experimental probability will not always equal theoretical probability.

4. Uniform Probability Models

- In this section, you will develop a uniform probability model by assigning equal probability to all outcomes.
- In this section, you will use a uniform probability model to estimate the probability of an event and predict the number of occurrences of a certain outcome.

5. Probability of Chance Events

- In this section, you will approximate the probability of a chance event by

collecting data on the chance process that produces it. You will observe its long-run relative frequency.

- In this section, you will develop a probability model by observing frequencies in data generated from a chance process.
- In this section, you will compare probability models to observed frequencies. You will explain possible sources of the discrepancy, if there are any.

6. Compound Events

- In this section, you will describe the probability of a compound event as a ratio of the outcomes in the compound event to the total outcomes in the sample space.
- In this section, you will calculate the probability of a compound event. You will solve problems involving a compound event.

7. Compound Events Portfolio

- In this section, you will identify the outcomes in the sample space that comprise an event.
- In this section, you will represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams.
- In this section, you will design a simulation to generate frequencies for compound events.
- In this section, you will use a simulation to generate frequencies for compound events.
- In this section, you will use frequencies generated by a simulation to determine the probability of a compound event.

8. Probability Apply

9. Probability Review

10. Probability Unit Test

9. Statistics

1. Statistics Introduction

2. Statistics Basics

- In this section, you will describe statistics as a way to gain information about a population by examining a sample of the population.
- In this section, you will determine whether it is valid to make generalizations about a population from a sample.

3. Random Sampling

- In this section, you will describe random sampling as a method that tends to produce representative samples and support valid inferences.
- In this section, you will use data from a random sample to draw inferences about a population with an unknown characteristic of interest.

4. Histograms

- In this section, you will represent data in histograms.
- In this section, you will use histograms to make observations and inferences from histograms.

5. Stem-and-Leaf Plots

- In this section, you will use a stem-and-leaf plot to represent various data.
- In this section, you will make observations and inferences about data shown in stem-and-leaf plots.

6. Line Plots

- In this section, you will make line plots to represent data.
- In this section, you will make observations and inferences about data shown in line plots.

7. Circle Graphs

- In this section, you will create circle graphs and use them to solve problems.
- In this section, you will utilize circle graphs to interpret the data represented.

8. Choosing the Correct Graph
 - In this section, you will compare data represented with a histogram to the same data represented by a stem-and-leaf plot.
 - In this section, you will match two graphs of different types that represent the same data.
 - In this section, you will compare data in histograms and circle graphs.
9. Statistics Apply
10. Statistics Review
11. Statistics Unit Test