INTRO TO COLLEGE MATH SYLLABUS

2013-2014 Academic School-Year

1ˢᵗ *Marking Period*

Unit 1.   **Whole Numbers**
    Introduction
    Addition
    Subtraction
    Multiplication
    Division
    Exponential Notation and Order of Operations
    Rounding whole numbers

Unit 2 & 3   **Fractions**
    Multiplication of Fractions and Mixed Numbers
    Division of Fractions and Mixed Numbers
    Least Common Multiple and Greatest Common Factor
    Writing Equivalent Fractions
    Addition of Fractions and Mixed Numbers
    Subtraction of Fractions and Mixed Numbers
    Order, Exponents and the Order of Operations Agreement

Unit 4.   **Decimals**
    Addition
    Subtraction
    Multiplication
    Division
    Rounding Decimals
    Comparing and Converting Fractions and Decimals

2ⁿᵈ *Marking Period*

Unit 5   **Ratio and Proportion**
    Ratio
    Rate
    Proportion

Unit 6   **Percent**
    Percent Equations
    Percent Applications

Unit 7   **Measurement**
    English measurement
    Metric measurement
    English - metric conversions

Unit 8   **Data Analysis and Statistics**
    Mean and Median, Mode
    Pictographs, Circle graphs, bar graphs, and line graphs
    Histograms and Frequency Distribution

Unit 9   **Real Number System**
    Real numbers and ordering
    Adding real numbers
    Subtracting real numbers
    Multiplying real numbers
    Dividing real numbers and order of operations

3<u>rd</u> *Marking Period*

Unit 10   **The Language of Algebra**
Exponents and Order of Operations
Positive and Negative Integers
Translation
Properties of Signed Numbers
Add, Subtract, Multiply and Divide Signed Numbers
Evaluate Expressions
Add, Subtract, Multiply and Divide Terms

Unit 11   **Equations and Inequalities**
Solving Linear Equations
Solving Literal Equations
Solving Linear Inequalities
Applications

Unit 12   **Polynomials**
Extending the Properties of Exponents
Introduction to Polynomials
Adding and Subtracting Polynomials
Multiplying Polynomials
Special Products
Dividing Polynomials (exclude long division)

Unit 13   **Factoring**
Factoring - An Introduction
Factoring out a GCF
Factor by grouping
Difference of Squares
Trinomials
Solving Equations by Factoring

4<u>th</u> *Marking Period*

Unit 14   **Algebraic Fractions**
Writing Algebraic Fractions in Simplest Form
Adding and Subtracting Like Fractions
Adding and Subtracting Unlike Fractions
Multiplying and Dividing Algebraic Fractions
Equations Involving Fractions

Unit 15   **Graphing Linear Equations**
Solutions of Equations in Two Variables
The Rectangular Coordinate System
Graphing Linear Equations

Unit 16   **Introduction to Functions**
Evaluate an Expression
Evaluate a Function
Express the Equation of a Line as a Linear Function

Unit 17   **Systems of Linear Equations**
Solving by Graphing
Solving by Adding
Solving by Substitution
Applications

Unit 18   **Exponents and Radicals**
Roots and Radicals (limited to an index 2)
Simplifying Radical Expressions
Adding and Subtracting Radicals
Multiplying Radicals

Course Expectations and Skills

- Students are required to have proficiency in all prerequisite topics for Algebra 1. Those who do not demonstrate proficiency will be required to seek additional help after school to close their achievement gap in order to be successful in this course.
- Students are required to take notes in Cornell Notes format and maintain those notes in a neat and organized notebook.
- Students are required to participate in both small and large group discussions and activities, as directed.
- Students are required to complete a project each marking period, including those which require the use of technology.

Resources

Text Book: *Basic Skills Math*, August Treff and Donald Jacobs
                                        Algebra 1, Holt McDougal

Supplemental Materials: Algebra 1 Practice Workbook
                                        Kuta Software
                                        Boardworks Interactive PowerPoint Software

Grading Scale	$1^{st} - 4^{th}$ MP
MAJ	50
MIN	30
CP	10
HW	10

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math / Whole Numbers	Unit Summary: **In this unit, students will use place values, do basic operations with whole numbers, and utilize order of operations.**
Grade Level(s): 12	
Essential Question(s): **How do you round whole numbers?** **How do you read and write with numbers?** **How do you perform operations with whole numbers?**	**Enduring Understanding(s):** Students will be able to: - Identify the place value of a digit in a number - Read and write numbers in word form - Round numbers - Compute with whole numbers to solve word problems

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Rounding Whole Numbers *MA.4.4.NBT.3 - [Standard] - Use place value understanding to ROUND multi-digit whole numbers to any place.* **2. Read and Write with Numbers and Exponents** *MA.4.4.NBT.2 - [Standard] - Read and WRITE multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.* *MA.5.5.NBT.2 - [Standard] - Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number EXPONENTS to denote powers of 10.* **3. Operations with Whole Numbers** *MA.4.4.OA.2 - [Standard] - Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.* *MA.4.4.NBT.4 - [Standard] - Fluently add and subtract multi-digit whole numbers using the standard algorithm.* *MA.4.4.NBT.5 - [Standard] - Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of OPERATIONS. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.* *MA.4.4.NBT.6 - [Standard] - Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of OPERATIONS, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.*	1. *MA.4.4.NBT.3* 2. *MA.4.4.NBT.2; MA.5.5.NBT.2* 3. *MA.4.4.OA.2; MA.4.4.NBT.4,5,6*

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Rounding to find an estimate of costs, Adding to find the weight of several objects, Multiplying to find the salary for a year, Divide to find number of miles per gallon, Find the average of test scores, Technology with

demographics.

Students will engage with the following text:

Basic Skills Math, by August Treff and Donald Jacobs

Students will write:

Writing/Open Ended questions:
Explain the rounding process, Explain how to use the order of operations, Explain how to find the average of test scores, Explain how to find the number of students in a class.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.

How will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Introduction to Whole Numbers:

Big Ideas
Digits: Any one of the symbols 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9
Place Value: Worth based on position in a numeral: Hundred Millions, Ten-Millions, Millions, Hundred-Thousands, Ten-Thousands, Thousands, Hundreds, Tens, Ones
Reading and Writing Whole Numbers using the place values

Adding and Subtracting Whole Numbers:

Big Ideas
Addition: The arithmetic operation of combining numbers to find their sum
Addend: The number that is added to one or more numbers
Order: Sequence from smallest to largest
Sum: The answer to an addition problem
Zero: The first whole number
Subtraction: The arithmetic operation of taking one number away from another to find the difference.
Difference: Answer to a subtraction problem

Multiplying Whole Numbers:

Big Ideas
Multiplication: The arithmetic operation of adding a number to itself many times
Factor: Number that is multiplied in a multiplication problem
Product: Answer to a multiplication problem

Dividing Whole Numbers:

Big Ideas
Division: The arithmetic operation that finds how many times a number is contained in another number
Dividend: A number that is divided
Quotient: Answer in a division problem
Divisor: Number by which you are dividing

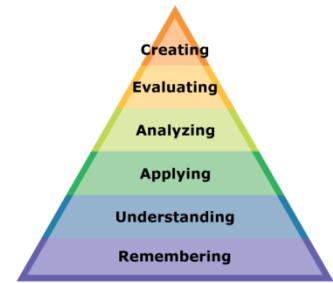**Exponent Notation and Order of Operations:**

Big Ideas
Exponent: Number that tells how many times another number is a factor
How to evaluate an expression: PEMDAS: Please Excuse My Dear Aunt Sally

Exponent Notation and Order of Operations:

Big Ideas
Round to a certain place value: Look at the next place value and round up if greater or equal to 5, round down if not.

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS. IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

A baseline of student knowledge will be established with a cumulative pretest. The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math / Fractions	Unit Summary: In this unit, students will perform arithmetic operations with fractions and mixed numbers. Also, students will find least common multiple and greatest common factor in order to write equivalent fractions. Then, students must be able to put fractions in order.
Grade Level(s): 12	
Essential Question(s): **How do you perform operations with fractions?** **How do you write an equivalent fraction?** **How do you write fractions in order from least to greatest?**	**Enduring Understanding(s):** Students will be able to: - Multiply and Divide with fractions and mixed numbers - Find the least common multiple and greatest common factors of numbers - Write equivalent fractions - Add and Subtract fractions and mixed numbers - Write fractions in order

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Operations with Fractions	**1. MA.4.4.NF.3.a,c;**
MA.4.4.NF.3.a - Understand addition and subtraction of FRACTIONS as joining and separating parts referring to the same whole.	**MA.5.5.NF.1,4,7**
MA.4.4.NF.3.c - Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.	**2. MA.3.3.NF.3.b,d;** **MA.4.4.NF.1**
MA.5.5.NF.1 - [Standard] - Add and subtract fractions with unlike DENOMINATORs (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like DENOMINATORs.	**3. MA.4.4.NF.2;** **MA.4.4.MD.2**
MA.5.5.NF.4 - [Standard] - Apply and extend previous understandings of multiplication to MULTIPLY a fraction or whole number by a fraction.	
MA.5.5.NF.7 - [Standard] - Apply and extend previous understandings of division to DIVIDE unit fractions by whole numbers and whole numbers by unit fractions.	
2. Read and Write Equivalent Fractions	
MA.3.3.NF.3.b - Recognize and generate simple equivalent FRACTIONs, (e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the FRACTIONs are equivalent, e.g., by using a visual FRACTION model.	
MA.3.3.NF.3.d - Compare two FRACTIONs with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two FRACTIONs refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual FRACTION model.	
MA.4.4.NF.1 - [Standard] - Explain why a fraction a/b is equivalent to a fraction by using visual fraction models, with attention to how the number and size of the parts differ even though the two FRACTIONS themselves are the same size. Use this principle to recognize and generate equivalent FRACTIONS.	
3. Order of Fraction	
MA.4.4.NF.2 - [Standard] - Compare two FRACTIONS with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two FRACTIONS refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	
MA.4.4.MD.2 - [Standard] - Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple FRACTIONS or decimals, and problems that require	

expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Find the length of a board needed for a shelf while working with mixed numbers and fractions, Multiplying a recipe's ingredients, Calculate the weight of an object, Adding 2 pieces of pipe together that are fractions.

Students will engage with the following text:

Basic Skills Math, by August Treff and Donald Jacobs

Students will write:

Writing/Open Ended questions:
Explain how to multiply fractions, Explain how to divide fractions, Explain how to find a common denominator, Explain how to add and subtract fractions with unlike denominators, and Explain how to put fractions in order from least to greatest.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.
How will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Multiplication of Fractions and Mixed Numbers:

Big Ideas
Multiply numerators together then multiply denominators together
Simplify before multiplying
Convert mixed numbers to improper fractions, multiply, then write answer as a mixed number or in simplest terms

Division of Fractions and Mixed Numbers:

Big Ideas
Multiply the first fraction by the reciprocal of the second
Convert mixed numbers to improper fractions, divide, then write answer as a mixed number or in simplest terms

Least Common Multiple and Greatest Common Factor:

Big Ideas
Common Denominators: Denominators that are alike
Least Common Denominator: Smallest denominator that is a multiple of two denominators

Writing Equivalent Fractions:

Big Ideas
Changing fractions to higher terms given the desired denominator.
Simplifying Fractions: Divide the numerator and denominator by the largest number that divides into both evenly.

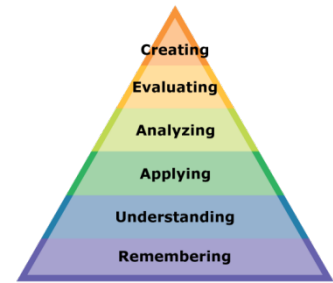**Addition and Subtraction of Fractions and Mixed Numbers:**

Big Ideas
Adding/Subtracting Like Denominators: Add the whole numbers and the numerators, keep the denominators. Simplify if needed.
Adding/Subtracting Unlike Denominators: Rewrite each fraction to have a common denominators, then add/subtract the fractions. Simplify if needed.

Order, Exponents, and the Order of Operations:

Big Ideas
Cross product: The answer obtained by multiplying the denominator of one fraction by the numerator of another.
Greater than: Larger than
Less than: Smaller than
Descending Order: Rewrite the fractions to have common denominators, and then list from greatest to least.
Follow the order of operations to compute an expression with fractions

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR
UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.
IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

A baseline of student knowledge will be established with a cumulative pretest. The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math / Decimals Grade Level(s): 12	Unit Summary: In this unit, students will perform arithmetic operations with decimals. Also, students will compare and convert fractions to decimals. Then, students will round decimals for a given place value.
Essential Question(s): • How do you perform operations with decimals? • How do you convert a fraction to a decimal? • How do round a decimal?	Enduring Understanding(s): Students will be able to: • Add, Subtract, Multiply and Divide with decimals. • Convert fractions to decimals. • Compare fractions and decimals. • Round decimals.

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Operations with Decimals ***MA.5.5.NBT.7*** *- [Standard] - Add, subtract, multiply, and divide* ==DECIMALS== *to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.*	1. *MA.5.5.NBT.7* 2. *MA.4.4.NF.6;* *MA.5.5.NBT.3.b* 3. *MA.5.5.NBT.4*
2. Convert and Compare Fractions and Decimals ***MA.4.4.NF.6*** *- [Standard] - Use* ==DECIMAL== *notation for fractions with denominators 10 or 100.* ***MA.5.5.NBT.3.b*** *- Compare two* ==DECIMALS== *to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.*	
3. Round Decimals ***MA.5.5.NBT.4*** *- [Standard] - Use place value understanding to round* ==DECIMALS== *to any place.*	

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Find the length of a board needed for a shelf while working with decimals, Multiplying a recipe's ingredients, Calculate the lap speed of an auto race, Adding 2 solutions together that are decimals, Internet search for subjects that include decimals for measurements.

Students will engage with the following text:

Basic Skills Math, by August Treff and Donald Jacobs

Students will write:

Writing/Open Ended questions:

Explain how to add or subtract decimals, Explain how to multiply or divide decimals, and Explain how to convert a fraction to a decimal, Explain how to convert a decimal to a fraction, Explain how to put fractions and decimals in order from least to greatest, Describe situations when you would have to round decimals.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.
How will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Add Decimals:

Big Ideas
Add Decimals: Line up the decimal points to add each column. Add zeros to avoid confusion.
Find the sum of a list of numbers that includes decimals.

Subtract Decimals:

Big Ideas
Add Decimals: Line up the decimal points to subtract each column. Add zeros to avoid confusion.

Multiply Decimals:

Big Ideas
Multiply Decimals: Count the decimal places in the problem to determine where to put the decimal point in the answer

Divide Decimals:

Big Ideas
Dividing Decimals by a Whole Number: Divide as usual, and then bring the decimal straight up.
Dividing Decimals by a Decimal: Move the decimal of the divisor to the right to make it a whole number. Move the decimal of the dividend the same number of places.
Repeating Decimal: A decimal where the same series of digits repeats.

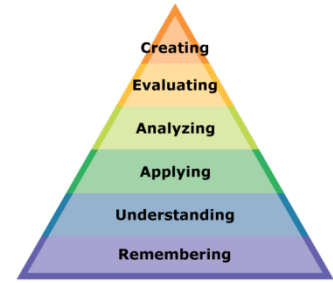**Compare and Convert Fractions and Decimals:**

Big Ideas
Convert Decimals to Fractions: Use the last place value to create a fraction. Simplify is necessary.
Convert Fractions to Decimals: Divide, adding zeros as necessary in the dividend.
Compare Decimals and Fractions: Convert fractions to decimals, and then see which is bigger.

Rounding Decimals:

Big Ideas
Place Value: Tenths, hundredths, thousandths, ten-thousandths
Decimal Place: Positions to the right of the decimal point
Rounding: Find the place value you are rounding to, if the digit to the right is 5 or greater, add 1 to that place value and drop the remaining decimals. If not, just drop the remaining decimals.

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR
UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.
IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math / Ratio and Proportion	Unit Summary: **In this unit, students will compare amounts using a ratio and find a missing term using a proportion. They will use these skills to solve word problems.**
Grade Level(s): 12	
Essential Question(s): • **How do you compare amounts using a ratio?** • **How do you figure out the unit rate?** • **How do I solve a proportion?**	**Enduring Understanding(s):** Students will be able to: • Write a ratio as a fraction in simplest form. • Compare amounts using a ratio. • Find the rate or unit rate. • Identify ratios that form a proportion. • Find the missing term in a proportion. • Solve world problems using ratios and proportions.

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Ratios	**1. MA.6.6.RP.1,2,3**
MA.6.6.RP.1 - *[Standard] - Understand the concept of a RATIO and use RATIO language to describe a RATIO relationship between two quantities.*	
MA.6.6.RP.2 - *[Standard] - Understand the concept of a unit rate a/b associated with a RATIO a:b with b is not equal to 0, and use rate language in the context of a RATIO relationship.*	**2. MA.6.6.RP.3.b; MA.7.7.RP.1**
MA.6.6.RP.3 - *[Standard] - 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.*	**3. MA.7.7.RP.3; MA.6.6.RP.3.d**
2. Rate	
MA.6.6.RP.3.b - *Solve unit rate problems including those involving unit pricing and constant speed.*	
MA.7.7.RP.1 - *[Standard] - Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.*	
3. Proportion	
MA.7.7.RP.3 - *[Standard] - Use proportional relationships to SOLVE multistep ratio and percent problems.*	
MA.6.6.RP.3.d - *Use RATIO reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.*	

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Use the internet to find area and total population of your state, Write a ratio of favorable outcomes to possible outcomes with dice, Adjust a baking recipe, Find how many miles you can travel given MPH and number of hours traveled, Convert currency.

Students will engage with the following text:

Basic Skills Math, by August Treff and Donald Jacobs

Students will write:

Writing/Open Ended questions:
Explain how to write a proportion, Explain how to solve a proportion, Explain how you can use proportions to show that 2 fractions are the same, Describe situations in which you can use a proportion to solve a problem.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.
How will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Ratio:

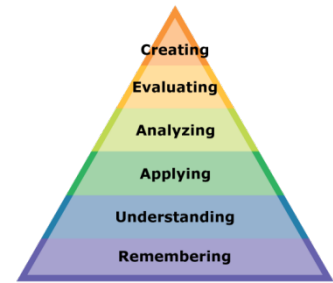| Big Ideas |
|---|
| Ratio: Comparison of two or more numbers using division |
| Comparison: Examining two numbers to see which is larger |
| Fractional Form: Expressed as a fraction |
| Simplify a Ratio: Write in simplest form by simplifying the fraction |

Rate:

Big Ideas
Rate: Writing a ratio with units
Unit Rate: Writing a ratio where the denominator is 1 unit

Proportion:

Big Ideas
Proportion: Two equal ratios
Unknown term: The missing number is a proportion
n: A letter used to stand for an unknown number
Cross Product: Cross multiply and divide to find the unknown
Mixture: A combination of two or more terms
Conversion: Change from one unit of measure to a different one
Currency: Money

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS. IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

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PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math / Percent	Unit Summary: In this unit, students will rewrite decimals and fractions as percents and vice versa; solve percentage equations and use proportions to find rate, base, and percentage. Students will also apply their knowledge to solving a variety of real world application problems.
Grade Level(s): 12	
Essential Question(s): • **What is a percent?** • **How do we rename fractions and decimals into percents?** • **How do we use ratio proportions to solve percent problems?**	**Enduring Understanding(s):** Students will be able to: • To rename a percent as a decimal and a fraction in simplest form • To rename a decimal and fraction as a percent • To find the missing terms in a percent sentence • To use a proportion to find the missing term in a percent sentence • To solve word problems involving percents and tax, commissions, interest, and tips • To calculate monthly payments on an installment plan

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Reading and Writing Percentages **MA.6.6.RP.1** - [*Standard*] - Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. **MA.6.6.RP.2** - [*Standard*] - Understand the concept of a unit rate a/b associated with a ratio a:b with b is not equal to 0, and use rate language in the context of a ratio relationship **MA.4.4.NF.5** - [*Standard*] - Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. **2. Convert Between Fractions, Decimals, and Percents** **MA.7.7.RP.2** - [*Standard*] - Recognize and represent proportional relationships between quantities. **3. Solving Ratio and Proportion problems with Percents.** **MA.7.7.RP.A** - [*Cluster Statement*] - Analyze proportional relationships and use them to solve real-world and mathematical problems. **MA.7.7.RP.3** - [*Standard*] - Use proportional relationships to solve multistep ratio and percent problems.	**1.** MA.6.6.RP.1; MA.6.6.RP.2; MA.4.4.NF.5 ; **2.** MA.7.7.RP.2 **3.** MA.7.7.RP.A ; MA.7.7.RP.3

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Find the tip you would leave in a restaurant. Find how much commission you would earn on a certain sale. Find the percentage of distance traveled in a car. Find the amount that needs to be paid if a certain percentage was already put down.

Students will engage with the following text:

Basic Skills Math, by August Treff and Donald Jacobs

Students will write:

Writing/Open Ended questions:
Explain how to rewrite a fraction in to a percent. Explain how to set up a percentage sentence. Explain the steps needed to find the percentage from a proportion. Explain how you would figure out how much tip you would leave from a certain bill.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.
<u>How</u> will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Meaning of Percent:

Big Ideas
Recognize the percent symbol.
Understand that percents are an amount out of 100.
Find percents graphically.

Changing Percents to Decimals and Fractions:

Big Ideas
Rewrite each percent into a decimal by moving the decimal point.
Rewrite each percent into a fraction by writing it over 100 then simplifying.

Renaming Fractions and decimals as percents:

Big Ideas
Rewrite each decimal as a percent by moving the decimal point.
Rewrite each fraction as a percent by dividing and multiplying by 100.

Major Elements of a Percentage Sentence:

Big Ideas
Define terms Rate, Base, and Percentage.
Identify the Rate, Base, and percentage in a Percentage sentence.

Finding the Percentage:

Big Ideas
Find the percentage by multiplying.
Write and solve a percentage sentence from a given word problem, for the percentage.

Finding the base:

Big Ideas
Find the base by dividing.

Big Ideas
Write and solve a percentage sentence from a given word problem, for the base.

Finding the Rate:

Big Ideas
Find the rate by multiplying.
Write and solve a percentage sentence from a given word problem, for the rate.

Using Proportions:

Big Ideas
Write a proportion including the rate, base, and percentage.
Solve by cross multiplication and division.
Write and solve proportions from word problems.

Discount:

Big Ideas
Define the terms List Price, Sale Price, Discount, Discount rate.
Find each amount by appropriate computation.
Write and solve discount problems from given word problems.

Finding the Sales Tax:

Big Ideas
Define the terms Sales Tax and Tax Rate.
Find the sales tax and tax rate.
Relate Discount to sales tax problems.

Finding Simple Interest:

Big Ideas
Define the terms Principal and Rate of Interest.
Compute the interest over various years using Interest = Principal x Rate of Interest x Time.

Installment Buying:

Big Ideas
Define the terms Previous Balance, Finance Rate, and Finance Charge.
Compute the purchase of a given item over an interval of time.

Finding Commission:

Big Ideas
Define the terms Commission and Rate of commission.
Find the commission by writing and solving word problems.

Finding Tips:
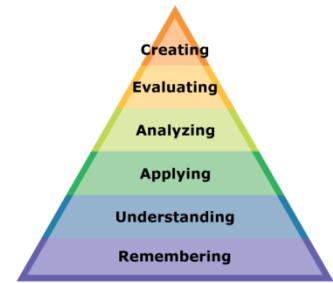
Big Ideas
Define the terms Tip and Tip Rate.

Find the tip from given bills.

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS. IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

A baseline of student knowledge will be established with a cumulative pretest. The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math / Measurement	Unit Summary: In this unit, students will learn about customary and metric units, use a ruler to measure, convert between units, and solve for are, volume, capacity, and mass in a variety of units.
Grade Level(s): 12	
Essential Question(s): • **What are the customary and metric measurement systems?** • **What are the basic customary units and metric units?** • **How do you find area, volume, capacity, and mass?** • **How do you convert between units of measure?**	**Enduring Understanding(s):** Students will be able to: • To measure line segments to the nearest tenth of a centimeter (nearest millimeter) • To estimate accurately the best unit for measuring a distance • To change from one metric unit to another • To find area measured in square units • To find volume measured in cubic units • To find volume, or capacity, measured in liters • To convert units of liquid capacity, weight, and distance.

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Reading and Writing Customary and Metric Units of Measure **MA.4.4.MD.1** - [*Standard*] - Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. **2. Operations with units of measure** **MA.4.4.MD.2** - [*Standard*] - Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. **3. Operations with Volume, Capacity, and Mass** **MA.4.4.MD.3** - [*Standard*] - Apply the area and perimeter formulas for rectangles in real world and mathematical problems. **3. Converting between Units of Measure** **MA.5.5.MD.1** - [*Standard*] - Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems**.**	1. MA.4.4.MD.1 2. MA.4.4.MD.2 3. MA.4.4.MD.3 4. MA.5.5.MD.1

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Find how many shingles will cover a roof? How many square feet of carpet are needed to cover a room? How much paint is needed to paint a certain room?

Students will engage with the following text:

Basic Skills Math, by August Treff and Donald Jacobs

Students will write:

Writing/Open Ended questions:

Explain how to convert from tons to pounds. Explain how to find the perimeter if some of the measurements are in feet and others are in inches.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.
How will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

English Measurement:

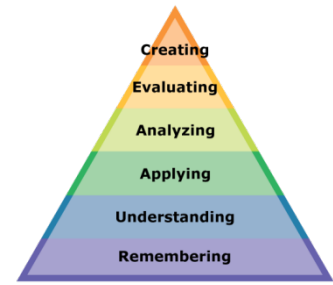| Big Ideas |
|---|
| Define the terms Customary, Pint, Fluid ounce, Quart, Gallon, ounce, inches, feet, yards, and miles |
| Convert between the various units. |
| Use measuring instruments to find measurements of length and volume. |
| Use approximation to estimate measures. |
| Find the perimeter when some of the measurements need to be converted (inches to ft, etc.) |

Metric Measurement:

Big Ideas
Define the terms Metric System, Meter, Liter, Gram, Prefix,
Convert between the various units (kilo, hector, deka, deci, centi, milli).
Use measuring instruments to find measurements of length.
Use approximation to estimate measures.
Find the volume of rectangular prisms.

English – Metric Conversion:

Big Ideas
Give appropriate unit equivalences and convert between various units of measure.
Use approximation to convert the measure of objects between different units of measure.

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS. IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

A baseline of student knowledge will be established with a cumulative pretest. The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math / Data Analysis and Statistics	Unit Summary: **In this unit, students will learn about ways to compute central tendency, and methods of representing data through Pictographs, circle, bar, and line graphs. Students will also create and analyze histograms and frequency distribution.**
Grade Level(s): 12	
Essential Question(s): • **What are the basic parts of a data graph?** • **How do we read data graphs?** • **How do we construct data graphs?** • **How can data be used to communicate misleading information?**	**Enduring Understanding(s):** Students will be able to: • To read and construct pictographs from data in chart form • To read and construct bar graphs and double bar graphs • To read and construct divided bar graphs from data in chart form • To read and construct line graphs and circle graphs • To redraw and correct a misleading graph

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Reading Data Graphs **MA.6.6.SP.4** - [*Standard*] - Display numerical data in plots on a number line, including dot plots, histograms, and box plots. **2. Creating Data Graphs** **MA.6.6.SP.4** - [*Standard*] - Display numerical data in plots on a number line, including dot plots, histograms, and box plots. **3. Analyzing Data Graphs for Information** **MA.7.7.SP.1** - [*Standard*] - Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences. **MA.6.6.SP.1** - [*Standard*] - Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.	**1.** MA.6.6.SP.4 **2.** MA.6.6.SP.4 **3.** MA.7.7.SP.1 ; MA.6.6.SP.1

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Analyze data about a family's budget. Complete a table from given government election results. Draw conclusions about resorts' land values by comparing two different line graphs. Choose the most appropriate way to represent data about weather patterns.

Students will engage with the following text:

Basic Skills Math, by August Treff and Donald Jacobs

Students will write:

Writing/Open Ended questions:
Explain when it would be more appropriate to represent data in a circle graph. Explain in which situation a double bar graph would be more appropriate than a circle graph. Give a situation that would benefit from being represented by a line graph, and explain why a circle graph would be an inappropriate way to represent

the same data.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.
How will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Mean, Median, and Mode:

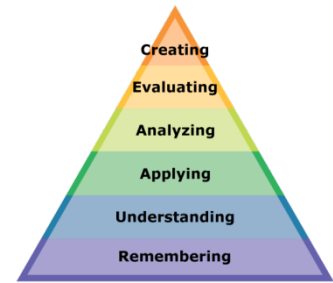| Big Ideas |
|---|
| Define the terms Mean, Median, and Mode. |
| Compute the mean, median, and mode from tables and word problems. |

Pictographs, Circle graphs, Bar graphs, and Line Graphs:

Big Ideas
Recognize the different parts of a graph.
Understand which graphs are best used in certain situations.
Read, analyze, and create Pictographs, bar, divided bar, multiple bar, line, circle graphs
Discuss how graphs can be used to present misleading information.

Histograms and Frequency Distribution:

Big Ideas
Define Histograms and Frequency Distribution.
Create a Histogram and Frequency Distribution from data.
Analyze a Histogram and Frequency Distribution for information.

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR
UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.
IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

A baseline of student knowledge will be established with a cumulative pretest. The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math / Real Number System	Unit Summary: In this unit, students will learn about the Real number line. They will add, subtract, multiply and divide real numbers, and use the order of operations.
Grade Level(s): 12	
Essential Question(s): **What is a real number?** **How do you perform basic mathematical operations with real numbers?** **How do you use the order of operations?**	**Enduring Understanding(s):** Students will be able to: - To identify and order real numbers. - To add real numbers - To subtract real numbers - To multiply real numbers - To divide real numbers - To use the order of operations to simplify an expression.

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Reading and Writing and Ordering Real Numbers **MA.8.8.NS.1** - [*Standard*] - Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. **MA.8.8.NS.2** - [*Standard*] - Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., pi◆). **2. Operations with Real Numbers** *MA.7.7.NS.1* - *[Standard] - Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram* *MA.7.7.NS.2* - *[Standard] - Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.* **3. Performing the Order of Operations** *MA.7.7.EE.1* - *[Standard] - Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.*	**1.** MA.8.8.NS.1 ; **MA.8.8.NS.2** **2.** *MA.7.7.NS.1;* *MA.7.7.NS.2* **3.** *MA.7.7.EE.1*

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Compute non-whole quantities of food to purchase. Compute proper distribution amounts for a budget.
Compute how much pipe is to be purchased if certain predetermined lengths are required.

Students will engage with the following text:

Basic Skills Math, by August Treff and Donald Jacobs

Students will write:

Writing/Open Ended questions:
Explain how real numbers are different from other types of numbers like whole numbers and integers. Explain the step you would use to order five given real numbers. Explain how you know which of these given numbers is greater than the other. Explain the steps used in the order of operations as you simplify a given expression.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.
How will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Real Numbers and Ordering:

Big Ideas
Define Real Numbers
Learn how to compare Real Numbers and how to order them.

Adding Real numbers:

Big Ideas
Learn to add Real numbers.

Subtracting Real numbers:

Big Ideas
Learn to subtract Real numbers.

Multiplying Real numbers:

Big Ideas
Learn to multiply Real numbers.

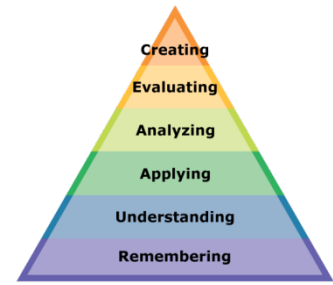**Dividing Real numbers:**

Big Ideas
Learn to Divide Real numbers.

The Order of Operations:

Big Ideas
Define term and expression
Simplify an expression using the order of operations.

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS. IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

A baseline of student knowledge will be established with a cumulative pretest. The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math / The Language of Algebra Grade Level(s): 12	Unit Summary: **In this unit, students will translate algebraic expressions. Also, they will perform operations with positive and negative numbers. Then they will simplify and evaluate expressions.**
Essential Question(s): • **How do you translate an algebraic expression?** • **How do you perform operations with signed numbers?** • **How do I simplify an expression?**	Enduring Understanding(s): Students will be able to: • Use exponents and the order of operations • Identify positive and negative integers • Translate an algebraic expression • Add, subtract, multiply, and divide signed numbers • Evaluate expressions • Simplify expressions

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

| Learning Target	NJCCCS or CCS
1. Translate Algebraic Expressions [*Standard*] - Use the structure of an expression to identify ways to rewrite it. [*Standard*] - Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	**1. MA.9-12.HSA-SSE.2,3**
	2. MA.7.7.NS.1,2,3
2. Operations with Signed Numbers [*Standard*] - Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. [*Standard*] - Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. [*Standard*] - Solve real-world and mathematical problems involving the four OPERATIONS with rational numbers.	**3. MA.6.6.EE.2; MA.9-12.HSA-SSE.1**
3. Evaluate and Simplify Expressions [*Standard*] - Write, read, and EVALUATE expressions in which letters stand for numbers. [*Standard*] - Interpret expressions that represent a quantity in TERMS of its context.	

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:

Represent Football scores with algebraic expressions, Figure out the cost of items, Figure out the amount of gas to fill a tank, Figure out golf scores, Figure out temperatures, Find the costs to raise a farm.

Students will engage with the following text:

Algebra 1, Holt McDougal 2011 edition

Students will write:

Writing/Open Ended questions:

Describe the difference between an expression and an equation, Describe the steps to evaluate an expression, Compare/ contrast the rules for adding and multiplying signed numbers, Explain how to simplify an expression.
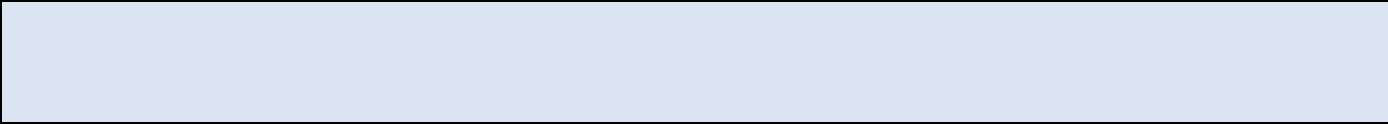
PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.
<u>How</u> will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Exponents and Order of Operation

Big Ideas
Exponents: Simplify without a calculator
Order of Operations with positive integers and rational numbers

Positive and Negative Integers

Big Ideas
Identify Positive and Negative Integers

Translation

Big Ideas
Translate Verbal Phrases
Addition: Sum, plus, total, more than, increased by
Subtraction: Difference, less than, minus, decreased by
Multiplication: Times, product, multiplied by, of
Division: Quotient, divided by, divided into
Quantity: use parenthesis

Properties of Signed Numbers

Big Ideas
Absolute Value: Distance between a and 0 on a number line
Commutative Property: The order in which you add two numbers doesn't change the sum; multiply/product
Associative Property: The way you group three numbers in a sum doesn't change the sum; multiply/product
Identity Property: The sum of a number and 0 is the number; The product of a number and 1 is that number.
Inverse Property: The sum of a number and its opposite is 0.
Property of Zero: The product of a number and 0 is 0.
Property of -1: The product of a number and -1 is the opposite of that number.

Operations with signed numbers

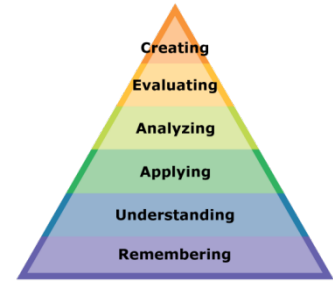| Big Ideas |
| --- |
| Add: Same signs, add and keep the sign. Different signs, subtract and keep the sign of the larger. |
| Subtract: Add to the opposite of the other number. |
| Multiply/Divide: Same sign, positive. Different Signs, negative. |

Evaluate Expressions

Big Ideas
Expression: Operations with numbers and variables
Evaluate an Expression: Substitute all values and simplify.

Simplify Expressions

Big Ideas
Distributive Property from both side of the parenthesis.
Terms: Parts of an expression separated by + and – signs.
Coefficient: Number in front of the variable.
Constant term: Number without a variable.
Like terms: Have the same variable parts.
Simplify an expression: Combine like terms and multiply/divide if needed.
Divide a Binomial by a number.

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS. IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math /Equations and Inequalities Grade Level(s): 12	Unit Summary: In this unit, students will solve linear equations and linear inequalities. They will also solve literal equations. They will also find ways to apply these skills to solving real world problems.
Essential Question(s): **How do you solve a linear equation?** **How do you solve a linear inequality?** **How do I translate this sentence into an equation or inequality?**	Enduring Understanding(s): Students will be able to: - Solve 1-step equations - Solve 2-step equations - Solve multi-step equations - Solve equations with variables on both sides - Rewrite equations and formulas - Solve and graph multi-step linear inequalities - Translate word problems into equations and inequalities and solve

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Solve Linear Equations [*Standard*] - Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. [*Standard*] - Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. [*Standard*] - Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. [*Standard*] - Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.	**1.** CC.9-12.A.CED.4; CC.9-12.A.REI.1,3,11; **2.** CC.9-12.A.CED.3; CC.9-12.A.REI.3 **3.** CC.9-12.A.CED.1
2. Solve and Graph Linear Inequalities [*Standard*] - Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. [*Standard*] - Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	
3. Translate and Solve Linear Equations and Inequalities [*Standard*] - Create equations and inequalities in one variable and use them to solve problems.	

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Find the average speed of an Olympic runner, Find the depth of a diver, Figure out groups of scavengers in a hunt, Find the number of cars sold, Find the temperature in F given C, Find possible weights in pounds that you can bring on a plane, Find the possible hourly rates a student can afford for training, Find out how much gas you can afford.

Students will engage with the following text:

Algebra 1, Holt McDougal 2011 edition

Students will write:

Writing/Open Ended questions:
Explain what property you would use to solve the equation, Describe the steps you would use to solve the equation, Explain why an equation has no solution/infinitely many solutions, Explain why 2 linear inequalities are equivalent, Explain how you know if an inequality has no solution or infinitely many solutions.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.
How will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Solve Linear Equations

Big Ideas
Inverse Operations- use opposite operations to get the variable alone
Distribute/Combine Like Terms on 1 side of the equation
No Solution/Infinitely Many Solutions

Solve Literal Equations

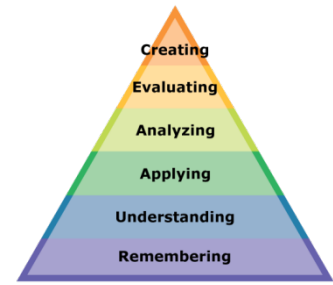| Big Ideas |
|---|
| Literal Equation – equations with more than 1 variable |

Solve Linear Inequalities

Big Ideas
Solve an Inequality using inverse operations
Multiply/Divide by a Negative Number – flip the inequality symbol
Graph an Inequality – open/closed circle, shade left/right on a number line

Applications

Big Ideas
Translate word problems into equations or inequalities and solve

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS. IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math /Polynomials	Unit Summary: **In this unit, students will use properties of exponents to simplify expressions. They will classify polynomials using several criteria. They will also add, subtract, multiply, and divide with polynomials.**
Grade Level(s): 12	
Essential Question(s): • **How do I simplify with exponents?** • **How do you classify a polynomial?** • **How do I multiply polynomials?**	**Enduring Understanding(s):** Students will be able to: • Use properties of exponents involving products • Use properties of exponents involving quotients • Use zero and negative exponents • Classify and identify parts of a polynomial • Add and subtract polynomials • Multiply polynomials • Use special product patterns to multiply polynomials • Divide polynomials evenly

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Simplifying with Exponents [*Standard*] - Know and apply the properties of integer exponents to generate equivalent numerical expressions.	**1.** CC.8.8.EE.A.1;
	2. CC.9.12-A.APR.1
2. Classifying Polynomials [*Standard*] - Understand that POLYNOMIALS form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply POLYNOMIALS.	**3.** CC.9.12-A.APR.1
3. Operations with Polynomials [*Standard*] - Understand that POLYNOMIALS form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply POLYNOMIALS.	

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Find the approximate number of bees in a study, Find how many more times more luminous a star is to the Sun, Find the amount of grams a moth eats, Find the amount of people that attended a baseball game, Find the area of a park, Find the percent of possible gene combinations of offspring.

Students will engage with the following text:

Algebra 1, Holt McDougal 2011 edition

Students will write:

Writing/Open Ended questions:
Explain when and how to use the product of powers property, Explain when and how to use the quotient of powers property, Explain why the expression 0^-4 is undefined, Explain why "6" is a polynomial, Explain how to subtract polynomials, Explain how to use the square of a binomial pattern.
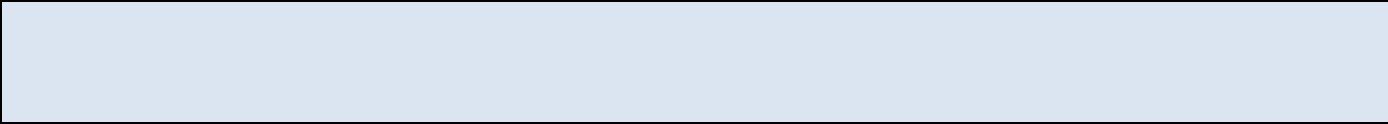
PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.
<u>How</u> will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Properties of Exponents

Big Ideas
Product of Powers Property – when multiplying with the same base, add the exponents
Power of a Power Property – when raising a power to another power, multiply the exponents
Quotient of Powers Property – when dividing with the same base, subtract the exponents
Zero Exponent Property – anything raised to 0 equals 1
Negative Exponent Property – write the factor with the negative exponent as the reciprocal
Evaluate Exponential Expressions – simplify the exponent to an integer if possible

Intro to Polynomials

Big Ideas
Polynomial – several terms separated by + or – signs
Monomial – 1 term
Binomial – 2 terms
Trinomial – 3 terms
Degree of the Polynomial – greatest degree of the polynomials terms
Leading Coefficient – When listed in descending order, it is the coefficient of the 1st term
Constant term – number without a variable

Adding/Subtracting Polynomials

Big Ideas
Add Polynomials – Combine like terms and put in descending order
Subtract Polynomials – Distribute the negative to the second polynomial, then add the polynomials

Multiplying Polynomials

Big Ideas
Monomial x Polynomial – Distribute
Polynomial x Polynomial – Multiply each term in the 1st with each in the 2nd, then combine like terms

Special Products

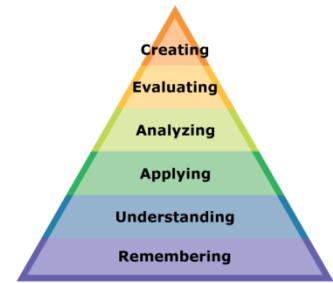| Big Ideas |
|---|
| Square of a Binomial Pattern – $(a+b)^2 = a^2 + 2ab + b^2$ |
| Sum and Difference Pattern – $(a + b)(a - b) = a^2 - b^2$ |

Dividing Polynomials (excluding long division)

Big Ideas
Divide a Polynomial by a monomial

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR
UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.
IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math /Factoring	Unit Summary: In this unit, students will factor out a GCF from polynomials. They will also factor different polynomials by various methods. And they will solve equations using factoring.
Grade Level(s): 12	
Essential Question(s): • **How do I factor out a GCF?** • **How do you factor a trinomial?** • **How do I solve an equation using factoring?**	**Enduring Understanding(s):** Students will be able to: • Factor out a GCF • Factor trinomials of the form $x^2 + bx + c$ • Factor trinomials of the form $ax^2 + bx + c$ • Factor perfect square trinomials • Factor the different of 2 perfect squares • Factor by grouping • Factor completely • Solve equations using factoring

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Factor out GCF [*Standard*] - Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	**1.** CC.9-12.A.SSE.3
2. Factor Polynomials [*Standard*] - Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	**2.** CC.9-12.A.SSE.3
3. Solve using Factoring [*Standard*] - Create equations and inequalities in one variable and use them to solve problems. [*Standard*] - Solve quadratic equations by inspection (e.g., for x� = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a � bi for real numbers a and b.	**3.** CC.9-12.A.CED.1, CC.9-12.A.REI.4b

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Find how many seconds it takes an armadillo to jump and land on the ground, Find the width of a banner, Find how many seconds it takes for a discus to hit the ground, Find how many seconds it takes for a sponge to hit the ground, Find the length, width, and height of a terrarium.

Students will engage with the following text:

Algebra 1, Holt McDougal 2011 edition

Students will write:

Writing/Open Ended questions:
Explain how to use the zero-product rule to find solutions, Explain how to come up with the signs when factoring trinomials, Compare the factoring of 2 trinomials, Explain how you factor the difference of 2 squares,

Explain how you know if a polynomial is unfactorable.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.
<u>How </u>will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Factoring out a GCF

Big Ideas
Greatest Common Monomial Factor – divides evenly into each term

Factor by Grouping

Big Ideas
Factor by Grouping – factor a common monomial from pairs of terms, then look for a common binomial factor

Difference of 2 Squares

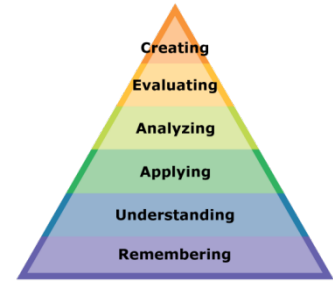| Big Ideas |
|---|
| Difference of 2 Squares – $a^2 - b^2 = (a+b)(a-b)$ |

Trinomials

Big Ideas
Factor Trinomials into the product of 2 binomials using guessing and checking (or box method, or factoring by grouping method)
Perfect Square Trinomial – $(a+b)^2 = a^2 + 2ab + b^2$

Solving using Factoring

Big Ideas
Roots – solutions to a polynomial equation
Zero-Product Property – If AB = 0, then either A = 0 or B = 0. After factoring, set each factor to 0 and solve.

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS. IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math / Algebraic Fractions	Unit Summary: **In this unit, students will learn to Perform basic operations with Algebraic Fractions and solve equations involving fractions.**
Grade Level(s): 12	
Essential Question(s): • **How do you write an algebraic fraction in simplest form?** • **How do you Add and Subtract like fractions?** • **How do you Add and Subtract unlike fractions?** • **How do you multiply and divide Algebraic fractions?** • **How do you solve Equations Involving Fractions?**	**Enduring Understanding(s):** Students will be able to: • To write an Algebraic fraction in simplest form • To Add and Subtract like Algebraic Fractions • To Add and Subtract unlike Algebraic Fractions • To Multiply and Divide Algebraic Fractions • To Solve Equations involving Algebraic Fractions

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Simplifying Algebraic Fractions *MA.6.6.RP.1 - [Standard] - Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.* **2. Add and Subtract Algebraic Fractions with Like denominators** 　　**MA.7.7.NS.1** - [Standard] - Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. **3. Multiply and Divide with Algebraic Fractions** *MA.7.7.NS.2 - [Standard] - Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.* **4. Solve equations with Algebraic Fractions** *MA.9-12.HSA-REI.2 - [Standard] - Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.*	1. *MA.6.6.RP.1* 2. MA.7.7.NS.1 3. *MA.7.7.NS.2* 4. *MA.9-12.HSA-REI.2*

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Compute between actual and model measure in a scale drawing. How does the ratio of moles of hydrogen to moles of oxygen in ascorbic acid in a given instance.

Students will engage with the following text:

Basic Skills Math, by August Treff and Donald Jacobs

Students will write:

Writing/Open Ended questions:
Explain how the scale can be used to find the actual distance between objects in a drawing. Explain the steps in adding or subtracting unlike algebraic fractions. Explain the difference between adding and multiplying like fractions.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.
How will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Writing Algebraic Fractions in Simplest Form:

Big Ideas
Define an Algebraic fraction and note what any differences and similarities to a normal fraction.
Define multiplicative identity and show why canceling works for simplifying fractions.

Adding and Subtracting Like Algebraic Fractions:

Big Ideas
Define algebraic fractions with like denominators
Perform basic addition on algebraic fractions with like denominators

Adding and Subtracting Unlike Algebraic Fractions:

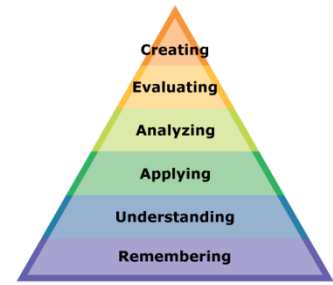| Big Ideas |
|---|
| Define algebraic fractions with unlike denominators |
| Analyze what is missing from each denominator and how using the multiplicative identity will produce fractions with like denominators. |
| Perform addition on algebraic fractions with unlike denominators by changing the denominators. |

Multiplying and Dividing Algebraic Fractions:

Big Ideas
Explain how to multiply fractions.
Show how to convert all division of fractions to multiplication and compute.

Equations Involving Fractions:

Big Ideas
Perform inverse operations to solve equations containing fractions.

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR
UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.
IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

A baseline of student knowledge will be established with a cumulative pretest. The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title:	Unit Summary:
Intro to College Math / Graphing Linear Equations	**In this unit, students will learn how to find solutions to equations with two variables, to represent individual solutions on a coordinate plane, and graph linear equations.**
Grade Level(s): 12	
Essential Question(s): • **How do you solve an equation if it has more than one variable?** • **What is a rectangular coordinate system?** • **How can you represent the solution to an equation on a rectangular coordinate system?** • **How can you graph a linear equation?**	**Enduring Understanding(s):** Students will be able to: • To solve for a variable. • To substitute values into an equation. • To plot points on a rectangular coordinate plane. • To make a table and find values for a linear equation. • To rewrite a linear equation in slope-intercept form. • To identify the slope and y-intercept. • To graph a linear equation

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Solving multi-step equations *MA.9-12.HSA-REI.3 - [Standard] - Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.* **2. Reading a Rectangular Coordinate Plane** *MA.6.6.EE.C - [Cluster Statement] - Represent and analyze quantitative relationships between dependent and independent variables.* **3. Plotting Points on a Rectangular Coordinate Plane** *MA.9-12.HSA-REI.10 - [Standard] - Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).* **4. Graphing Linear Equations** *MA.8.8.EE.5 - [Standard] - Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.* *..*	1. *MA.9-12.HSA-REI.3* 2. *MA.6.6.EE.C* 3. *MA.9-12.HSA-REI.10* 4. *MA.8.8.EE.5*

Inter-Disciplinary Connections:

 Inter-Disciplinary problem solving examples:
Find the amount of time it took to repair a car given the cost on a per hour bases. Compute how long it would take to pay off an item if you could afford to pay a fixed amount each month given a certain down payment. Find the possible dimensions for a running track given varying length and radius.

Students will engage with the following text:

 Basic Skills Math, by August Treff and Donald Jacobs

Students will write:

Writing/Open Ended questions:

Explain how each part of a linear equation works. Explain how to plot a point on a rectangular coordinate system. List the steps of graphing a linear equation.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.
How will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Solutions of Equations with Two-Variables:

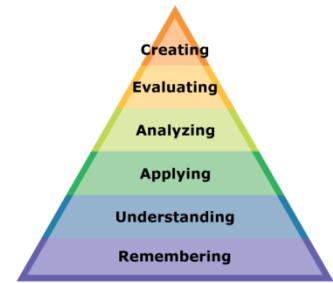| Big Ideas |
|---|
| Define Equation, term, x-intercept, y-intercept, substitution |
| Solve for a variable by performing inverse operations to isolate the variable. |
| Substitute a given value into an equation and solve for the other value. |

The Rectangular Coordinate Plane:

Big Ideas
Define the rectangular coordinate plane, ordered pair, solution set, x-axis, y-axis, and the origin.
Demonstrate how to locate a point and plot a point on the coordinate plane.

Graphing Linear Equations:

Big Ideas
Define slope-intercept form and standard form of a linear equation, slope, and y-intercept.
Plot the points on a plane from a table.
Sketch the graph of a linear equation given linear equation by recognizing the y-intercept and x-intercept.
Sketch the graph of a linear equation given linear equation by recognizing the y-intercept and slope.

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS. IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

A baseline of student knowledge will be established with a cumulative pretest. The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math / Introduction to Functions	Unit Summary: In this unit, students will learn how to recognize function notation; substitute values into a function, simplify the expression and find the value of that function. They will also be able to read a graph of a linear equation and write the corresponding equation.
Grade Level(s): 12	
Essential Question(s): - How do you evaluate an expression? - How do you evaluate a function? - How can we express the equation of a line as a linear Function?	**Enduring Understanding(s):** Students will be able to: - To explain the difference between an expression and an equation and how those relate to a function. - To evaluate a function for a given value. - To analyze a graph of a linear function and write a linear equation. - To express the equation of a line as a linear function.

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Evaluating Expressions *MA.8.8.EE.1 - [Standard] - Know and apply the properties of integer exponents to generate equivalent numerical expressions.* **2. Evaluating Functions** *MA.9-12.HSF-IF.1 - [Standard] - Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).* *MA.9-12.HSF-IF.2 - [Standard] - Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.* **3. Solving Linear Equations in Function Notation** *MA.9-12.HSF-BF.1 - [Standard] - Write a function that describes a relationship between two quantities.* *MA.8.8.EE.7 - [Standard] - Solve linear equations in one variable.* *MA.9-12.HSF-IF.8 - [Standard] - Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.* *..*	1. *MA.8.8.EE.1* 2. *MA.9-12.HSF-IF.1; MA.9-12.HSF-IF.2* 3. *MA.9-12.HSF-BF.1; MA.8.8.EE.7; MA.9-12.HSF-IF.8*

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Determine which linear equation would best model a given real world situation. Write a linear equation that gives the annual sales as a function of the number of years since certain initial conditions.

Students will engage with the following text:

Basic Skills Math, by August Treff and Donald Jacobs

Students will write:

Writing/Open Ended questions:

Explain the difference between an expression, equation, and function. Explain that features we are looking at when we try to analyze the graph of a linear function and write the corresponding linear equation.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS
DESCRIBE THE LEARNING EXPERIENCE.

How will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Evaluate an Expression:

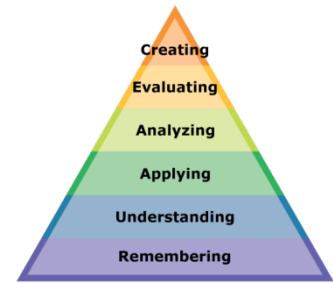| Big Ideas |
|---|
| Define expression, variable, simplify, substitution |
| Perform basic computations using the order of operations after substituting a value into an expression |
| Determine if a given set of values are a solution set. |

Evaluate a Function:

Big Ideas
Define function notation
Perform basic computations using the order of operations for a given function of a given value.

Express the Equation of a line as a Linear Function:

Big Ideas
Analyze a graph of a linear equation and write its corresponding linear equation.
Rewrite a linear equation using function notation.

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS. IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

A baseline of student knowledge will be established with a cumulative pretest. The effectiveness of the instructional program will be based on teacher observations, students doing quality of work together, questioning strategies, self and peer assessment, student record-keeping, quizzes, essays, journal writing, performance tasks, diagnostic tests, homework, and projects.

Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title:	Unit Summary:
Intro to College Math / Systems of Linear Equations	**In this unit, students will learn how to solve systems of linear equations by graphing them, the addition method, and by using a substitution method. They will also solve real world applications involving systems of linear equations.**
Grade Level(s): 12	
Essential Question(s): **What is a system of linear equations?** **How do you solve a system of equations by graphing?** **How do you solve a system of equations by adding?** **How do you solve a system of equations by substitution?**	**Enduring Understanding(s):** Students will be able to: - To understand what a solution to a system of linear equations is. - To solve a system of linear equations by graphing. - To solve a system of linear equations by adding method. - To solve a system of linear equations by substitution. - To apply systems of linear equations to real world situations.

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Reading and Writing a system of Linear Equations *MA.8.8.EE.8 - [Standard] - Analyze and solve pairs of simultaneous linear equations.* *MA.8.8.EE.8.a - Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.*	**1.** *MA.8.8.EE.8; MA.8.8.EE.8.a*
2. Finding Solutions to a System of Linear Equations by Graphing *MA.9-12.HSA-REI.6 - [Standard] - Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.* *MA.8.8.EE.8.b - Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection.*	**2.** *MA.9-12.HSA-REI.6 ; MA.8.8.EE.8.b* **3.** *MA.9-12.HSA-REI.5* **4. *MA.9-12.HSA-REI.7***
3. Finding Solutions to a System of Linear Equations by Addition *MA.9-12.HSA-REI.5 - [Standard] - Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.*	
4. Finding Solutions to a System of Linear Equations by Substitution *MA.9-12.HSA-REI.7 - [Standard] - Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.* **3.**	

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Compare which of two phone plans would be best and under which circumstance. If two cars get an oil change at the same service station and both are charged x dollars for a service fee and y dollars per quart. Given their bill find the fee and cost per quart.

Students will engage with the following text:

Students will write:

Writing/Open Ended questions:
Explain what a solution to a system looks like on a graph. Explain the steps needed to find the solution to a system of equations by any method.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS

DESCRIBE THE LEARNING EXPERIENCE.

How will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Solving by Graphing:

Big Ideas
Graph two systems on the same axis and locate their point of intersection.

Solve by Adding:

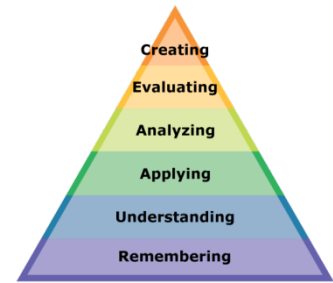| Big Ideas |
|---|
| Add two linear functions so that one set of variables cancels then solve for the remaining variable. Use what you found to find the final variable by substitution. |

Solve by Substitution:

Big Ideas
Solve either function for one variable then use substitution to find the value of one variable. Then substitute again to find the final variable.

Applications:

Big Ideas
Create linear equations from word problems then use any method to solve them.

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS. IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

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Accommodations/Modifications:

As needed.

Summative Assessments:

Periodic benchmark tests, chapter tests

Accommodations/Modifications:

As needed.

Performance Assessments:

Projects, display of student work

Accommodations/Modifications:

As needed.

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Intro to College Math / Exponents and Radicals	Unit Summary: **In this unit, students will learn how simplify square roots, add, subtract, and multiply radicals.**
Grade Level(s): 12	
Essential Question(s): • **What is a radical?** • **How do you simplify a square root?** • **How do you add and subtract radicals?** • **How do you multiply radicals?**	**Enduring Understanding(s):** Students will be able to: • To simplify radicals. • To Add radicals • To Subtract radicals • To multiply radicals

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES
DESCRIBE THE LEARNING TARGETS.

After each target, identify the NJCCCS or Common Core Standards that are applicable

Learning Target	NJCCCS or CCS
1. Reading and Writing Radicals *MA.9-12.HSN-RN.1 - [Standard] - Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.* *.* **2. Simplifying Radicals** *MA.9-12.HSN-RN.2 - [Standard] - Rewrite expressions involving radicals and rational exponents using the properties of exponents.* **3. Add and Subtract Radicals** *MA.9-12.HSN-RN.3 - [Standard] - Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.* **4. Multiply Radicals** *MA.9-12.HSN-RN.3 - [Standard] - Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.*	1. *MA.9-12.HSN-RN.1* 2. *MA.9-12.HSN-RN.2* 3. *MA.9-12.HSN-RN.3* 4. *MA.9-12.HSN-RN.3*

Inter-Disciplinary Connections:

Inter-Disciplinary problem solving examples:
Solve a variety of real life problems from areas such as oceanography, suspension bridges, and athletics with given equations that contain radicals.

Students will engage with the following text:

Basic Skills Math, by August Treff and Donald Jacobs

Students will write:

Writing/Open Ended questions:
Explain how to recognize a radical number it terms of exponents. Explain how to simplify a radical. Explain the similarity and difference of radicals to other number types in terms of addition and subtraction.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS

DESCRIBE THE LEARNING EXPERIENCE.

How will students uncover content and build skills.

Students will uncover and build skills through various classroom activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using SMARTBoard technologies will all be explored. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and extra examples of problem solving.

Suggested warm-up activities, instructional strategies/activities, and assignments:

Roots and Radicals (limited to an index of 2):

Big Ideas
Define roots, radicals, fractional exponents
Write whole numbers with fractional exponents in radical form and vice versa.

Simplifying Radical Expressions:

Big Ideas
Define factors
Find the factors of a radical to simplify it.

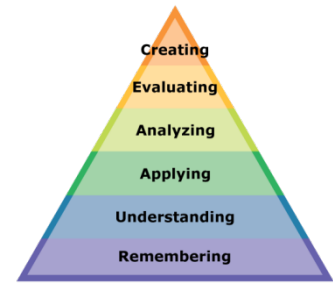**Adding and Subtracting Radicals:**

Big Ideas
Add and subtract radicals by simplifying them and combining them as like terms.

Multiplying Radicals:

Big Ideas
Multiply radicals then simplify by finding factors.

PART IV: EVIDENCE OF LEARNING
IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR
UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.
IDENTIFY BLOOM'S LEVELS.

Formative Assessments:

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Accommodations/Modifications:

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Summative Assessments:

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As needed.

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Projects, display of student work

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