Essential Outcomes
Basic Algebra

1. There are rules used to simplify expressions and equations.
   Learning Goals
   - A) Students will understand and master four operations with real numbers (1.1, 9.1, 9.2)
   - B) Students will understand and apply order of operations to simplify and solve equations and inequalities (1.3, 1.5, 9.1, 9.2)
   - C) Students will understand and apply properties of equality and inequality to simplify numerical expressions (1.3, 2.3, 2.4, 2.5)
   - D) Students will understand and apply properties of equality and inequality to simplify algebraic expressions (2.1, 2.2)
2. Solving equations using ratios and proportions
   Learning Goals
   - A) Students will understand and identify ratios and proportions (9.1, 9.2)
   - B) Students will understand and apply means extremes rule to solve proportions (7.2, 9.1, 9.2)
   - C) Students will understand and apply conversion factors to change units (1.5, 9.1, 9.2)

3. Finding slope given two points, an equation, or a graph
   Learning Goals
   - A) Students will understand and apply the slope formula (4.2, 9.1, 9.2)
   - B) Students will understand and apply slope intercept form and standard form of a linear equation (4.3, 4.4, 9.1, 9.2)

C) Students will understand and apply that slope equals rise over run (4.2, 9.1, 9.2)

D) Students will understand and name two points on a given line (4.5, 9.1, 9.2)

4. There are rules used for simplifying and comparing real numbers.

Learning Goals

A) Students will understand and apply laws of exponents (1.4, 8.1, 8.2, 8.3, 9.1, 9.2)

B) Students will simplify square roots. (8.1, 9.1, 9.2)

C) Students will compare real numbers. (1.2, 8.2, 8.4)

5. Problems may be solved in a variety of ways.

Learning Goals:

A) Students will choose an appropriate method to solve problems.

B) Students will be able to justify steps when solving equations.

C) Students will determine and verify whether a solution is valid.

MICHIGAN CITY HIGH SCHOOL Basic Algebra				
Ongoing/All Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
Course Title **Bundle** #5 Solving Mathematical Problems	**Assessment Type** **Bundle** #1 **Best Practice Methods** Similarities and Differences Summarizing and Note Taking Homework and Practice Nonlinguistic Representation Cooperative Learning Advance Organizers Cues, Questioning Goal Setting	**Assessment Type** **Bundle** #2 **Best Practice Methods** Similarities and Differences Summarizing and Note Taking Homework and Practice Nonlinguistic Representation Cooperative Learning Advance Organizers Cues, Questioning Goal Setting	**Assessment Type** • **Bundle** #3 **Best Practice Methods** Similarities and Differences Summarizing and Note Taking Homework and Practice Nonlinguistic Representation Cooperative Learning Advance Organizers Cues, Questioning Goal Setting	**Assessment Type** • **Bundle** #4 **Best Practice Methods** Similarities and Differences Summarizing and Note Taking Homework and Practice Nonlinguistic Representation Cooperative Learning Advance Organizers Cues, Questioning Goal Setting

Basic Algebra Bundle 1
Radical and Exponential Expressions

Standard Indicator: Algebra
Standard 1: Radical and Exponential Expressions
1.1.1, 1.1.2, 1.1.4, 1.6.3, 1.6.2

Declarative Knowledge		Procedural Knowledge	
Concepts	There are rules used for simplifying and comparing real numbers.	Processes	1. Order of Operations 2. Reading Process 3. Writing Process
Organizing Ideas	Students will understand and compare real numbers.		
Details	Rules for Factor Tree Prime Factors	Skills	1. Compare the value of two numbers 2. Find the prime factorization of a number. 3. Find the greatest common factor.
Vocabulary	comparisons, simplify, real numbers, rational numbers, factors, prime		

Basic Algebra Bundle #2
Real Numbers

Standard Indicator: Algebra

Standard 1: Understand and Use Operations with Real Numbers.

1.1.3, 1.6.1

<table>
<tr><th colspan="2">Declarative Knowledge</th><th colspan="2">Procedural Knowledge</th></tr>
<tr><td>Concepts</td><td>There are rules used to simplify expressions and equations</td><td rowspan="2">Processes</td><td rowspan="2">1. Order of operations.
2. Reading Process
3. Writing Process</td></tr>
<tr><td>Organizing Ideas</td><td>1.Students will understand the four operations with real numbers.
2.Students will apply order of operations to simplify and solve equations and inequalities</td></tr>
<tr><td>Details</td><td>• Rules:
Distributive
a(b+ c) =ab + ac
Associative
(a + b) + c = a + (b+ c)
Commutative
a + b = b + c
• Properties of equality
• Properties of one and zero</td><td rowspan="2">Skills</td><td rowspan="2">• Apply the rules to simplify expressions
• Use a calculator to add, subtract, multiply, and divide</td></tr>
<tr><td>Vocabulary</td><td>Distributive, like/unlike, Associative, commutative, variable, parentheses, grouping symbols, brackets, fraction bar</td></tr>
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Basic Algebra Bundle #3
Algebraic Ratios and Proportions

Standard Indicator: Algebra

Standard 7: Simplify Algebraic Ratios and Solve Algebraic Proportions

1.7.1, 1.7.2

Declarative Knowledge		**Procedural Knowledge**	
Concepts	Solving ratios and proportions	**Processes**	1. Reading Process 2. Writing Process
Organizing Ideas	1. Students will understand and identify ratios and proportions. 2. Students will understand and apply means extremes rule to solve problems		
Details	1. Identify Distributive Property 2. Properties of 1 and 0 3. Rules for factoring 4. Recognize common factoring patterns	**Skills**	1. Use a calculator for multiplication and division facts
Vocabulary	means, proportion, ratio, factor, GCF, simplify, solve, variables, numerator, denominator, fractions, distributive property, cancel		

Basic Algebra Bundle #4

Solving Mathematical Problems

Standard Indicator: Algebra

Standard 9: Students Evaluate and Solve a Variety of Mathematical Problems.

1.9.1, 1.9.2, 1.9.3, 1.9.5

Declarative Knowledge		Procedural Knowledge	
Concepts	1. Problems may be solved in a variety of ways.	Processes	1. Reading Process 2. Problem Solving Method
Organizing Ideas	1. Students will choose an appropriate method to solve problems. 2. Students will determine and verify whether a solution is valid.		
Details	1. Draw a diagram 2. Make a chart 3. Solve a simpler problem 4. Work backwards 5. Write an equation 6. Look for a pattern	Skills	1. Interpret information and results. 2. Understand what is being asked, what is relevant, what is extraneous 3. Apply appropriate strategies to solve problem 4. Draw a diagram 5. Make a chart 6. Work backwards 7. Write an equation 8. Look for a pattern
Vocabulary	Pattern, solution, equation, diagram, graph, dimensions, discount, mark-up, percent, average, at most, at least, difference, product, quotient, sum, total, result, simplify		

Essential Outcome:

There are rules used for simplifying and comparing real numbers.

Summative Assessment:

Students will understand and compare real numbers.- **students will answer 10 multiple choice questions**

Describe assessment and timeline	Method	Knowledge	Types of Reasoning	Performance Skills	Products
Formative 1: Students will understand and compare real numbers using factor trees **Timeline: 2-3 weeks**	Student will answer 3-5 multiple choice questions about factoring tress	**x**	**x**		
Formative: Students will understand and compare real numbers using prime factors **Timeline: 2-3 weeks**	Students will answer 3-5 multiple choice questions using prime numbers	**x**	**x**		

Basic Algebra Assessment Planning Guide – Bundle #1

Basic Algebra Assessment Planning Guides – Bundle #2

Essential Outcome :
There are rules used to simplify expressions and equations

Summative Assessment: Identify or list the four operations with real numbers. –. **students will answer 10 multiple choice questions** Apply order of operation to simplify and solve equations and inequalities					
Describe assessment and timeline	**Method**	**Knowledge**	**Types of Reasoning**	**Performance Skills**	**Products**
Formative 1: Students will understand the four operations with real numbers. **Timeline: 2-3 weeks**	Given 3-5 multiple choice questions student will solve the problems using the four operations.	**x**	**x**		
Formative 2: Students will apply order of operations to simplify and solve equations and inequalities **Time Line:2-3 weeks**	Given 3-5 multiple choice questions student will solve the problems using order of operations.	**x**	**x**		

Basic Algebra Assessment Planning Guide – Bundle #3

Essential Outcome: Solving ratios and proportions					
Summative Assessment: Identify ratios and proportion –students will demonstrate use of ratio and proportions Apply means extremes rule to solve problems- students will answer 5 multiple choice questions					
Describe assessment and timeline	**Method**	**Knowledge**	**Types of Reasoning**	**Performance Skills**	**Products**
Formative 1: Students will understand and identify ratios and proportions. **Timeline:2-3 weeks**	**given written directions students will use ratio and proportions to mix two products**	**x**	**x**	**x**	**x**
Formative 2: Students will understand and apply means extremes rule to solve problems. **Timeline: 2-3 weeks**	**Given 3-5 multiple choice questions students will solve problems using the means extreme rule**	x	x		

Basic Algebra Assessment Planning Guide – Bundle #4

Essential Outcome: Problems may be solved in a variety of ways.					
Summative Assessment: Choose an appropriate method to solve problems Determine and verify whether a solution is valid **Given an example of a problem student will answer 3-5 multiple choice questions about which methods to use**					
Describe assessment and timeline	**Method**	**Knowledge**	**Types of Reasoning**	**Performance Skills**	**Products**
Formative: Students will choose an appropriate method to solve problems. **Timeline:2-3 weeks**	**Given an example of a problem student will answer 3-5 multiple choice questions about which methods to use**	**x**	**x**		
Formative: Students will determine and verify whether a solution is valid. **Timeline: 2-3 weeks**	**Given an example of a problem student will answer 3-5 multiple choice questions about which methods to use**	x	x		