INTRODUCTION TO ALGEBRA SYLLABUS

2018-2019 Academic School-Year

1st Marking Period – No calculator

Chapter 1: Algebraic Expressions and Integers (Test 1.1-1.6, 1.9, 1.10)

1.1 Variables and Expressions *(NJSLS.6.6.EE.C.9, NJSLS.6.6.EE.A.2.c)*
1.2 The Order of Operations *(NJSLS.6.6.EE.C.9, NJSLS.6.6.EE.A.2.c)*
1.3 Evaluating Expressions *(NJSLS.6.6.NS.C.5, NJSLS.7.7.NS.A.2.b)*
1.4 Integers and Absolute Value *(NJSLS.6.6.NS.C.5, NJSLS.7.7.NS.A.2.b)*
1.5 Adding Integers *(NJSLS.6.6.NS.C.5, NJSLS.7.7.NS.A.2b, NJSLS.6.6.EE.C.9, NJSLS.6.6.EE.A.2c)*
1.6 Subtracting Integers *(NJSLS.6.6.NS.C.5, NJSLS.7.7.NS.A.2b, NJSLS.6.6.EE.C.9, NJSLS.6.6.EE.A.2c)*
1.9 Multiplying and Dividing Integers *(NJSLS.6.6.NS.C.5, NJSLS.7.7.NS.A.2b, NJSLS.6.6.EE.C.9, NJSLS.6.6.EE.A.2c)*
1.10 The Coordinate Plane *(NJSLS.6.6.NS.C.8)*

Chapter 2: Solving One-Step Equations and Inequalities (Test 2.1-2.6, 2.8-2.10)

2.1 Properties of Numbers *(NJSLS.6.EE.A.3)*
2.2 The Distributive Property *(NJSLS.6.EE.A.3)*
2.3 Simplifying Variable Expressions *(NJSLS.7.EE.B.3, NJSLS.7.EE.B.4)*
2.4 Variables and Equations *(NJSLS.7.EE.B.3, NJSLS.7.EE.B.4)*
2.5 Solving Equations by Adding or Subtracting *(NJSLS.7.EE.B.3, NJSLS.7.EE.B.4)*
2.6 Solving Equations by Multiplying or Dividing *(NJSLS.7.EE.B.3, NJSLS.7.EE.B.4)*
2.8 Inequalities and Their Graphs *(NJSLS.6.EE.B.5, NJSLS.6.EE.B.8, NJSLS.7.EE.B.4.b)*
2.9 Solving Inequalities by Adding or Subtracting *(NJSLS.6.EE.B.5, NJSLS.6.EE.B.8, NJSLS.7.EE.B.4.b)*
2.10 Solving Inequalities by Multiplying or Dividing *(NJSLS.6.EE.B.5, NJSLS.6.EE.B.8, NJSLS.7.EE.B.4.b)*

Chapter 3: Decimals and Equations (Test 3.1-3.6, 3.8)

3.1 Rounding and Estimating *(NJSLS.5.NBT.A.4)*
3.2 Estimating Decimal Products and Quotients *(NJSLS.5.NBT.A.4)*
3.3 Mean, Median, and Mode *(NJSLS.6.SP.B.5.c)*
3.4 Using Formulas *(NJSLS.6.RP.A.3.b, NJSLS.6.EE.A.2.c)*
3.5 Solving Equations by Adding or Subtracting Decimals *(NJSLS.5.NBT.B.7)*
3.6 Solving Equations by Multiplying or Dividing Decimals *(NJSLS.5.NBT.B.7)*
3.8 Simplify the Problem *(NJSLS.8.EE.C.7.b, NJSLS.7.EE.B.3)*

2nd Marking Period – No calculator

Chapter 4: Factors, Fractions, and Exponents (Test 4.1-4.4, 4.6-4.9)

- 4.1 Divisibility and Factors *(NJSLS.4.OA.B.4)*
- 4.2 Exponents *(NJSLS.6.EE.A.1, NJSLS.8.EE.A.1)*
- 4.3 Prime Factorization and Greatest Common Factor *(NJSLS.6.NS.B.4)*
- 4.4 Simplifying Fractions *(NJSLS.3.NF.A.3.B, NJSLS.3.NF.A.3.c)*
- 4.6 Rational Numbers *(NJSLS.6.NS.C.6)*
- 4.7 Exponents and Multiplication *(NJSLS.6.EE.A.1, NJSLS.8.EE.A.1)*
- 4.8 Exponents and Division *(NJSLS.3.NF.A.3.b, NJSLS.3.NF.A.3.c)*
- 4.9 Scientific Notation *(NJSLS.8.EE.A.3, NJSLS.8.EE.A.4)*

Chapter 5: Operations with Fractions (Test 5.1-5.4, 5.7-5.9)

- 5.1 Comparing and Ordering Fractions *(NJSLS.5.NF.A.1, NJSLS.5.NF.A.2, NJSLS.5.NF.B.3, NJSLS.6.EE.A.1)*
- 5.2 Fractions and Decimals *(NJSLS.5.NF.A.1, NJSLS.5.NBT.A.4)*
- 5.3 Adding and Subtracting Fractions *(NJSLS.5.NF.A.1, NJSLS.5.NF.A.2, NJSLS.5.NF.B.3)*
- 5.4 Multiplying and Dividing Fractions *(NJSLS.5.NF.A.1, NJSLS.NF.A.2, NJSLS.5.NF.B.3)*
- 5.7 Solving Equations by Adding or Subtracting Fractions *(NJSLS.7.EE.B.3)*
- 5.8 Solving Equations by Multiplying Fractions *(NJSLS.7.EE.B.3)*
- 5.9 Powers of Products and Quotients *(NJSLS.8.EE.A.1)*

Chapter 6: Ratios, Proportions, and Percents (Test 6.1-6.9)

- 6.1 Ratios and Unit Rates *(NJSLS.6.RP.A.1, NJSLS.6.RP.A.2, NJSLS.6.RP.A.3.b)*
- 6.2 Proportions *(NJSLS.6.RP.A.1, NJSLS.6.RP.A.3.c, NJSLS.6.RP.A.2.c, NJSLS.7.RP.A.3)*
- 6.3 Similar Figures and Scale Drawings *(NJSLS.7.RP.A.2.c)*
- 6.4 Probability *(NJSLS.7.SP.C.7.a)*
- 6.5 Fractions, Decimals, and Percents *(NJSLS.5.NBT.A.4, NJSLS.3.NFA.3.B, NJSLS.NFA.3.C)*
- 6.6 Proportions and Percents *(NJSLS.6.RP.A.1, NJSLS.6.RP.A.3.c, NJSLS.7.RP.A.3)*
- 6.7 Percents and Equations *(NJSLS.6.RP.A.3.c, NJSLS.7.RP.A.3)*
- 6.8 Percent of Change *(NJSLS.6.RP.A.3.c, NJSLS.7.RP.A.3)*
- 6.9 Markup and Discount *(NJSLS.6.RP.A.3.c, NJSLS.7.RP.A.3)*

3rd Marking Period – Calculator Permitted

Chapter 7: Solving Equations and Inequalities (Test 7.1-7.8)

7.1 Solving Two-Step Equations *(NJSLS.9-12.A-CED.A.1, NJSLS.9-12.A-REI.B.3)*
7.2 Solving Multi-Step Equations *(NJSLS.9-12.A-CED.A.1NJSLS.9-12.A-REI.B.3)*
7.3 Multi-Step Equations with Fractions and Decimals *(NJSLS.9-12.A-CED.A.1, NJSLS.9-12.A-REI.B.3)*
7.4 Write an Equation *(NJSLS.9-12.A-CED.A.1, NJSLS.9-12.A-REI.B.3)*
7.5 Solving Equations with Variables on Both Sides *(NJSLS.9-12.A-CED.A.1, NJSLS.9-12.A-REI.B.3)*
7.6 Solving Two-Step Inequalities *(NJSLS.9-12.A-CED.A.1, NJSLS.9-12.A-REI.B.3)*
7.7 Transforming Formulas (*NJSLS.9-12.A-CED.A.4*)
7.8 Simple and Compound Interest *(NJSLS.9-12.A-CED.A.4, NJSLS.7.7.RP.A.3)*

Chapter 8: Solving Equations and Inequalities (Test 8.1-8.8)

8.1 Relations and Functions *(NJSLS.8.8.F.A.1)*
8.2 Equations with Two Variables *(NJSLS.8.8.F.A.1, NJSLS.9-12.F-IF.A.1)*
8.3 Slope and *y*-intercept *(NJSLS.9-12.F-IF.A.1, NJSLS.9-12.A-CED.A.2)*
8.4 Writing Rules for Linear Functions *(NJSLS.8.8.F.B.4 , NJSLS.9-12.F-BF.A.1)*
8.5 Scatter Plots *(NJSLS.8.8.SP.A.1, NJSLS.8.8.SP.A.2)*
8.6 Solve by Graphing *(NJSLS.8.8.SP.A.2, NJSLS.8.8.SP.A.3)*
8.7 Solving Systems of Linear Equations *(NJSLS.9-12.A-REI.D.10, NJSLS.9-12.A-REI.C.6)*
8.8 Graphing Linear Inequalities *(NJSLS.9-12.A-REI.D.12, NJSLS.9-12.A-REI.D.12)*

Chapter 13: Nonlinear Functions and Polynomials (Test 13.2-13.7)

13.2 Graphing Nonlinear Functions *(NJSLS.9-12.F-IF.C.7a, NJSLS.9-12.F-IF.C.7b)*
13.3 Exponential Growth and Decay *(NJSLS.9-12.F-IF.C.7e)*
13.4 Polynomials *(NJSLS.9-12.A-APR.A.1)*
***Include Extension: Degree of a Polynomial**
13.5 Adding and Subtracting Polynomials *(NJSLS.9-12.A-APR.A.1)*
13.6 Multiplying a Polynomial by a Monomial *(NJSLS.9-12.A-APR.A.1)*
13.7 Multiplying Binomials *(NJSLS.9-12.A-APR.A.1)*

4th Marking Period – Calculator Permitted

Chapter 12: Data Analysis and Probability (Test 12.1, 12.2, 12.4-12.8)

12.1 Frequency Tables and Line Plots *(NJSLS.9-12.S-ID.A.1, NJSLS.9-12.S-ID.A.3)*
***Include Extension: Making Histograms**
12.2 Box-and-Whisker Plots *(NJSLS.9-12.S-ID.A.1, NJSLS.9-12.S-ID.A.3)*
***Include Extension: Stem-and-Leaf Plots**
12.4 Counting Outcomes and Theoretical Probability *(NJSLS.7.7.SP.C.5)*
12.5 Independent and Dependent Events *(NJSLS.9-12.S-CP.A.2, NJSLS.9-12.S-CP.A.5, NJSLS.9-12.S-CP.B.6)*
12.6 Permutations and Combinations *(NJSLS.9-12.S-CP.B.9)*
12.7 Experimental Probability *(NJSLS.7.7.SP.C.5)*
12.8 Random Samples and Surveys *(NJSLS.9-12.S-IC.B.3, NJSLS.9-12.S-IC.B.4)*

Chapter 10: Area and Volume (Test 10.1-10.7, 10.9)

10.1 Area: Parallelograms *(NJSLS.7.7.G.B.6, NJSLS.6.6.G.A.1)*
10.2 Area: Triangles and Trapezoids *(NJSLS.7.7.G.B.6, NJSLS.6.6.G.A.1)*
10.3 Area: Circles *(NJSLS.7.7.G.B.4, NJSLS.7.7.G.B.6)*
10.4 Space Figures *(NJSLS.7.7.G.A.3)*
10.5 Surface Area: Prisms and Cylinders *(NJSLS.7.7.G.B.4, NJSLS.7.7.G.B.6) (Formulas Provided)*
10.6 Surface Area: Pyramids, Cones, and Spheres *(NJSLS.7.7.G.B.4, NJSLS.7.7.G.B.6) (Formulas Provided)*
10.7 Volume: Prisms and Cylinders *(NJSLS.7.7.G.B.4, NJSLS.7.7.G.B.6) (Formulas Provided)*
10.8 Volume: Pyramids, Cones, and Spheres *(NJSLS.7.7.G.B.4, NJSLS.7.7.G.B.6) (Formulas Provided)*

Chapter 11: Right Triangles in Algebra (Test 11.1-11.4)

11.1 Square Roots and Irrational Numbers *(NJSLS.8.8.NS.A.1, NJSLS.8.8.NS.A.2)*
11.2 The Pythagorean Theorem *(NJSLS.8.8.G.B.7)*
11.3 Distance and Midpoint Formulas *(NJSLS.9-12.N-CN.B.6) (Formulas Provided)*
11.4 Write a Proportion *(NJSLS.7.7.RP.A.2a, NJSLS.7.7.RP.A.2c)*

Course Expectations and Skills

- Students are required to have proficiency in all topics for Introduction to Algebra. 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 and maintain those notes in a neat and organized notebook.
- Students are required to have a scientific calculator for Marking Period 3 and Marking Period 4.
- 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: *Pre-Algebra*, Prentice Hall

Supplemental Materials:
Pre-Algebra Practice Workbook
Online Textbook Resource
Kuta Infinite Pre-Algebra
Kuta Infinite Algebra 1
Kuta Infinite Geometry

Assessment Information

Department of Mathematics – Introduction to Algebra (2018-2019)

Marking Period 1	Marking Period 2	Marking Period 3	Marking Period 4
Major (MAJ): Summative: 30%	Major (MAJ): Summative: 30%	Major (MAJ): Summative: 30%	Major (MAJ): Summative: 30%
Benchmark (BMK): 20%	Benchmark (BMK): 20%	Benchmark (BMK): 20%	Benchmark (BMK): 20%
Project (PRJ): 10%	Project (PRJ): 10%	Project (PRJ): 10%	Project (PRJ): 10%
Minor (MIN): Formative: 25%	Minor (MIN): Formative: 25%	Minor (MIN): Formative: 25%	Minor (MIN): Formative: 25%
Class Participation (CP): 5%	Class Participation (CP): 5%	Class Participation (CP): 5%	Class Participation (CP): 5%
Homework (HW): 10%	Homework (HW): 10%	Homework (HW): 10%	Homework (HW): 10%

Black Horse Pike Regional School District Curriculum Template

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

Course Name: Introduction to Algebra 1

Course Number: 031200

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Introduction to Algebra / Chapter 1 – Algebraic Expressions and Integers** **Grade Level(s):** **9**	**Unit Summary**: In this chapter, the basic language of algebra is introduced. First, students learn to represent unknown quantities with variables and to write numerical and variable expressions. Students simplify and evaluate numerical expressions. Students learn to represent, graph, and order integers, as well as find absolute values. They simplify expressions containing integers using all four mathematical operations. Last, the students explore coordinate planes. They name coordinates and quadrants, and graph points. This chapter will be completed without the use of a calculator.
Essential Question(s): • **How do you use variables and variable expressions?** • **How do you perform operations with integers?** • **How do you graph points in the coordinate plane?**	**Enduring Understanding(s):** Students will be able to: • To identify variables, numerical expressions, and variable expressions • To write variable expressions for word phrases • To use the order of operations • To evaluate variable expressions • To represent, graph, and order integers • To find opposites and absolute values • To use rules to add integers • To use a rule to subtract integers • To multiply integers using repeated addition, patterns, and rules • To divide integers using rules • To name coordinates and quadrants in the coordinate plane • To graph points in the coordinate plane

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	NJSLS:
1. Use variables and variable expressions. [*Standard*] - Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. [*Standard*] - Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).	**1. NJSLS.6.EE.C.9, NJSLS.6.EE.A.2c**
2. Perform operations with integers. [*Standard*] - Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. [*Standard*] - Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.	**2. NJSLS.6.NS.C.5, NJSLS.7.NS.A.2b**
3. Graph points in the coordinate plane. [*Standard*] - Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	**3. NJSLS.6.NS.C.8**

Inter-Disciplinary Connections:

Real-World problem solving examples:
Using variables to estimate distance running (p. 5), using variables to find the number of calories in a meal (p. 6), using order of operations to find area of an irregular space for urban planning (p. 10), using order of operations to find total hours worked at a job (p. 12), using variable expressions to estimate the cost of ordering items online (p. 15), using variable expressions to find distance traveled for marine mammals (p. 16), representing temperature using opposites and negative integers (p. 18), finding elevation using integer addition (p. 26), using integer addition to find net gains or losses in football (p. 28), using integer subtraction to find temperature after a drop (p. 31), using integer subtraction to find a bank account balance (p. 32), using multiplication of integers to find the distance traveled by a submarine (p. 44), using integer division to find a stock price (p. 48), using ordered pairs to represent latitude and longitude of map locations (p. 53)

Inter-Disciplinary problem solving examples:
Architecture (p. 10), marine biology (p. 16), earth science (p. 26), sports (p. 28), financial planning (p. 48), geography (p. 53)

Students will engage with the following text:

Prentice Hall Mathematics Pre-Algebra

Students will write:

Writing/Open-Ended Questions:
Comparing numerical and variable expressions (p. 7), writing word problems (p. 17), describing elevations using integers (p. 21), explaining integer addition (p. 28), writing expressions to represent temperatures on a thermometer (p. 33), comparing graphs (p. 53)

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 learning activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using Smart Board technologies will all be explored as a blend of learning strategies to promote critical thinking, problem solving and performance skills of all learners. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and projects.

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

Section 1.1:

Warm-up/Starting Options	**p. 4 check skills you'll need**
Practice and Apply	**p. 6 #7-26, 33-35, 42-45**
Resources	**Online Textbook Resource (algebra readiness puzzles 1 & 24, self-grading lesson quiz), practice workbook 1-1, enrichment 1-1**

Section 1.2:

Warm-up/Starting Options	**p. 8 check skills you'll need**
Practice and Apply	**p. 11 #1-22, 24-32, 43-45**
Resources	**Online Textbook Resource (algebra readiness puzzles 2, self-grading lesson quiz), practice workbook 1-2, enrichment 1-2**

Section 1.3:

Warm-up/Starting Options	**P 14 check skills you'll need**
Practice and Apply	**p. 16 #1-33**
Resources	**Online Textbook Resource (algebra readiness puzzles 25 & 26, self-grading lesson quiz), practice workbook 1-3, enrichment 1-3**

Section 1.4:

Warm-up/Starting Options	**p. 18 check skills you'll need**
Practice and Apply	**p. 20 #1-27, 35-46; p. 21 #47-49, 59**
Resources	**Online Textbook Resource (algebra readiness puzzles 27, self-grading lesson quiz), practice workbook 1-4, enrichment 1-4**

Section 1.5:

Warm-up/Starting Options	**p. 24 check skills you'll need**
Practice and Apply	**p. 27-28 #13-51, 54, 55**
Resources	**Online Textbook Resource (algebra readiness puzzles 3 & 4, self-grading lesson quiz), practice workbook 1-5, enrichment 1-5**

Section 1.6:

Warm-up/Starting Options	**p. 30 check skills you'll need**
Practice and Apply	**p. 32-33 #18-50, 54-68**
Resources	**Online Textbook Resource (self-grading lesson quiz), practice workbook 1-6, enrichment 1-6**

Section 1.9:

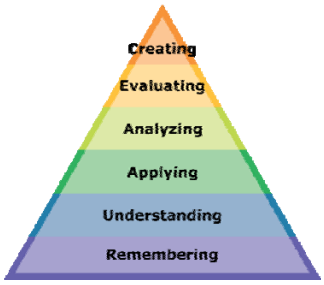
Warm-up/Starting Options	**p. 44 check skills you'll need**
Practice and Apply	**p. 47 #5-28, 33-36, 50, 67**
Resources	**Online Textbook Resource (algebra readiness puzzles 5 & 6, self-grading lesson quiz), practice workbook 1-9, enrichment 1-9**

Section 1.10:

Warm-up/Starting Options	**p. 50 check skills you'll need**
Practice and Apply	**p. 52-53 #1-37, 41-44**
Resources	**Online Textbook Resource (algebra readiness puzzles 61 & 62, self-grading lesson quiz), practice workbook 1-10, enrichment 1-10**

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 numerous activities and strategies including the following: teacher observations, students collaborating with peers, questioning strategies, student record-keeping, quizzes, exit/admit assignments, peer/self-assessments, learning/response logs, discussions and practice presentations.

Accommodations/Modifications:

As per IEP.

Summative Assessments:

The following assessments will be used to evaluate student learning, skill acquisition and academic achievement of the Standards of Mathematical Practice and the New Jersey Learning Standards for Mathematics listed under each chapter in the Geometry curriculum/syllabus at the conclusion of an instructional time period.

- Diagnostic Pre-Test
- Chapter Tests
- Periodic Benchmark Tests
- End-Of –Course Assessment
- Standardized Tests

Accommodations/Modifications:

As per IEP.

Performance Assessments:

Performance Tasks, Projects, Display of Student Work

Accommodations/Modifications:

As per IEP.

Black Horse Pike Regional School District Curriculum Template

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

Course Name: Introduction to Algebra 1

Course Number: 031200

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Introduction to Algebra / Chapter 2 – Solving One-Step Equations and Inequalities** **Grade Level(s):** **9**	**Unit Summary**: In this chapter, students will be introduced to the basic algebraic properties needed to solve equations and inequalities. The Associative, Commutative, and Identity Properties of Addition and Multiplication will show how to rewrite expressions. Students will learn to solve one-step equations and inequalities by applying inverse operations and the Addition and Multiplications Properties of Equality. Additionally, students will learn to graph inequalities and to identify inequalities by looking at a graph. This chapter will be completed without the use of a calculator.
Essential Question(s): • **How do you use the distributive property?** • **How do you write and solve equations?** • **How do you write, solve, and graph inequalities?**	**Enduring Understanding(s):** Students will be able to: • Identify properties of addition and multiplication • Use properties to solve problems • Use the Distributive Property with algebraic expressions • Identify parts of and simplify a variable expression • Classify types of equations • Solve one-step equations by using addition, subtraction, multiplication, or division • Graph and write inequalities • Solve one-step inequalities using addition, subtraction, multiplication, or division

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	NJSLS:
1. Use distributive property. [*Standard*] - Apply the properties of operations to generate equivalent expressions.	**1. NJSLS.6.EE.A.3**
2. Perform operations with integers. [*Standard*] - Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. [*Standard*] - Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	**2. NJSLS.7.EE.B.3, NJSLS.7.EE.B.4**
3. Graph points in the coordinate plane. [*Standard*] - Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. [*Standard*] - Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams. [*Standard*] - Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	**3. NJSLS.6.EE.B.5, NJSLS.6.EE.B.8, NJSLS.7.EE.B.4.B**

Inter-Disciplinary Connections:

Real-World problem solving examples:
Using the Associative Property of Addition to find total cost (p.66), using the Commutative Property of Addition to find total cost (p. 68), using the distributive property (p. 72), writing and solving one-step equations using addition (p. 81), writing and solving one-step equations using subtraction (p. 87 and p. 88), writing equations using addition to find the distance from Mars to the Sun (p. 89), writing and solving equations using multiplication to find the population of the United States in a given year (p. 92), writing an inequality to find the amount of sodium in food (p. 103), writing an inequality to describe the height restrictions on an amusement park ride (p. 104), writing and solving an inequality using addition to determine the amount of memory that can be added to a computer (p. 107), using inequalities to determine the number of average sized adults that can safely ride an elevator at one time (p. 111).

Inter-Disciplinary problem solving examples:
Business (p. 66), Science (p. 81), Health (p. 87), Statistics (p. 92), Nutrition (p. 103).

Students will engage with the following text:

Prentice Hall Mathematics Pre-Algebra

Students will write:

Writing/Open-Ended Questions:
Simplifying using order of operations (p. 69), explaining how to use the distributive property (p. 75), explaining differences between expressions and equations (p. 83), explaining inverse operations (p. 90 and 95), representing inequalities (p. 105)

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 learning activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using Smart Board technologies will all be explored as a blend of learning strategies to promote critical thinking, problem solving and performance skills of all learners. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and projects.

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

Section 2.1:

Warm-up/Starting Options	**p. 66 Check Skills You'll Need**
Practice and Apply	**p. 69-70 #4-21, 37, 38, 44**
Resources	**Online Textbook Resource (Self-Grading Lesson Quiz), Practice Workbook 2-1, Enrichment 2-1**

Section 2.2:

Warm-up/Starting Options	**p. 71 Check Skills You'll Need**
Practice and Apply	**p. 74-75 #16-29, 38-45, 48-51**
Resources	**Online Textbook Resource (Algebra Readiness Puzzle 7, Self-Grading Lesson Quiz), Practice Workbook 2-2, Enrichment 2-2**

Section 2.3:

Warm-up/Starting Options	**P 76 Check Skills You'll Need**
Practice and Apply	**p. 78-79 #11-16, 21-33, 36-41**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 28, Self-Grading Lesson Quiz), Practice Workbook 2-3, Enrichment 2-3**

Section 2.4:

Warm-up/Starting Options	**p. 80 Check Skills You'll Need**
Practice and Apply	**p. 82-83 #1-22**
Resources	**Online Textbook Resource (Algebra Readiness Puzzle 35 & 36, Self-Grading Lesson Quiz), Practice Workbook 2-4, Enrichment 2-4**

Section 2.5:

Warm-up/Starting Options	**p. 86 Check Skills You'll Need**
Practice and Apply	**p. 89-90 #1-22, 25-34, 36-46**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 37 & 38, Self-Grading Lesson Quiz), Practice Workbook 2-5, Enrichment 2-5**

Section 2.6:

Warm-up/Starting Options	**p. 92 Check Skills You'll Need**
Practice and Apply	**p. 94-95 #1-60**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 39 & 40, Self-Grading Lesson Quiz), Practice Workbook 2-6, Enrichment 2-6**

Section 2.8:

Warm-up/Starting Options	**p. 102 Check Skills You'll Need**
Practice and Apply	**p. 104-105 #1-32, 34-36**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 54, Self-Grading Lesson Quiz), Practice Workbook 2-8, Enrichment 2-8**

Section 2.9:

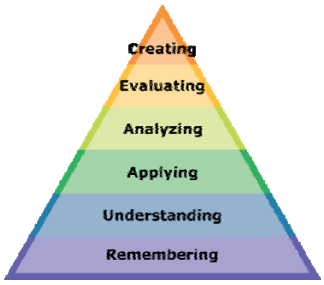
Warm-up/Starting Options	**p. 106 Check Skills You'll Need**
Practice and Apply	**p. 108-109 #1-19, 22-34**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 55 & 56, Self-Grading Lesson Quiz), Practice Workbook 2-9, Enrichment 2-9**

Section 2.10:

Warm-up/Starting Options	**p. 110 Check Skills You'll Need**
Practice and Apply	**p. 113-114 #1-50**
Resources	**Online Textbook Resource (Self-Grading Lesson Quiz), Practice Workbook 2-10, Enrichment 2-10**

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 numerous activities and strategies including the following: teacher observations, students collaborating with peers, questioning strategies, student record-keeping, quizzes, exit/admit assignments, peer/self-assessments, learning/response logs, discussions and practice presentations.

Accommodations/Modifications:

As per IEP.

Summative Assessments:

The following assessments will be used to evaluate student learning, skill acquisition and academic achievement of the Standards of Mathematical Practice and the New Jersey Learning Standards for Mathematics listed under each chapter in the Geometry curriculum/syllabus at the conclusion of an instructional time period.

- Diagnostic Pre-Test
- Chapter Tests
- Periodic Benchmark Tests
- End-Of –Course Assessment
- Standardized Tests

Accommodations/Modifications:

As per IEP.

Performance Assessments:

Performance Tasks, Projects, Display of Student Work

Accommodations/Modifications:

As per IEP.

Black Horse Pike Regional School District Curriculum Template

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

Course Name: Introduction to Algebra 1

Course Number: 031200

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Introduction to Algebra / Chapter 3- Decimals and Equations** **Grade Level(s):** **9**	**Unit Summary**: In this chapter, students will work with decimals and equations through lessons on rounding decimals, estimating decimals sums, differences, quotients, and products, and the use of decimals in formulas. Students will also be introduced to the measures of central tendency; mean, median, and mode. Students will solve one-step equations involving decimals. This chapter will be completed without the use of a calculator.
Essential Question(s): • **How do you estimate with decimals?** • **How do you solve equations with decimals?**	**Enduring Understanding(s):** Students will be able to: • Round decimals • Estimate sums, differences, products, and quotients • Find mean, median, and mode of a set of data • Choose the best measure of central tendency • Substitute into formulas and use for the perimeter of a rectangle • Solve one-step equations using decimal addition, subtraction, multiplication, or division

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	NJSLS:
1. Estimate with decimals. [*Standard*] - Use place value understanding to round decimals to any place.	**1. NJSLS.5.NBT.A.4**
2. Solve equations with decimals. [*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.	**2. NJSLS.5.NBT.B.7**

Inter-Disciplinary Connections:

Real-World problem solving examples:
Estimating total cost while grocery shopping (p. 128), estimating total long-distance phone charges for a given month (p. 129), finding the difference in size between the Great Lakes (p. 130), finding average rainfall in a given city of the United States (p. 131), estimating the cost of fabric needed to make a quilt (p. 133), analyzing wages for hospital staff using a chart (p. 134), estimating how much gas is needed for a road trip (p. 135), using a chart to approximate land areas (p. 139), using formulas to find average speed (p. 143), estimating temperature using formulas (p. 143), finding distance from a satellite to the moon (p. 148), finding account balance by solving equations (p. 149), finding the number of hits of a baseball player by solving equations (p. 153)

Inter-Disciplinary problem solving examples:
Finance (p. 128), geography (p. 130), meteorology (p. 131), business (p. 134), geography (p. 135), science (p. 143)

Students will engage with the following text:

Prentice Hall Mathematics Pre-Algebra

Students will write:

Writing/Open-Ended Questions:
Estimating by rounding decimals (p. 131), using formulas to convert measurements (p. 145), using properties of addition and subtraction to solve equations using decimals (p. 151), rounding decimals (p. 154)

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 learning activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using Smart Board technologies will all be explored as a blend of learning strategies to promote critical thinking, problem solving and performance skills of all learners. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and projects.

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

Section 3.1:

Warm-up/Starting Options	**p. 127 Check Skills You'll Need**
Practice and Apply	**p. 130-131 #1-43**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 14, Self-Grading Lesson Quiz), Practice Workbook 3-1, Enrichment 3-1**

Section 3.2:

Warm-up/Starting Options	**p. 132 Check Skills You'll Need**
Practice and Apply	**p. 134-135 #1-34**
Resources	**Online Textbook Resource (Self-Grading Lesson Quiz), Practice Workbook 3-2, Enrichment 3-2**

Section 3.3:

Warm-up/Starting Options	**P 137 Check Skills You'll Need**
Practice and Apply	**p. 140-141 #1-9, 18-22, 26-28**
Resources	**Online Textbook Resource (Self-Grading Lesson Quiz), Practice Workbook 3-3, Enrichment 3-3**

Section 3.4:

Warm-up/Starting Options	**p. 143 Check Skills You'll Need**
Practice and Apply	**p. 145-146 #1-27**
Resources	**Online Textbook Resource (algebra readiness puzzle 29, Self-Grading Lesson Quiz), Practice Workbook 3-4, Enrichment 3-4**

Section 3.5:

Warm-up/Starting Options	**p. 148 Check Skills You'll Need**
Practice and Apply	**p. 150-151 #1-34**
Resources	**Online Textbook Resource (Self-Grading Lesson Quiz), Practice Workbook 3-5, Enrichment 3-5**

Section 3.6:

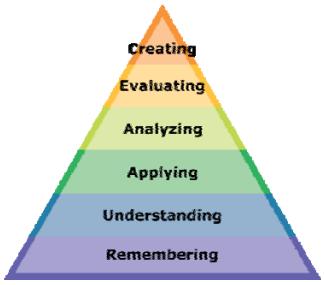
Warm-up/Starting Options	**p. 152 Check Skills You'll Need**
Practice and Apply	**p. 154-155 #1-40**
Resources	**Online Textbook Resource (Self-Grading Lesson Quiz), Practice Workbook 3-6, Enrichment 3-6**

Section 3.8:

Warm-up/Starting Options	**p. 164 Check Skills You'll Need**
Practice and Apply	**p. 166-167 #1-24**
Resources	**Online Textbook Resource (Self-Grading Lesson Quiz), Practice Workbook 3-8, Enrichment 3-8**

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 numerous activities and strategies including the following: teacher observations, students collaborating with peers, questioning strategies, student record-keeping, quizzes, exit/admit assignments, peer/self-assessments, learning/response logs, discussions and practice presentations.

Accommodations/Modifications:

As per IEP.

Summative Assessments:

The following assessments will be used to evaluate student learning, skill acquisition and academic achievement of the Standards of Mathematical Practice and the New Jersey Learning Standards for Mathematics listed under each chapter in the Geometry curriculum/syllabus at the conclusion of an instructional time period.

- Diagnostic Pre-Test
- Chapter Tests
- Periodic Benchmark Tests
- End-Of –Course Assessment
- Standardized Tests

Accommodations/Modifications:

As per IEP.

Performance Assessments:

Performance Tasks, Projects, Display of Student Work

Accommodations/Modifications:

As per IEP.

Black Horse Pike Regional School District Curriculum Template

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

Course Name: Introduction to Algebra 1

Course Number: 031200

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Introduction to Algebra / Chapter 4- Factors, Fractions, and Exponents** **Grade Level(s):** **9**	**Unit Summary**: In this chapter, students will use divisibility rules to find factors. They will apply rules to find prime factorizations and the greatest common factor, and to simplify fractions. Students will learn how to add, subtract, multiply, and divide expressions containing powers with the same base. Students will recognize and simplify rational numbers that contain powers. This chapter will be completed without the use of a calculator.
Essential Question(s): • **How do you simplify expressions with exponents?** • **How do you simplify fractions?** **How do you write and calculate in scientific notation?**	**Enduring Understanding(s):** Students will be able to: • Use exponents • Use the order of operations with exponents • Find the prime factorization of a number • Find the greatest common factor of two or more numbers • Find equivalent fractions and write fractions in simplest form • Identify and graph rational numbers • Evaluate fractions containing variables • Apply exponent rules to simplify expressions • Write and evaluate numbers in scientific notation

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	NJSLS:
1. Simplify expressions with exponents. [*Standard*] - Write and evaluate numerical expressions involving whole-number exponents. [*Standard*] - Know and apply the properties of integer exponents to generate equivalent numerical expressions.	**1. NJSLS.6.EE.A.1, NJSLS. 8.EE.A.1**
2. Simplify fractions. [*Standard*] - 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. [*Standard*] - Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.	**2. NJSLS.3.NF.A.3.B, NJSLS.3.NF.A.3.C**
3. Write and calculate in scientific notation. [*Standard*] - Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. [*Standard*] - Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	**3. NJSLS.8.EE.A.3, NJSLS.8.EE.A.4**

Inter-Disciplinary Connections:

Real-World problem solving examples:
Finding factors to organize students at a concert (p. 179), using exponents to determine how a microscope works (p. 183), Simplifying fractions when surveying (p. 193), evaluating fractions containing variables (p. 202), finding the mass of a hummingbird (p. 212), writing in scientific notation (p. 216 and 218)

Inter-Disciplinary problem solving examples:
Science (p. 183), statistics (p. 193), science (p. 202), biology (p. 212), business (p. 216)

Students will engage with the following text:

Prentice Hall Mathematics Pre-Algebra

Students will write:

Writing/Open-Ended Questions:
Finding factors of a number (p. 180), using rules of exponents (p. 185), evaluating fractions (p. 194), applying rules of exponents when multiplying (p. 207), applying rules of exponents when dividing (p. 213), applying scientific notation rules (p.219)

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 learning activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using Smart Board technologies will all be explored as a blend of learning strategies to promote critical thinking, problem solving and performance skills of all learners. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and projects.

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

Section 4.1:

Warm-up/Starting Options	**p. 178 Check Skills You'll Need**
Practice and Apply	**p. 180-181 #1-53**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 8 & 9, Self-Grading Lesson Quiz), Practice Workbook 4-1, Enrichment 4-1**

Section 4.2:

Warm-up/Starting Options	**p. 182 Check Skills You'll Need**
Practice and Apply	**p. 184-185 #1-13, 20-27, 34-39**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 10 & 11, Self-Grading Lesson Quiz), Practice Workbook 4-2, Enrichment 4-2**

Section 4.3:

Warm-up/Starting Options	**P 186 Check Skills You'll Need**
Practice and Apply	**p. 189-190 #1-48, 58-60**
Resources	**Online Textbook Resource (Algebra readiess puzzles 12, Self-Grading Lesson Quiz), Practice Workbook 4-3, Enrichment 4-3**

Section 4.4:

Warm-up/Starting Options	**p. 192 Check Skills You'll Need**
Practice and Apply	**p. 194-195 #1-42, 47-50**
Resources	**Online Textbook Resource (Self-Grading Lesson Quiz), Practice Workbook 4-4, Enrichment 4-4**

Section 4.6:

Warm-up/Starting Options	**p. 201 Check Skills You'll Need**
Practice and Apply	**p. 203-204 #1-42**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 15, Self-grading Lesson Quiz), Practice Workbook 4-6, Enrichment 4-6**

Section 4.7:

Warm-up/Starting Options	**p. 205 Check Skills You'll Need**
Practice and Apply	**p. 207 #1-44**
Resources	**Online Textbook Resource (Self-Grading Lesson Quiz), Practice Workbook 4-7, Enrichment 4-7**

Section 4.8:

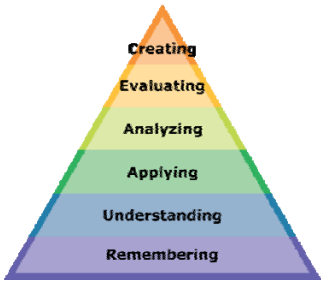
Warm-up/Starting Options	**p. 210 Check Skills You'll Need**
Practice and Apply	**p. 213 #1-45**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 30, Self-Grading Lesson Quiz), Practice Workbook 4-8, Enrichment 4-8**

Section 4.9:

Warm-up/Starting Options	**p. 215 Check Skills You'll Need**
Practice and Apply	**p. 219-220 #1-35**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 13, Self-Grading Lesson Quiz), Practice Workbook 4-9, Enrichment 4-9**

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 numerous activities and strategies including the following: teacher observations, students collaborating with peers, questioning strategies, student record-keeping, quizzes, exit/admit assignments, peer/self-assessments, learning/response logs, discussions and practice presentations.

Accommodations/Modifications:

As per IEP.

Summative Assessments:

The following assessments will be used to evaluate student learning, skill acquisition and academic achievement of the Standards of Mathematical Practice and the New Jersey Learning Standards for Mathematics listed under each chapter in the Geometry curriculum/syllabus at the conclusion of an instructional time period.

- Diagnostic Pre-Test
- Chapter Tests
- Periodic Benchmark Tests
- End-Of –Course Assessment
- Standardized Tests

Accommodations/Modifications:

As per IEP.

Performance Assessments:

Performance Tasks, Projects, Display of Student Work

Accommodations/Modifications:

As per IEP.

Black Horse Pike Regional School District Curriculum Template

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

Course Name: Introduction to Algebra 1

Course Number: 031200

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Introduction to Algebra / Chapter 5- Operations with Fractions** **Grade Level(s):** **9**	**Unit Summary**: In this chapter, students will build on their basic knowledge of fractions to compare and order fractions and then to perform operations with fractions. They apply skills to solve equations by adding, subtracting, multiplying, and dividing fractions. Students will convert fractions to decimals, and will revisit concepts from Chapter 4 to find powers of products and quotients. This chapter will be completed without the use of a calculator.
Essential Question(s): • **How do you perform operations with fractions?** • **How do you solve equations with fractions? How do you find powers of products and quotients?**	**Enduring Understanding(s):** Students will be able to: • Find the least common multiple of a series of numbers • Compare fractions • Write fractions as decimals • Write terminating and repeating decimals as fractions • Add and subtract fractions and mixed numbers • Multiply and divide fractions • Solve equations by adding, subtracting, and multiplying fractions Find powers of products and quotients

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	NJSLS:
1. Simplify expressions with exponents. [*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. [*Standard*] - Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. [*Standard*] - Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	**1. NJSLS.5.NF.A.1, NJSLS.5.NF.A.2, NJSLS.5.NF.B.3**
2. Simplify fractions. [*Standard*] - Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.	**2. NJSLS.7.EE.B.3**
3. Write and calculate in scientific notation. [*Standard*] - Know and apply the properties of integer exponents to generate equivalent numerical expressions.	**3. NJSLS.8.EE.A.1**

Inter-Disciplinary Connections:

Real-World problem solving examples:
Using least common multiple to determine when sports teams will play at the same time (p. 232), using equivalent fractions to determine which team wins a competition (p. 234), converting decimals to fractions when shopping (p. 237), adding mixed numbers to find total distance (p. 244), using mixed numbers to determine area (p. 249), using mixed numbers to compare prices (p. 254), adding mixed numbers to find total recycled product (p. 264), solving equations with mixed numbers to determine necessary shelf length (p. 269), finding area of a tile using fractions (p. 275)

Inter-Disciplinary problem solving examples:
Physical Education (p. 232), measurement (p. 235), sales (p. 237), geography (p. 241), geography (p. 245), geometry (p. 249), construction (p. 251), science (p. 271)

Students will engage with the following text:

Prentice Hall Mathematics Pre-Algebra

Students will write:

Writing/Open-Ended Questions:
Finding equivalent fractions (p. 236), explaining repeating decimals (p. 241), estimating sum and difference (p. 246), multiplying and dividing improper fractions (p. 253), solving equations with fractions (p. 267), solving equations by dividing fractions (p. 271)

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 learning activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using Smart Board technologies will all be explored as a blend of learning strategies to promote critical thinking, problem solving and performance skills of all learners. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and projects.

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

Section 5.1:

Warm-up/Starting Options	**p. 232 Check Skills You'll Need**
Practice and Apply	**p. 235 #1-59**
Resources	**Online Textbook Resource (self-grading lesson quiz), Practice Workbook 5-1, Enrichment 5-1**

Section 5.2:

Warm-up/Starting Options	**p. 237 Check Skills You'll Need**
Practice and Apply	**p. 240 #1-51**
Resources	**Online Textbook Resource (self-grading lesson quiz), Practice Workbook 5-2, Enrichment 5-2**

Section 5.3:

Warm-up/Starting Options	**P 243 Check Skills You'll Need**
Practice and Apply	**p. 18246-247 #1-50**
Resources	**Online Textbook Resource (Algebra readiess puzzles 16, 17, self-grading lesson quiz), Practice Workbook 5-3, Enrichment 5-3**

Section 5.4:

Warm-up/Starting Options	**p. 248 Check Skills You'll Need**
Practice and Apply	**p. 1252 #1-62**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 18, 19, Self-Grading Lesson Quiz), Practice Workbook 5-4, Enrichment 5-4**

Section 5.7:

Warm-up/Starting Options	**p. 264 Check Skills You'll Need**
Practice and Apply	**p. 266-267 #1-43**
Resources	**Online Textbook Resource (Self-grading Lesson Quiz), Practice Workbook 5-7, Enrichment 5-7**

Section 5.8:

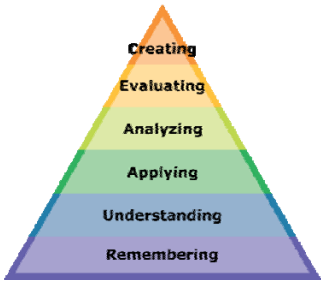
Warm-up/Starting Options	**p. 268 Check Skills You'll Need**
Practice and Apply	**p. 270-271 #1-56**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 41, 42, Self-Grading Lesson Quiz), Practice Workbook 4-7, Enrichment 4-7**

Section 5.9:

Warm-up/Starting Options	**p. 274 Check Skills You'll Need**
Practice and Apply	**p. 276-277 #1-63**
Resources	**Online Textbook Resource (Self-Grading Lesson Quiz), Practice Workbook 5-9, Enrichment 5-9**

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 numerous activities and strategies including the following: teacher observations, students collaborating with peers, questioning strategies, student record-keeping, quizzes, exit/admit assignments, peer/self-assessments, learning/response logs, discussions and practice presentations.

Accommodations/Modifications:

As per IEP.

Summative Assessments:

The following assessments will be used to evaluate student learning, skill acquisition and academic achievement of the Standards of Mathematical Practice and the New Jersey Learning Standards for Mathematics listed under each chapter in the Geometry curriculum/syllabus at the conclusion of an instructional time period.

- Diagnostic Pre-Test
- Chapter Tests
- Periodic Benchmark Tests
- End-Of –Course Assessment
- Standardized Tests

Accommodations/Modifications:

As per IEP.

Performance Assessments:

Performance Tasks, Projects, Display of Student Work

Accommodations/Modifications:

As per IEP.

Black Horse Pike Regional School District Curriculum Template

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

Course Name: Introduction to Algebra 1

Course Number: 031200

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Introduction to Algebra / Chapter 6 - Ratios, Proportions, and Percents** **Grade Level(s):** **9**	**Unit Summary**: In this chapter, students will learn the definitions and uses of ratios, rates, and unit rates, including proportions involving similar figures and scale drawings. Students use their knowledge of ratios to find probabilities and odds. They learn that a percent can be written as a ratio in fraction form with 100 as the denominator, and as a decimal. Students will solve percent problems with proportions and then with equations. They will use what they learn about percents to find percents of change, markups and discounts. This chapter will be completed without the use of a calculator.
Essential Question(s): • **How do you find and use ratios and unit rates?** • **How do you write and solve proportions?** • **How do you find and use percents?**	**Enduring Understanding(s):** Students will be able to: • Write and simplify ratios • Find rates and unit rates • Solve proportions and use proportions to solve proportions • Solve problems that involve similar figures • Solve problems that involve scale drawings • Find probability and odds • Write percents as fractions and decimals • Write decimals and fractions as percents • Find a part of a whole and a percent • Write and solve percent equations • Find percent of change • Find markups and discounts

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	NJSLS:
1. Simplify expressions with exponents. [*Standard*] - Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. [*Standard*] - Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. [*Standard*] - Solve unit rate problems including those involving unit pricing and constant speed.	**1. NJSLS.6.RP.A.1, NJSLS.6.RP.A.2, NJSLS.6.RP.A.3.b**
2. Simplify fractions. [*Standard*] - Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. [*Standard*] - Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. [*Standard*] - Represent proportional relationships by equations. [*Standard*] - [Standard] - Use proportional relationships to solve multistep ratio and percent problems.	**2. NJSLS.6.RP.A.1, NJSLS.6.RP.A.3.c, NJSLS.6.RP.A.2.c, NJSLS.7.RP.A.3**
3. Write and calculate in scientific notation. [*Standard*] - Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. [*Standard*] - Use proportional relationships to solve multistep ratio and percent problems.	**3. NJSLS.6.RP.A.3.c, NJSLS.7.RP.A.3**

Inter-Disciplinary Connections:

Real-World problem solving examples:
finding unit rate to make the best buy (p. 289), comparing unit rates for speed (p. 290), using proportions to convert from nautical miles to statute miles (p. 295), solving problems using scale drawings (p. 300), finding the probability that a child is a twin in the United States (p. 306), converting fractions to percents (p. 311), using proportions to find percentage (p. 317), solving equations that involve percents (p. 321), finding percent of change (p. 326), finding markup on an item sold in a music store (p. 329)

Inter-Disciplinary problem solving examples:
Physics (p. 290), science (p. 291), geometry (p. 297), geography (p. 301), business (p. 309)

Students will engage with the following text:

Prentice Hall Mathematics Pre-Algebra

Students will write:

Writing/Open-Ended Questions:
Equivalent fractions and ratios (p. 290), using ratios to estimate time driven (p. 297), finding probability using odds (p. 309), converting decimals to percents (p. 313)

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 learning activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using Smart Board technologies will all be explored as a blend of learning strategies to promote critical thinking, problem solving and performance skills of all learners. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and projects.

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

Section 6.1:

Warm-up/Starting Options	**p. 288 Check Skills You'll Need**
Practice and Apply	**p. 209-291 #1-33**
Resources	**Online Textbook Resource (self-grading lesson quiz), Practice Workbook 6-1, Enrichment 6-1**

Section 6.2:

Warm-up/Starting Options	**p. 294 Check Skills You'll Need**
Practice and Apply	**p. 296-297 #1-68**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 20, 21, self-grading lesson quiz), Practice Workbook 6-2, Enrichment 6-2**

Section 6.3:

Warm-up/Starting Options	**P 299 Check Skills You'll Need**
Practice and Apply	**p. 301 #1-45**
Resources	**Online Textbook Resource (self-grading lesson quiz), Practice Workbook 6-3, Enrichment 6-3**

Section 6.4:

Warm-up/Starting Options	**p. 305 Check Skills You'll Need**
Practice and Apply	**p. 308-309 #1-35**
Resources	**Online Textbook Resource (Self-Grading Lesson Quiz), Practice Workbook 6-4, Enrichment 6-4**

Section 6.5:

Warm-up/Starting Options	**p. 310 Check Skills You'll Need**
Practice and Apply	**p. 312-313 #1-78**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 22, Self-grading Lesson Quiz), Practice Workbook 6-5, Enrichment 6-5**

Section 6.6:

Warm-up/Starting Options	**p. 315 Check Skills You'll Need**
Practice and Apply	**p. 318 #1-42**
Resources	**Online Textbook Resource (Self-Grading Lesson Quiz), Practice Workbook 6-6, Enrichment 6-6**

Section 6.7:

Warm-up/Starting Options	**p. 320 Check Skills You'll Need**
Practice and Apply	**p. 322-323 #1-39**
Resources	**Online Textbook Resource (Self-Grading Lesson Quiz), Practice Workbook 6-7, Enrichment 6-7**

Section 6.8:

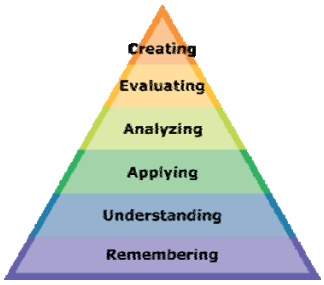
Warm-up/Starting Options	**p. 325 Check Skills You'll Need**
Practice and Apply	**p. 327-328 #1-41**
Resources	**Online Textbook Resource (Self-Grading Lesson Quiz), Practice Workbook 6-8, Enrichment 6-8**

Section 6.9:

Warm-up/Starting Options	**p. 329 Check Skills You'll Need**
Practice and Apply	**p. 331-332 #1-25**
Resources	**Online Textbook Resource (Algebra Readiness Puzzles 23, Self-Grading Lesson Quiz), Practice Workbook 6-9, Enrichment 6-9**

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 numerous activities and strategies including the following: teacher observations, students collaborating with peers, questioning strategies, student record-keeping, quizzes, exit/admit assignments, peer/self-assessments, learning/response logs, discussions and practice presentations.

Accommodations/Modifications:

As per IEP.

Summative Assessments:

The following assessments will be used to evaluate student learning, skill acquisition and academic achievement of the Standards of Mathematical Practice and the New Jersey Learning Standards for Mathematics listed under each chapter in the Geometry curriculum/syllabus at the conclusion of an instructional time period.

- Diagnostic Pre-Test
- Chapter Tests
- Periodic Benchmark Tests
- End-Of –Course Assessment
- Standardized Tests

Accommodations/Modifications:

As per IEP.

Performance Assessments:

Performance Tasks, Projects, Display of Student Work

Accommodations/Modifications:

As per IEP.

Black Horse Pike Regional School District Curriculum Template

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

Course Name: Introduction to Algebra 1

Course Number: 031200

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Introduction to Algebra / Chapter 7 – Solving Equations and Inequalities** **Grade Level(s):** **9**	**Unit Summary**: In this chapter, students will use mathematical properties to solve two-step equations, multi-step equations, and two-step inequalities. The multi-step equations include fractions and decimals, and equations with variables on both sides of the equal sign. Students will use problem solving strategies to write and solve equations. They will use the same mathematical properties and skills to transform formulas. Then they use formulas to find simple and compound interest. This chapter will be completed with the use of a scientific or graphing calculator.
Essential Question(s): • **How do you write and solve multi-step equations?** • **How do you write and solve two-step inequalities?** • **How do you find simple and compound interest?**	**Enduring Understanding(s):** Students will be able to: • To solve two-step equations • To combine like terms and use the distributive property in equations • To solve multi-step equations with fractions and decimals • To write an equation to solve a problem • To solve equations with variables on both sides • To solve two-step inequalities • To solve a formula for a given variable • To use formulas to solve problems • To solve simple interest problems • To solve compound interest problems

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	NJSLS:
1. Write and solve multi-step equations. [*Standard*] - Create equations and inequalities in one variable and use them to solve problems. [*Standard*] - Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	**1. NJSLS.9-12.A-CED.A.1, NJSLS.9-12.A-REI.B.3**
2. Write and solve two-step inequalities. [*Standard*] - Create equations and inequalities in one variable and use them to solve problems [*Standard*] - Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	**2. NJSLS.9-12.A-CED.A.1, NJSLS.9-12.A-REI.B.3**
3. Find simple and compound interest. [*Standard*] - Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. [*Standard*] - Use proportional relationships to solve multistep ratio and percent problems.	**3. NJSLS.9-12.A-CED.A.4, NJSLS.7.RP.A.3**

Inter-Disciplinary Connections:

Real-World problem solving examples:
Using equations to save money for vacation (p. 349), using equations to save money for a camera (p. 350), using equations to compare collectibles (p. 352), using equations to compare cell phone plans (p. 358), using equations to find the cost of hiring a guide (p. 360), using equations to find the cost of shoes (p. 360), using equations to find the cost of a moving van (p. 362), finding sale prices (p. 364), finding the cost of painting (p. 364), using equations to find time when bicycling (p. 368), using equations to compare costs of cell phone plans (p. 369), using equations to find the time a boating trip takes (p. 370), using inequalities to determine minimum food on a camping trip (p. 374), using inequalities to determine average speed (p. 375), using inequalities to determine the minimum distance a taxi can travel (p. 375), using inequalities to determine how long it takes to pay back a loan (p. 376), using formulas to find time for distance traveled on vacation (p. 379), using transforming formulas to convert temperatures from Fahrenheit to Celsius (p. 379), using transforming formulas to determine commissions (p. 380), using transforming formulas to determine rental costs (p. 380), using simple interest to determine interest earned (p. 382), using compound interest to determine money saved (p. 383), using compound interest to find the value of an investment (p. 384)

Inter-Disciplinary problem solving examples:
Construction (p. 350), sports (p. 353), construction (p. 355), art (p. 360), financial planning (p. 364), farming (p. 364), physics (p. 364), aviation (p. 369), photography (p. 375), construction (p. 380), economics (p. 380), investing (p. 386)

Students will engage with the following text:

Prentice Hall Mathematics Pre-Algebra

Students will write:

Writing/Open-Ended Questions:
Compare the processes of solving two different equations (p. 351), explaining how to solve an equation (p. 355), explain how to find a price in an equation (p. 360), describe the steps in solving a multi-step equation (p. 370), write a letter about inequalities (p. 376), explain how to transform a formula (p. 380), explain the difference between simple and compound interest (p. 385)

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 learning activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using Smart Board technologies will all be explored as a blend of learning strategies to promote critical thinking, problem solving and performance skills of all learners. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and projects.

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

Section 7.1:

Warm-up/Starting Options	**p. 348 check skills you'll need**
Practice and Apply	**p. 350-351 #1-34**
Resources	**Online Textbook Resource (algebra readiness puzzles 43 & 44, self-grading lesson quiz, graphing calculator procedure 7), practice workbook 7-1, enrichment 7-1**

Section 7.2:

Warm-up/Starting Options	**p. 352 check skills you'll need**
Practice and Apply	**p. 355-356 #1-7, 16-23, 26-30, 33, 34**
Resources	**Online Textbook Resource (algebra readiness puzzles 45 & 46, self-grading lesson quiz), practice workbook 7-2, enrichment 7-2**

Section 7.3:

Warm-up/Starting Options	**p. 357 check skills you'll need**
Practice and Apply	**p. 360-361 #1-34, 36-37, 39-42, 44-50**
Resources	**Online Textbook Resource (algebra readiness puzzles 47, self-grading lesson quiz), practice workbook 7-3, enrichment 7-3**

Section 7.4:

Warm-up/Starting Options	**p. 362 check skills you'll need**
Practice and Apply	**p. 364-365 #1-22**
Resources	**Online Textbook Resource (algebra readiness puzzles 48, self-grading lesson quiz), practice workbook 7-4, enrichment 7-4**

Section 7.5:

Warm-up/Starting Options	**p. 367 check skills you'll need**
Practice and Apply	**p. 369-371 #3-23, 26-34, 37-49**
Resources	**Online Textbook Resource (self-grading lesson quiz), practice workbook 7-5, enrichment 7-5**

Section 7.6:

Warm-up/Starting Options	**p. 373 check skills you'll need**
Practice and Apply	**p. 375-376 #3-24, 26-32, 34-40**
Resources	**Online Textbook Resource (algebra readiness puzzles 57 & 58, self-grading lesson quiz), practice workbook 7-6, enrichment 7-6**

Section 7.7:

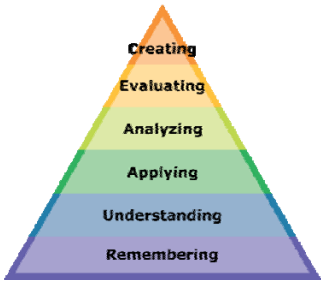
Warm-up/Starting Options	**p. 378 check skills you'll need**
Practice and Apply	**p. 380-381 #1-27**
Resources	**Online Textbook Resource (algebra readiness puzzles 49, self-grading lesson quiz, graphing calculator procedure 2), practice workbook 7-7, enrichment 7-7**

Section 7.8:

Warm-up/Starting Options	**p. 382 check skills you'll need**
Practice and Apply	**p. 385-386 #1-2, 5-32**
Resources	**Online Textbook Resource (self-grading lesson quiz, graphing calculator procedures 19 & 27), practice workbook 7-8, enrichment 7-8**

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 numerous activities and strategies including the following: teacher observations, students collaborating with peers, questioning strategies, student record-keeping, quizzes, exit/admit assignments, peer/self-assessments, learning/response logs, discussions and practice presentations.

Accommodations/Modifications:

As per IEP.

Summative Assessments:

The following assessments will be used to evaluate student learning, skill acquisition and academic achievement of the Standards of Mathematical Practice and the New Jersey Learning Standards for Mathematics listed under each chapter in the Geometry curriculum/syllabus at the conclusion of an instructional time period.

- Diagnostic Pre-Test
- Chapter Tests
- Periodic Benchmark Tests
- End-Of –Course Assessment
- Standardized Tests

Accommodations/Modifications:

As per IEP.

Performance Assessments:

Performance Tasks, Projects, Display of Student Work

Accommodations/Modifications:

As per IEP.

Black Horse Pike Regional School District Curriculum Template

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

Course Name: Introduction to Algebra 1

Course Number: 031200

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Introduction to Algebra / Chapter 8 – Linear Functions and Graphing** **Grade Level(s):** **9**	**Unit Summary**: In this chapter, students identify relations and functions, and then graph linear equations, learning that nonvertical lines represent linear functions. Students graph lines by first plotting points and then using the slope and y-intercept. Students learn to write rules for linear functions from words and from tables. They use their graphing knowledge to find trends and make predictions from scatter plots. Students also solve systems of linear equations and inequalities by graphing. This chapter will be completed with the use of a graphing calculator.
Essential Question(s): • **How do you determine whether a relation is a function?** • **How do you solve and graph linear equations?** • **How do you solve systems of linear equations and inequalities by graphing?**	**Enduring Understanding(s):** Students will be able to: • To determine whether a relation is a function • To graph relations and functions • To find solutions and graph linear equations • To find the slope of a line • To use slope-intercept form to graph a linear equation • To write function rules from descriptions, tables, and graphs • To draw scatter plots and find trends • To solve problems by graphing • To solve systems of linear equations by graphing • To graph linear inequalities • To graph systems of linear inequalities

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	NJSLS:
1. Determine whether a relation is a function. [*Standard*] - Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	**1. NJSLS.8.F.A.1**
2. Solve and graph linear equations. [*Standard*] - Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. [*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). [*Standard*] - Write a function that describes a relationship between two quantities. [*Standard*] - Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	**2. NJSLS.8.F.B.4, NJSLS.9-12.F-IF.A.1, NJSLS.9-12.F-BF.A.1, NJSLS.9-12.A-CED.A.2**
3. Solve systems of linear equations and inequalities by graphing. [*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). [*Standard*] - Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes. [*Standard*] - Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. [*Standard*] - Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	**3. NJSLS.9-12.A-REI.D.10, NJSLS.9-12.A-REI.D.12, NJSLS.9-12.A-REI.C.6, NJSLS.9-12.A-REI.D.12**

Inter-Disciplinary Connections:

Real-World problem solving examples:
Using functions to evaluate cooking time (p. 401), using functions rules to determine calories burned while swimming (p. 408), using slope to determine a safe ramp height (p. 413), use function rules to find sales commissions (p. 418), use function rules to determine electricity costs (p. 421), using scatter plots to compare education and income (p. 423), determining correlation between winning times and years in the Olympics (p. 425), determining correlation between nutrition and calories (p. 426), determining correlation between ticket prices and tickets sold (p. 427), use graphs to predict animal populations (p. 430), use graphs to predict registered cars in the future (p. 432), using systems of linear equations to create a kite (p. 438), using systems of linear equations to determine jobs that earn more money (p. 439), using linear inequalities to determine ticket sales needed to earn a profit (p. 443), use linear inequalities to determine income (p. 445)

Inter-Disciplinary problem solving examples:
Banking (p. 404), meteorology (p. 405), language arts (p. 409), architecture (p. 414), construction (p. 415),

science (p. 420), physics (p. 420), latitude and longitude (p. 424), statistics (p. 426), business (p. 432), engineering (p. 433), physics (p. 433), carpentry (p. 437)

Students will engage with the following text:

Prentice Hall Mathematics Pre-Algebra

Students will write:

Writing/Open-Ended Questions:
Compare and contrast relations and functions (p. 404), explain how to determine solutions of a linear function (p. 408), explain the relationship between lines (p. 415), describe the advantages of using function rules instead of tables (p. 420), describe pairs of data sets with different types of correlation (p. 427), explain correlations (p. 432), writing conjectures about solutions to systems of linear equations (p. 439), determine the difference between two linear inequalities (p. 444), compare and contrast linear inequalities with one variable inequalities (p. 445)

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 learning activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using Smart Board technologies will all be explored as a blend of learning strategies to promote critical thinking, problem solving and performance skills of all learners. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and projects.

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

Section 8.1:

Warm-up/Starting Options	**p. 400 check skills you'll need**
Practice and Apply	**p. 403-404 #1-23, 25-29, 31-37**
Resources	**Online Textbook Resource (algebra readiness puzzles 85 & 86, self-grading lesson quiz), practice workbook 8-1, enrichment 8-1**

Section 8.2:

Warm-up/Starting Options	**p. 405 check skills you'll need**
Practice and Apply	**p. 408-409 #1-39, 42-46**
Resources	**Online Textbook Resource (algebra readiness puzzles 63 & 87, self-grading lesson quiz, graphing calculator procedures 4 & 5), practice workbook 8-2, enrichment 8-2**

Section 8.3:

Warm-up/Starting Options	**p. 411 check skills you'll need**
Practice and Apply	**p. 414-416 #1-21, 23-58**
Resources	**Online Textbook Resource (algebra readiness puzzles 64 & 65, self-grading lesson quiz, graphing calculator procedure 6), practice workbook 8-3, enrichment 8-3**

Section 8.4:

Warm-up/Starting Options	**p. 418 check skills you'll need**
Practice and Apply	**p. 420-422 #1-9, 13-38**
Resources	**Online Textbook Resource (algebra readiness puzzles 66 & 67, self-grading lesson quiz), practice workbook 8-4, enrichment 8-4**

Section 8.5:

Warm-up/Starting Options	**p. 423 check skills you'll need**
Practice and Apply	**p. 426-428 #1-37**
Resources	**Online Textbook Resource (self-grading lesson quiz), practice workbook 8-5, enrichment 8-5**

Section 8.6:

Warm-up/Starting Options	**p. 430 check skills you'll need**
Practice and Apply	**p. 432-433 #1-22**
Resources	**Online Textbook Resource (self-grading lesson quiz, graphing calculator procedure 22), practice workbook 8-6, enrichment 8-6**

Section 8.7:

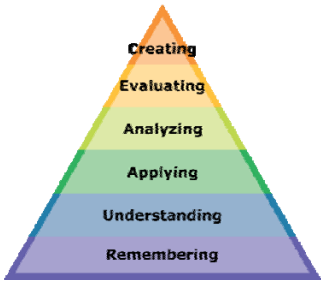
Warm-up/Starting Options	**p. 435 check skills you'll need**
Practice and Apply	**p. 438-440 #1-16, 19-25, 28-30, 36-48**
Resources	**Online Textbook Resource (algebra readiness puzzles 68 & 69, self-grading lesson quiz, graphing calculator procedure 9), practice workbook 8-7, enrichment 8-7**

Section 8.8:

Warm-up/Starting Options	**p. 441 check skills you'll need**
Practice and Apply	**p. 444-446 #1-12, 16-43, 47-65**
Resources	**Online Textbook Resource (self-grading lesson quiz, graphing calculator procedure 8), practice workbook 8-8, enrichment 8-8**

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 numerous activities and strategies including the following: teacher observations, students collaborating with peers, questioning strategies, student record-keeping, quizzes, exit/admit assignments, peer/self-assessments, learning/response logs, discussions and practice presentations.

Accommodations/Modifications:

As per IEP.

Summative Assessments:

The following assessments will be used to evaluate student learning, skill acquisition and academic achievement of the Standards of Mathematical Practice and the New Jersey Learning Standards for Mathematics listed under each chapter in the Geometry curriculum/syllabus at the conclusion of an instructional time period.

- Diagnostic Pre-Test
- Chapter Tests
- Periodic Benchmark Tests
- End-Of –Course Assessment
- Standardized Tests

Accommodations/Modifications:

As per IEP.

Performance Assessments:

Performance Tasks, Projects, Display of Student Work

Accommodations/Modifications:

As per IEP.

Black Horse Pike Regional School District Curriculum Template

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

Course Name: Introduction to Algebra 1

Course Number: 031200

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Introduction to Algebra / Chapter 10 – Area and Volume** **Grade Level(s):** **9**	**Unit Summary**: In this chapter, students will learn how to find the areas, surface areas, and volumes of some basic geometric figures. Students find the areas of parallelograms. Then they sue the formula for the area of a parallelogram to develop and use area formulas for triangles and trapezoids. Students use all these formulas and the formula for the area of a circle to find the areas of irregular shapes. Students learn about space figures and identify them from nets. They find surface and volume by using formulas. This chapter will be completed with the use of a scientific or graphing calculator. Formula sheets will be permitted.
Essential Question(s): • **How do you find the areas of figures?** • **How do you find the surface area of space figures?** • **How do you find the volume of space figures?**	**Enduring Understanding(s):** Students will be able to: • To find areas of rectangles and parallelograms • To find areas of triangles and trapezoids • To find areas of circles • To find areas of irregular figures • To identify common space figures • To find surface areas of prisms and cylinders • To find surface areas of pyramids, cones, and spheres • To find volumes of prisms and cylinders • To find volumes of pyramids, cones, and spheres

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	NJSLS:
1. Find the areas of figures. [*Standard*] - Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. [*Standard*] - Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. [*Standard*] - Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	**1. NJSLS.7.G.B.4, NJSLS.7.G.B.6, NJSLS.6.G.A.1**
2. Find the surface area of space figures. [*Standard*] - Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. [*Standard*] - Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	**2. NJSLS.7.G.A.3, NJSLS.7.G.B.6**
3. Find the volume of space figures. [*Standard*] - Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. [*Standard*] - Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	**3. NJSLS.7.G.A.3, NJSLS.7.G.B.6**

Inter-Disciplinary Connections:

Real-World problem solving examples:
Finding the area of a banner (p. 522), determining how much fertilizer is needed for a backyard (p. 525), determining how much siding is needed for a house (p. 528), finding the area of the Erie Canal (p. 529), finding the appropriate area for an animal enclosure (p. 533), finding the cost of lawn sod (p. 535), finding the cost of grass seed (p. 534), finding the surface area of a can of vegetables (p. 547), finding the square footage of wrapping paper needed for a gift (p. 549), finding the surface area of a camping tent (p. 549), finding the cost of painting a pool (p. 549), finding the surface area of a basketball (p. 554), find the volume under a bed (p. 559), finding the volume of a snowman (p. 567), find the volume of frozen yogurt inside a cone (p. 568)

Inter-Disciplinary problem solving examples:
Sports (p. 524), landscaping (p. 534), culinary arts (p. 535), construction (p. 550), engineering (p. 555), geography (p. 555), architecture (p. 556), construction (p. 560), botany (p. 568), physics (p. 568)

Students will engage with the following text:

Prentice Hall Mathematics Pre-Algebra

Students will write:

Writing/Open-Ended Questions:
Explain how two parallelograms with the same perimeter can have different areas (p. 525), compare different methods of finding area (p. 530), explain how to find a maximum circle size (p. 536), explain how to match a net to a space figure (p. 542), explain the difference between height of a base and height of a prism (p. 549), write a paragraph explanation of finding surface area (p. 555), describe real life objects with a specific shape (p. 559), explain the formulas for volume (p. 568)

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 learning activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using Smart Board technologies will all be explored as a blend of learning strategies to promote critical thinking, problem solving and performance skills of all learners. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and projects.

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

Section 10.1:

Warm-up/Starting Options	**p. 522 check skills you'll need**
Practice and Apply	**p. 524-525 #1-15, 18-19, 25-29**
Resources	**Online Textbook Resource (self-grading lesson quiz, graphing calculator procedure 2), practice workbook 10-1, enrichment 10-1**

Section 10.2:

Warm-up/Starting Options	**p. 527 check skills you'll need**
Practice and Apply	**p. 530-531 #1-10, 12-13, 15-16, 20-29**
Resources	**Online Textbook Resource (algebra readiness puzzles 107, self-grading lesson quiz), practice workbook 10-2, enrichment 10-2**

Section 10.3:

Warm-up/Starting Options	**p. 532 check skills you'll need**
Practice and Apply	**p. 535-537 #1-11, 17-21, 28-36, 38-41**
Resources	**Online Textbook Resource (self-grading lesson quiz), practice workbook 10-3, enrichment 10-3**

Section 10.4:

Warm-up/Starting Options	**p. 539 check skills you'll need**
Practice and Apply	**p. 541-543 #1-6, 13-16, 19, 24, 30-40**
Resources	**Online Textbook Resource (algebra readiness puzzles 66 & 67, self-grading lesson quiz), practice workbook 8-4, enrichment 8-4**

Section 10.5:

Warm-up/Starting Options	**p. 545 check skills you'll need**
Practice and Apply	**p. 548-550 #4-13, 15-20, 22-23, 25, 27-33, 37**
Resources	**Online Textbook Resource (self-grading lesson quiz), practice workbook 10-5, enrichment 10-5**

Section 10.6:

Warm-up/Starting Options	**p. 552 check skills you'll need**
Practice and Apply	**p. 555-556 #1-19, 21, 22-31**
Resources	**Online Textbook Resource (self-grading lesson quiz), practice workbook 10-6, enrichment 10-6**

Section 10.7:

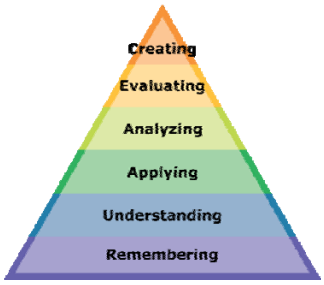
Warm-up/Starting Options	**p. 557 check skills you'll need**
Practice and Apply	**p. 559-560 #1-17, 19-25**
Resources	**Online Textbook Resource (self-grading lesson quiz), practice workbook 10-7, enrichment 10-7**

Section 10.9:

Warm-up/Starting Options	**p. 566 check skills you'll need**
Practice and Apply	**p. 568-569 #1-23, 25-38**
Resources	**Online Textbook Resource (self-grading lesson quiz), practice workbook 10-9, enrichment 10-9**

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 numerous activities and strategies including the following: teacher observations, students collaborating with peers, questioning strategies, student record-keeping, quizzes, exit/admit assignments, peer/self-assessments, learning/response logs, discussions and practice presentations.

Accommodations/Modifications:

As per IEP.

Summative Assessments:

The following assessments will be used to evaluate student learning, skill acquisition and academic achievement of the Standards of Mathematical Practice and the New Jersey Learning Standards for Mathematics listed under each chapter in the Geometry curriculum/syllabus at the conclusion of an instructional time period.

- Diagnostic Pre-Test
- Chapter Tests
- Periodic Benchmark Tests
- End-Of –Course Assessment
- Standardized Tests

Accommodations/Modifications:

As per IEP.

Performance Assessments:

Performance Tasks, Projects, Display of Student Work

Accommodations/Modifications:

As per IEP.

Black Horse Pike Regional School District Curriculum Template

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

Course Name: Introduction to Algebra 1

Course Number: 031200

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Introduction to Algebra / Chapter 11 – Right Triangles in Algebra** **Grade Level(s):** **9**	**Unit Summary**: In this chapter, students will begin by finding square roots and classifying real numbers. They use the Pythagorean Theorem and its converse to find missing sides of right triangles and to determine whether triangles are right triangles. Students find the distance between two points and the midpoint of a segment using the distance and midpoint formulas. They use proportions to solve real world problems that can be modeled with similar triangles. This chapter will be completed with the use of a scientific or graphing calculator. Formula sheets will be permitted.
Essential Question(s): • **How do you find the square roots of numbers?** • **How do you use the distance and midpoint formulas?** • **How do you solve a problem by writing a proportion?**	**Enduring Understanding(s):** Students will be able to: • To find square roots of numbers • To classify real numbers • To use the Pythagorean Theorem • To identify right triangles • To find the distance between two points using the distance formula • To find the midpoint of a segment using the midpoint formula • To write a proportion from similar triangles

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	NJSLS:
1. Find the square roots of numbers. [*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. [*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., π^2).	**1. NJSLS.8.NS.A.1, NJSLS.8.NS.A.2**
2. Use the distance and midpoint formulas. [*Standard*] - Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.	**2. NJSLS.9-12.N-CN.B.6**
3. Solve a problem by writing a proportion. [*Standard*] - Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. [*Standard*] - Represent proportional relationships by equations.	**3. NJSLS.7.RP.A.2a, NJSLS.7.RP.A.2c**

Inter-Disciplinary Connections:

Real-World problem solving examples:
Using square roots to find the distance to a horizon line (p. 581), finding the height of a ladder while painting a house (p. 587), finding distance while hiking (p. 587), finding the length of stakes necessary for a tree (p. 588), finding the lengths of the diagonals of a quilt (p. 588), finding the distance across a canyon (p. 598), estimating the height of a tree (p. 600), estimating the length of the shadow of the Eiffel Tower (p. 601)

Inter-Disciplinary problem solving examples:
Carpentry (p. 586), architecture (p. 601)

Students will engage with the following text:

Prentice Hall Mathematics Pre-Algebra

Students will write:

Writing/Open-Ended Questions:
Explain how to estimate a square root (p. 582), explain how to form a right triangle (p. 588), explain how the midpoint formula uses averages (p. 596)

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 learning activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using Smart Board technologies will all be explored as a blend of learning strategies to promote critical thinking, problem solving and performance skills of all learners. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and projects.

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

Section 11.1:

Warm-up/Starting Options	**p. 580 check skills you'll need**
Practice and Apply	**p. 582-583 #1-36, 38, 54-65**
Resources	**Online Textbook Resource (algebra readiness puzzles 90 & 91, self-grading lesson quiz, graphing calculator procedure 1), practice workbook 11-1, enrichment 11-1**

Section 11.2:

Warm-up/Starting Options	**p. 584 check skills you'll need**
Practice and Apply	**p. 587-589 #1-4, 9-17, 28, 31-32, 38-51**
Resources	**Online Textbook Resource (algebra readiness puzzles 50 & 51, self-grading lesson quiz, graphing calculator procedure 2), practice workbook 11-2, enrichment 11-2**

Section 11.3:

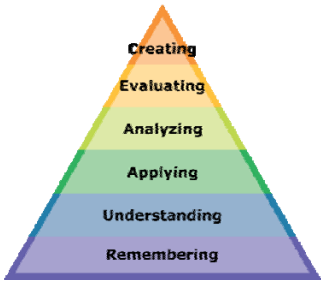
Warm-up/Starting Options	**p. 592 check skills you'll need**
Practice and Apply	**p. 595-596 #1-13, 15-17, 19, 20-30**
Resources	**Online Textbook Resource (self-grading lesson quiz, graphing calculator procedure 19), practice workbook 11-3, enrichment 11-3**

Section 11.4:

Warm-up/Starting Options	**p. 598 check skills you'll need**
Practice and Apply	**p. 600-601 #1-8, 10-11, 13-17, 20**
Resources	**Online Textbook Resource (self-grading lesson quiz), practice workbook 11-4, enrichment 11-4**

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 numerous activities and strategies including the following: teacher observations, students collaborating with peers, questioning strategies, student record-keeping, quizzes, exit/admit assignments, peer/self-assessments, learning/response logs, discussions and practice presentations.

Accommodations/Modifications:

As per IEP.

Summative Assessments:

The following assessments will be used to evaluate student learning, skill acquisition and academic achievement of the Standards of Mathematical Practice and the New Jersey Learning Standards for Mathematics listed under each chapter in the Geometry curriculum/syllabus at the conclusion of an instructional time period.

- Diagnostic Pre-Test
- Chapter Tests
- Periodic Benchmark Tests
- End-Of –Course Assessment
- Standardized Tests

Accommodations/Modifications:

As per IEP.

Performance Assessments:

Performance Tasks, Projects, Display of Student Work

Accommodations/Modifications:

As per IEP.

Black Horse Pike Regional School District Curriculum Template

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

Course Name: Introduction to Algebra 1

Course Number: 031200

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Introduction to Algebra / Chapter 12 – Data Analysis and Probability** **Grade Level(s):** **9**	**Unit Summary**: This chapter shows how to display data in different forms, such as frequency tables, line plots, and box-and-whisker plots. Students find probabilities for independent and dependent events and learn the differences between theoretical and experimental probabilities. They distinguish between permutations and combinations and calculate both. They also evaluate sampling plans for surveys and make estimates about populations. This chapter will be completed with the use of a scientific or graphing calculator.
Essential Question(s): • **How do you use graphs to represent data?** • **How do you find theoretical probability and experimental probability?** • **How do you find permutations and combinations?**	**Enduring Understanding(s):** Students will be able to: • To display data in frequency tables • To display data in line plots • To make box-and-whisker plots • To analyze data in box-and-whisker plots • To use a tree diagram and the counting principle to count possible choices • To find theoretical probability by counting outcomes • To calculate probabilities of independent events • To calculate probabilities of dependent events • To use permutations and combinations • To find experimental probability • To choose a sample for a survey of a population • To make estimates about populations

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	NJSLS:
1. Use graphs to represent data. [*Standard*] - Represent data with plots on the real number line (dot plots, histograms, and box plots). [*Standard*] - Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	**1. NJSLS.9-12.S-ID.A.1, NJSLS.9-12.S-ID.A.3**
2. Find theoretical probability and experimental probability. [*Standard*] - Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. [*Standard*] - Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent. [*Standard*] - Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. [*Standard*] - Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.	**2. NJSLS.7.SP.C.5, NJSLS.9-12.S-CP.A.2, NJSLS.9-12.S-CP.A.5, NJSLS.9-12.S-CP.B.6**
3. Find permutations and combinations. [*Standard*] - Use permutations and combinations to compute probabilities of compound events and solve problems.	**3. NJSLS.9-12.S-CP.B.9**

Inter-Disciplinary Connections:

Real-World problem solving examples:
Use line plots to display weekly earnings (p. 632), use box-and-whisker plots to display crops harvested (p. 635), using box-and-whisker plots to identify trends in prices (p. 638), using stem-and-leaf plots to compare winning times for Olympic speeds (p. 641), finding the probability of a winning lottery ticket (p. 651), finding all possible clothing combinations (p. 652), finding the probability that seeds will grow (p. 655), finding the probability of picking certain volunteers (p. 656), finding how many different orders are possible when playing music (p. 661), finding the probability of selecting a certain color car (p. 667), picking a survey plan to determine whether students recycle (p. 669), estimating the number of defective items expected in manufacturing (p. 670)

Inter-Disciplinary problem solving examples:
Baseball (p. 632), biology (p. 636), social studies (p. 637), biology (p. 640), meteorology (p. 657), geography (p. 660), sports (p. 671)

Students will engage with the following text:

Prentice Hall Mathematics Pre-Algebra

Students will write:

Writing/Open-Ended Questions:
Describe data sets that fit certain criteria (p. 633), explain finding quartiles (p. 638), write a problem to be solved using the counting principle (p. 652), compare and contrast independent and dependent (p. 657), explain the difference between permutations and combinations (p. 663), explain whether a game is fair (p. 668), explain how you determine the number of expected defective items (p. 671)

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 learning activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using Smart Board technologies will all be explored as a blend of learning strategies to promote critical thinking, problem solving and performance skills of all learners. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and projects.

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

Section 12.1:

Warm-up/Starting Options	**p. 630 check skills you'll need**
Practice and Apply	**p. 632-633 #1-19, 27-31, 36-37**
Resources	**Online Textbook Resource (self-grading lesson quiz, graphing calculator procedure 20), practice workbook 12-1, enrichment 12-1**

Section 12.2:

Warm-up/Starting Options	**p. 635 check skills you'll need**
Practice and Apply	**p. 638-639 #1-8, 10-11, 14-18, 23; p. 640-641 #1-13**
Resources	**Online Textbook Resource (self-grading lesson quiz, graphing calculator procedure 21), practice workbook 12-2, enrichment 12-2**

Section 12.4:

Warm-up/Starting Options	**p. 649 check skills you'll need**
Practice and Apply	**p. 652-653 #1-4, 9-15, 17-22**
Resources	**Online Textbook Resource (self-grading lesson quiz, graphing calculator procedure 16), practice workbook 12-4, enrichment 12-4**

Section 12.5:

Warm-up/Starting Options	**p. 654 check skills you'll need**
Practice and Apply	**p. 657-658 #1-32**
Resources	**Online Textbook Resource (self-grading lesson quiz), practice workbook 12-5, enrichment 12-5**

Section 12.6:

Warm-up/Starting Options	**p. 659 check skills you'll need**
Practice and Apply	**p. 662-663 #1-22, 20-38, 40**
Resources	**Online Textbook Resource (self-grading lesson quiz), practice workbook 12-6, enrichment 12-6**

Section 12.7:

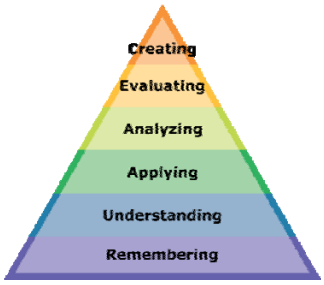
Warm-up/Starting Options	**p. 665 check skills you'll need**
Practice and Apply	**p. 667-668 #1-12, 14-15, 17-23**
Resources	**Online Textbook Resource (self-grading lesson quiz), practice workbook 12-7, enrichment 12-7**

Section 12.8:

Warm-up/Starting Options	**p. 669 check skills you'll need**
Practice and Apply	**p. 671-672 #1-21**
Resources	**Online Textbook Resource (self-grading lesson quiz), practice workbook 12-8, enrichment 12-8**

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 numerous activities and strategies including the following: teacher observations, students collaborating with peers, questioning strategies, student record-keeping, quizzes, exit/admit assignments, peer/self-assessments, learning/response logs, discussions and practice presentations.

Accommodations/Modifications:

As per IEP.

Summative Assessments:

The following assessments will be used to evaluate student learning, skill acquisition and academic achievement of the Standards of Mathematical Practice and the New Jersey Learning Standards for Mathematics listed under each chapter in the Geometry curriculum/syllabus at the conclusion of an instructional time period.

- Diagnostic Pre-Test
- Chapter Tests
- Periodic Benchmark Tests
- End-Of –Course Assessment
- Standardized Tests

Accommodations/Modifications:

As per IEP.

Performance Assessments:

Performance Tasks, Projects, Display of Student Work

Accommodations/Modifications:

As per IEP.

Black Horse Pike Regional School District Curriculum Template

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

Course Name: Introduction to Algebra 1

Course Number: 031200

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: **Introduction to Algebra / Chapter 13 – Nonlinear Functions and Polynomials** **Grade Level(s):** **9**	**Unit Summary**: In this chapter, students will learn to graph quadratic and absolute value functions. Students use tables, rules, and graphs to model exponential growth and decay. They identify and evaluate polynomials, and then add and subtract polynomials by combining like terms. Students use an area model to multiply polynomials. They use the distributive property to multiply two binomials and write a polynomial as the product of a monomial (GCF) and a polynomial. This chapter will be completed with the use of a graphing calculator.
Essential Question(s): • **How do you graph quadratic and absolute value functions?** • **How do you graph exponential growth and decay functions?** • **How do you perform operations with polynomials?**	**Enduring Understanding(s):** Students will be able to: • To graph quadratic functions • To graph absolute value functions • To use tables, rules, and graphs with functions modeling growth • To use tables, rules, and graphs with functions modeling decay • To identify polynomials • To evaluate polynomials • To add and subtract polynomials • To multiply a monomial by a polynomial • To write a polynomial as the product of a monomial and a polynomial • To multiply binomials

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable

Learning Target	NJSLS:
1. Graph quadratic and absolute value functions. [*Standard*} - Graph linear and quadratic functions and show intercepts, maxima, and minima. [*Standard*] - Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	**1. NJSLS.9-12.F-IF.C.7a, NJSLS.9-12.F-IF.C.7b**
2. Graph exponential growth and decay functions. [*Standard*] - Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	**2. NJSLS.9-12.F-IF.C.7e**
3. Perform 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.	**3. NJSLS.9-12.A-APR.A.1**

Inter-Disciplinary Connections:

Real-World problem solving examples:
Using quadratic functions to find the maximum area of an animal pen (p. 695), using exponential decay to determine how long medication stays in the body (p. 700), finding the value of a stock that is increasing exponentially (p. 701), using quadratics to determine the height at which fireworks explode (p. 705), use quadratics to determine school enrollment (p. 707), finding area using polynomials (p. 715)

Inter-Disciplinary problem solving examples:
Biology (p. 701), sports (p. 706), sports (p. 717)

Students will engage with the following text:

Prentice Hall Mathematics Pre-Algebra

Students will write:

Writing/Open-Ended Questions:
Compare and contrast quadratics (p. 696), compare and contrast exponential growth and decay (p. 702), write a descriptions of other words that use the prefixes of polynomials and explain the relationship (p. 706), compare and contrast adding polynomials with adding integers (p. 713), explain the similarities between multiplying different types of polynomials (p. 721)

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 learning activities. Investigating algebra activities, modeling examples, using real-life application, using note-taking strategies, and using Smart Board technologies will all be explored as a blend of learning strategies to promote critical thinking, problem solving and performance skills of all learners. Other learning experiences could include alternative lesson openers, math and history applications, problem-solving workshops, interdisciplinary applications and projects.

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

Section 13.2:

Warm-up/Starting Options	**p. 694 check skills you'll need**
Practice and Apply	**p. 696-697 #1-28, 30, 34-41**
Resources	**Online Textbook Resource (algebra readiness puzzles 88, self-grading lesson quiz, graphing calculator procedures 4, 5, 6, & 10), practice workbook 13-2, enrichment 13-2**

Section 13.3:

Warm-up/Starting Options	**p. 699 check skills you'll need**
Practice and Apply	**p. 701-702 #1-39**
Resources	**Online Textbook Resource (self-grading lesson quiz, graphing calculator procedure 2), practice workbook 13-3, enrichment 13-3**

Section 13.4:

Warm-up/Starting Options	**p. 704 check skills you'll need**
Practice and Apply	**p. 706-707 #1-39, 42-48, 52, 54-64; p. 709 #1-29**
Resources	**Online Textbook Resource (algebra readiness puzzles 73 & 74, self-grading lesson quiz), practice workbook 13-4, enrichment 13-4**

Section 13.5:

Warm-up/Starting Options	**p. 710 check skills you'll need**
Practice and Apply	**p. 712-714 #3-26, 28-38, 43-53**
Resources	**Online Textbook Resource (self-grading lesson quiz), practice workbook 13-5, enrichment 13-5**

Section 13.6:

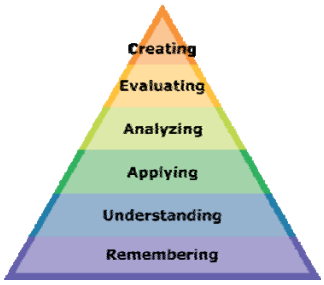
Warm-up/Starting Options	**p. 715 check skills you'll need**
Practice and Apply	**p. 717-718 #1-41, 44-53, 60-67**
Resources	**Online Textbook Resource (algebra readiness puzzles 75, self-grading lesson quiz), practice workbook 13-6, enrichment 13-6**

Section 13.7:

Warm-up/Starting Options	**p. 719 check skills you'll need**
Practice and Apply	**p. 721-722 #10-33, 38-46**
Resources	**Online Textbook Resource (algebra readiness puzzles 76 & 77, self-grading lesson quiz), practice workbook 13-7, enrichment 13-7**

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 numerous activities and strategies including the following: teacher observations, students collaborating with peers, questioning strategies, student record-keeping, quizzes, exit/admit assignments, peer/self-assessments, learning/response logs, discussions and practice presentations.

Accommodations/Modifications:

As per IEP.

Summative Assessments:

The following assessments will be used to evaluate student learning, skill acquisition and academic achievement of the Standards of Mathematical Practice and the New Jersey Learning Standards for Mathematics listed under each chapter in the Geometry curriculum/syllabus at the conclusion of an instructional time period.

- Diagnostic Pre-Test
- Chapter Tests
- Periodic Benchmark Tests
- End-Of –Course Assessment
- Standardized Tests

Accommodations/Modifications:

As per IEP.

Performance Assessments:

Performance Tasks, Projects, Display of Student Work

Accommodations/Modifications:

As per IEP.