



Manhattan Center for Science and Math High School

Mathematics Department Curriculum

Content/Discipline

**Algebra 1**

Marking Period 1 - Unit 1

Foundations of Algebra

Topic and Essential Question

**How do you interpret, evaluate and write algebraic expressions that model real-world situations?**

Unit/Topics

- How do we use the symbol of algebra and how do we evaluate algebraic expressions?
- How do we perform operations over the set of signed numbers?
- How do we add/subtract algebraic fractions?
- How do we evaluate expressions containing exponents?
- How do we evaluate expressions containing square roots and how do we classify real numbers?
- How do we use order of operations to simplify expressions?
- What are the properties of real numbers?
- Review/Test (same day)

SWBAT/Objectives

- Students will be able to evaluate and simplify expressions
- Students will be able to translate between words and algebra
- Students will be able to identify and apply the properties of real numbers
- Students will be able to classify numbers within the real number system
- Students will be able to use the order of operations to simplify expressions
- Students will be able to combine like terms

Vocabulary/Key Terms

Additive inverse, multiplicative inverse, coefficient, constant, coordinate plane, irrational numbers, like terms, origin, rational numbers, variable, reciprocal, power, base, exponents, real numbers, natural numbers, whole numbers, integers, rational numbers, terminating decimals, repeating decimals, order of operations

Assessments:

Formative Assessments:

- Do Now responses
- Teacher/student exchange
- Questioning during class discussions
- Exit Slips
- Homework
- Notebook check/quiz

Summative Assessment / Performance Task:

Unit test

**Common Core Standards:**

**N.Q.1** Use units as a way to understand... and to guide the solution of multi step problems...  
**N.Q.2** Define appropriate quantities for the purpose of descriptive modeling.  
**A.SSE.1** Interpret expressions that represent a quantity in terms of its context.  
**A.SSE.1a** Interpret parts of an expression, such as terms, factors, and coefficients.  
**A.SSE.1b** Interpret complicated expressions by viewing one or more of their parts as a single entity.  
**A.SSE.2** Use the structure of an expression to identify ways to rewrite it.  
**A.REI.1** Explain each step in solving a simple equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.  
**HSN-RN.B.3.** Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.  
**HSA-APR.A.1.** Understanding 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.

**Differentiated Instruction:**

Flexible grouping  
Cooperative Learning  
Visual Learning – SMART Board, White board  
Visual and interactive questions using the Smart board

**ELLs:**

Use of dictionaries, translated assessments, translated handouts, visuals/graphic organizer that reinforce spoken word

**SWDs:**

Small group instruction, modified assessments, skeleton – note handouts, mnemonic strategies, computer assisted instruction, peer mediation

**High-Achievers:**

Challenge and bonus questions, accelerate pacing

**Resources/Books**

Explorations in CORE Math for Common Core  
Big Ideas Textbook

**Homework:**

- (1.1) How do we use the symbol of algebra and how do we evaluate algebraic expressions?  
**HW #1:** Handout
- (1.2) How do we perform operations over the set of signed numbers?  
**HW #2:** Handout
- (1.3) How do we add/subtract algebraic fractions?  
**HW #3:** Handout
- (1.4) How do we evaluate expressions containing exponents?  
**HW #4:** Handout
- (1.5) How do we evaluate expressions containing square roots and how do we classify real numbers?  
**HW #5:** Handout
- (1.6) How do we use order of operations to simplify expressions?  
**HW #6:** Handout
- (1.7) What are the properties of real numbers?  
**HW #7:** Handout



Manhattan Center for Science and Math High School  
Mathematics Department Curriculum

Content/Discipline

**Algebra 1**

Marking Period 1 - Unit 2

**Equations**

**Topic and Essential Question**

- What are some different methods for solving linear equations?
- How can you use properties to justify solutions to equations that involve multiplication and division?
- How can you use properties to justify solutions to multi-step equations?
- How can you use properties to justify solutions to equations with variables on both sides?
- How do you solve literal equations and rewrite formulas?
- How can you use units to help solve real-world problems?
- How can you use units to write and solve proportions?

**Unit/Topics**

- How do we solve one-step equations?
- How do we solve two-step equations?
- How do we solve multi-step equations?
- How do we solve equations with variables on both sides?
- How do we solve an equation involving absolute value?
- How do we solve literal equations for a variable?
- How do we use LESCA to solve word problems?
- How do we use LESCA to solve consecutive integer problems?
- What are rates, ratios, and proportions? How do we convert between units?
- How can we apply our skills from Unit 2?
- Review
- Test

**SWBAT/Objectives**

- Students will be able to solve one-step equations in one variable by using addition and subtraction.
  - Students will be able to solve one-step equations in one variable by using multiplication and division
  - Students will be able to solve equations in one variable that contain more than one operation
  - Students will be able to solve equations in one variable that contain variables on both sides
  - Students will be able to solve a formula for a given variable
  - Students will be able to solve an equation in two or more variables for one of the variables
  - Students will be able to solve an equation that contains absolute value expressions
  - Students will be able to write and use ratios, rates, and unit rates
  - Students will be able to write and solve proportions
- 
- Students will be able to use proportions to solve problems involving geometric figures
  - Students will be able to use proportions and similar figures to measure objects indirectly
  - Students will be able to solve problems involving percent

**Vocabulary/Key Terms** Equation, formula, identity, indirect measurement, literal equation, percent, percent change, proportion, ratio, unit rate, scale, conversion factor, cross products, scale model, scale drawing, solution of an equation, inverse operations, contradiction, similar, corresponding sides, discount, markup

**Assessments:**

**Formative Assessments:**

- Quizzes
- Do Now responses
- Teacher/student exchange
- Questioning during class discussions
- Exit Slips
- Homework
- Notebook check quiz

**Summative Assessment / Performance Task:**

- Equation project
- Unit Test

**Common Core Standards:**

**A.REI.1** Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.  
**A.REI.3** Solve linear equations...in one variable...  
**A.SSE.2** Use the structure of an expression to identify ways to rewrite it...  
**A.CED.2** Create equations in two or more variables to represent relationships between quantities...  
**A.CED.4** Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations...  
**N.Q.1** Use units as a way to understand...and to guide the solution of multi-step problems.  
**A.SSE.1** Interpret expressions that represent a quantity in terms of its context.  
**A.CED.1** Create equations...in one variable and use them to solve problems

**Differentiated Instruction:**

Flexible grouping  
Cooperative Learning  
Visual Learning – SMART Board, White board  
Visual and interactive questions using the Smart board

**ELLs:**

*ELL* – use of dictionaries, translated assessments, translated handouts, visuals/graphic organizer that reinforce spoken word

**SWDs:**

*SWD* – small group instruction, modified assessments, skeleton – note handouts, mnemonic strategies, computer assisted instruction, peer mediation

**High-Achievers:**

*Higher Achieving* - Challenge and bonus questions, accelerate pacing

**Resources/Books**

Explorations in CORE Math for Common Core  
Big Ideas Textbook

**Homework:**

**(2.1)** What is an equation? How do we solve one-step equations?

**HW #8:** pp. 8/ #1, 2, 5 – 11(odd), 22 – 34(even), 39

**(2.2)** How do we solve two-step equations?

**HW #9:** pp. 16/ #3 – 12 *include checks*

**(2.3)** How do we solve multi-step equations?

**HW #10:** pp. 16 / #17 – 21, 25, 26, 41, 44

**(2.4)** How do we solve equations we variables on both sides?

**HW #11:** pp. 23/ #3 – 6, 10 – 13, 25

**(2.5)** How do we solve an equation involving absolute value expression?

**HW #12:** pp. 32/ #1, 3, 4, 6, 11, 12, 35 – 37, 49

**(2.6)** How do we solve literal equations for a variable?

**HW #13:** pp. 40/ #3 – 9(odd), 27 – 30, 33

**(2.7)** How do we use LESCA to solve word problems?

**HW #14:** Handout

**(2.8)** How do we use LESCA to solve consecutive integer problems?

**HW #15:** Handout

**(2.9)** What are rates, ratios, and proportions? How do we convert between units?

**HW #16:** Handout

**(2.10)** How do we apply our skills from Unit 2?

**HW #17:** pg. 26/ #12 – 16, 19

pg. 41/ #15, 31, 51 – 54

**Review**

**Unit 2 Test**



Manhattan Center for Science and Math High School  
Mathematics Department Curriculum

Content/Discipline

**Algebra 1**

Marking Period 2 - Unit 3

**Inequalities**

**Topic and Essential Question**

- **How can patterns, relations, and functions be used as tools to best describe and help explain real-life relationships?**

**Unit/Topics**

- How do we write and graph inequalities? How do we solve one-step inequalities?
- How do we solve multi-step inequalities?
- How do we solve inequalities with variables on both sides?
- How do we solve compound inequalities involving “and”?
- How do we solve compound inequalities involving “or”?
- How do we solve inequalities involving absolute values?
- How do we use set-builder notation and interval notation to write the solution set of an inequality?
- How do we solve verbal problems with inequalities?
- Review
- Test

**SWBAT/Objectives**

- Write an inequality from a verbal description
- Write and use inequalities to solve verbal problems
- Graph linear inequalities on a number line
- Use set-builder notation to write the solution set of an inequality
- Solve a compound inequality
- Determine solutions of compound inequality that make the inequality true

**Vocabulary/Key Terms**

Inequality, Less than, greater than, less than or equal to, greater than or equal to, included, not included, compound inequality, conjunction, intersection, set-builder notation, interval notation, sets, roster form

**Assessments:**

**Formative Assessments:**

- Quizzes
- Do Now responses
- Teacher/student exchange
- Questioning during class discussions
- Exit Slips
- Homework
- Notebook check quiz

**Summative Assessment / Performance Task:**

- Unit Test

**Common Core Standards:**

**A.CED.1** Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions  
**A.CED.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context  
**A.REI.1** Explain each step in solving a simple inequality as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method  
**A.REI.3** Solve linear equations and inequalities in one variable, including equations with coefficients represented by letter

**Differentiated Instruction:**

Flexible grouping  
Cooperative Learning  
Visual Learning – SMART Board, White board  
Visual and interactive questions using the Smart board

**ELLs:**

*ELL* – use of dictionaries, translated assessments, translated handouts, visuals/graphic organizer that reinforce spoken word

**SWDs:**

*SWD* – small group instruction, modified assessments, skeleton – note handouts, mnemonic strategies, computer assisted instruction, peer mediation

**High-Achievers:**

*Higher Achieving* - Challenge and bonus questions, accelerate pacing

**Resources/Books**

Explorations in CORE Math for Common Core  
Big Ideas Textbook

**Homework:**

- (3.1) How do we write and graph inequalities? How do we solve one-step inequalities?  
**HW #18:** pp. 58/ #2, 3, 6 – 10, 15, 16, 29 – 31  
pp. 65/ #7 – 12, 27  
pp. 71/ #1, 3, 4, 11, 12
- (3.2) How do we solve multi-step inequalities?  
**HW #19:** pp. 77/ #1, 3- 6 , 7 – 12
- (3.3) How do we solve inequalities with variables on both sides?  
**HW #20:** pp. 77/ #17 – 20, 23, 24, 29
- (3.4) How do we solve compound inequalities involving “and”?  
**HW #21:** pp. 85/ #7, 13, 14, 18, 19, 21, 25
- (3.5) How do we solve compound inequalities “or”?

**HW #22:** pp. 85/ #15 – 17, 20, 22

**(3.6)** How do we solve inequalities involving absolute values?

**HW #23:** pp. 91/ # 3, 5 – 10, 21, 38

**(3.7)** How do we use set-builder notation and interval notation to write the solution set of an inequality?

**HW #24:** Handout

**(3.8)** How do we solve verbal problems with inequalities?

**HW #25:** Handout

**Review**

**Unit 3 Test**





## Manhattan Center for Science and Math High School

### Mathematics Department Curriculum

Content/Discipline

**Algebra 1**

Marking Period 2 - Unit 4

Introduction to Functions

Topic and Essential Question

- How can patterns, relations, and functions be used as tools to best describe and help explain real-life relationships?
- What is a function?
- How do functions relate to mathematics?

Unit/Topics

- How do we use graphs to relate two quantities?
- What is the difference between a relation and a function? How do we identify the domain and range?
- How do we write equations of functions from tables or descriptions?
- What is a parent function?
- How do we use the coordinate plane to graph ordered pairs?
- How do we graph functions using the table method?
- How do we graph functions using a graphing calculator?
- Review
- Test

SWBAT/Objectives

- Students will be able to write an equation from a verbal description
- Students will be able to write an inequality from a verbal description
- Students will be able to write and use equations to solve verbal problems
- Students will be able to graph ordered pairs on a coordinate grid
- Students will be able to represent mathematical relationships using graphs
- Students will be able to determine if a relation is a function
- Students will be able to identify the domain and range of a function
- Students will be able to write equations from descriptions and tables
- Students will be able to write equations using function notation
- Students will be able to use a table of values to graph a function
- Students will be able to use a graphing calculator to graph a function
- Students will be able to analyze how different transformations affect a graph

Vocabulary/Key Terms

linear relationships, translate; dependent variable; independent variable; profit; co-ordinate grid; x- and y-axis; quadrants, domain, range

Assessments:

**Formative Assessments:**

- Quizzes
- Do Now responses
- Teacher/student exchange

**Summative Assessment:**

Unit test

- Questioning during class discussions
- Exit tickets
- Homework
- Notebook check

<b>Common Core Standards:</b>	<p><b>A.CED.1</b> Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions</p> <p><b>A.CED.2</b> Create equations in two variables to represent relationships between quantities</p> <p><b>A.CED.3</b> Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context</p> <p><b>A.REI.3</b> Solve linear equations and inequalities in one variable, including equations with coefficients represented by letter</p> <p><b>A.REI.10</b> Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane</p> <p><b>F.LE.2</b> Construct linear functions given a graph, a description of a relationship, or two input-output pairs</p> <p><b>F.IF.4</b> For a function that models a relationship between two quantities, interpret key features if graphs.. and sketch graphs showing key features given a verbal description of the relationship</p>
<b>Differentiated Instruction:</b>	<p>Flexible grouping</p> <p>Cooperative Learning</p> <p>Visual Learning – SMART Board, White board</p> <p>Visual and interactive questions using the Smart board</p>
<b>ELLs:</b>	<i>ELL</i> – use of dictionaries, translated assessments, translated handouts, visuals/graphic organizer that reinforce spoken word
<b>SWDs:</b>	<i>SWD</i> – small group instruction, modified assessments, skeleton – note handouts, mnemonic strategies, computer assisted instruction, peer mediation
<b>High-Achievers:</b>	<i>Higher Achieving</i> - Challenge and bonus questions, accelerate pacing
<b>Resources/Books</b>	<p>Explorations in CORE Math for Common Core</p> <p>Big Ideas Textbook</p>

- Homework:**
- (4.1) How do we use graphs to relate two quantities?  
**HW #26:** pp. 117/ # 3, 27, 28, 37a&b, 40, 42  
 pp. 144/ #50a
- (4.2) What is the difference between a relation and a function? How do we identify the domain and range?

**HW #27:** pp. 108/ #3 – 16

**(4.3)** How do we write equations of functions from tables or descriptions?

**HW #28:** pp. 108/ # 17, 18a, 21, 22, 27, 28, 35 – 37  
pp. 125/ #2, 3 – 5

**(4.4)** What is a parent function?

**HW #29:** pp. 117/ # 2, 5 – 14, 17 – 20, 25, 58 – 60

**(4.5)** How do we use the coordinate plane to graph ordered pairs?

**HW #30:** Handout

**(4.6)** How do we graph functions using the table method?

**HW #31:** Handout

**(4.7)** How do we graph functions using a graphing calculator?

**HW #32:** Handout

**Review**

**Unit 4 Test**



Manhattan Center for Science and Math High School  
Mathematics Department Curriculum

Content/Discipline

**Algebra 1**

Marking Period 2 -Unit 5

**Linear Functions**

**Topic and Essential Question**

- **What is a discrete linear function? How are discrete and continuous linear functions alike and how are they different?**
- **What is the slope of a linear function and how can we use it to graph linear functions?**
- **How can you represent relationships using linear functions?**

**Unit/Topics**

- What are x-intercepts and y-intercepts, and how do we use them to graph linear functions?
- What is the slope of the line? How do we find it from a graph?
- How do we write and graph an equation of a line in slope-intercept form?
- How do we write and graph an equation of a line given the slope and a point?
- How do we use different forms of linear equations?
- How do we find slopes of parallel and perpendicular lines?
- How do we perform transformations of linear functions?
- Review
- Test

**SWBAT/Objectives**

- Students will be able to identify linear functions given a table of values
- Students will be able to identify linear functions given its graph
- Students will be able to identify linear functions given its equation
- Students will be able to determine x and y-intercepts of a given graph
- Students will be able to find slope using the slope formula
- Students will be able to plot a line given the slope
- Students will be able to find the slope of a line, given its equation
- Students will be able to write the equation of a line in  $y=mx + b$  form
- Students will be able to graph a line given its equation
- Students will be able to write the equation of a line, given its slope and the coordinates of a point on the line
- Students will be able to find slope of a line parallel to a given equation
- Students will be able to find slope of a line perpendicular to a given equation
- Students will be able to write the equation of a line parallel to the x- or y-axis
- Students will be able to perform transformations of a linear function

**Vocabulary/Key Terms**

Linear function, Rate of change, rise, run, slope, constant function, x-intercept, y-intercept, standard form of a line, direct variation, constant, point slope form, parallel, perpendicular, transformation

**Assessments:**

**Formative Assessments:**

- Quizzes
- Do Now responses

**Summative Assessment:**

- Unit Test
- Cell Phone Project

- Teacher/student exchange
- Questioning during class discussions
- Exit tickets
- Homework
- Binder Check

**Common Core Standards:**

**A.REI. 10.** Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane

**N.Q.1** – Use units as a way to understand problems and to guide solutions to multi-step problems; choose and interpret scale and the origin in graphs and data displays

**F.IF.1** – 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 the domain, then  $f(x)$  denotes the output of  $f$  corresponding to the input  $x$ . The graph of  $f$  is the graph of the equation  $f(x) = y$

**F.IF.2** – Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

**F.IF.3** – Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.

**F.IF.4** – For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graph showing key features given a verbal description of the relationship

**F.IF.5** – Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.

**F.IF.6** – Calculate and interpret the average rate of change of a function (presented symbolically or in a table) over a specified interval. Estimate the rate of change from a graph

**CC.9-12.F.IF.7** – Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

**F.IF.7a** – Graph linear... functions and show intercepts

**F.BF.1** – Write a function that describes a relationship between two quantities

**F.LE.2** – Construct linear functions, given a graph, a description of a relationship, or two input-output pairs (include reading a table)

**F.BF.3** – Identify the effect on the graph of replacing  $f(x)$  by  $f(x) + k$  and  $f(x + k)$  for specific values of  $k$ ; find the value of  $k$  given the graphs

**F.LE.5** – Interpret the parameters in a linear function in terms of a context

**Differentiated Instruction:**

Flexible grouping  
 Cooperative Learning  
 Visual Learning – SMART Board, White board  
 Visual and interactive questions using the Smart board

**ELLs:**

*ELL* – use of dictionaries, translated assessments, translated handouts, visuals/graphic organizer that reinforce spoken word

**SWDs:**

*SWD* – small group instruction, modified assessments, skeleton – note handouts, mnemonic strategies, computer assisted instruction, peer mediation

**High-Achievers:**

*Higher Achieving* - Challenge and bonus questions, accelerate pacing

**Resources/Books**

Explorations in CORE Math for Common Core  
 Big Ideas Textbook  
 Graphing calculator

**Homework:**

**(5.1)** What are x-intercepts and y-intercepts, and how do we use them to graph linear functions?

**HW #33:** pp. 133/ # 1, 3, 4, 7 – 10, 25, 29 – 32

**(5.2)** What is the slope of a line? How do we find it?

**HW #34:** pp. 141/ #5 – 12, 13, 40, 41

**(5.3)** How do we write and graph an equation of a line in slope-intercept form?

**HW #35:** pp. 141/ # 3, 4, 15 – 18

pp. 179/ # 5 – 7, 9, 10, 27

**(5.4)** How do we write and graph an equation of a line given the slope and a point?

**HW #36:** pp. 185/ #1, 3 – 5, 11 – 14

**(5.5)** How do we use different forms of linear equations?

**HW #37:** Worksheet

**(5.6)** How do we find slopes of parallel and perpendicular lines?

**HW #38:** pp. 191/ # 2, 5, 9, 10, 19, 20, 23, 33 – 35

**(5.7)** How do we describe transformations on linear functions?

**HW #39:** pp. 151/ #5, 6, 13, 14, 55 – 59

**Review**

**Unit 5 Test**



## Manhattan Center for Science and Math High School

### Mathematics Department Curriculum

Content/Discipline

#### Algebra 1

Marking Period 3 - Unit 6

#### Systems of Linear Equations and Inequalities

#### Topic and Essential Question

- What does it mean to be the solution of a system of equations?
- How do we graph linear equations?
- How can we determine if a value/point is in the solution set?
- Look at the graphs of the two equations. Does the linear system have exactly one solution? How do you know?
- How do we graph linear inequalities?

#### Unit/Topics

- What are systems of equations? How do we solve systems of linear equations by graphing?
- How do we solve systems of linear equations by substitution?
- How do we solve systems of linear equations by elimination?
- What are special systems?
- Practice/Quiz
- How do we solve verbal problems leading to solving a system of linear equations algebraically?
- How do we graph and solve linear inequality in two variables?
- How do we graph and solve systems of linear inequalities in two variables?
- How do we graph and solve systems of inequalities that model word problems?
- Review
- Test

#### SWBAT/Objectives

- Students will be able to graph linear equations
- Students will be able to solve systems of equations by substitution
- Students will be able to solve systems of equations by elimination
- Students will be able to solve systems of equations from word problems
- Students will be able to graph linear inequalities
- Students will be able to identify the solution set of linear inequalities
- Students will be able to solve systems of linear inequalities

#### Vocabulary/Key Terms

intersection, systems of equations, linear, solution set, substitution method, elimination method, constraint

#### Assessments:

#### Formative Assessments:

- Quizzes
- Do Now responses
- Teacher/student exchange
- Questioning during class discussions

#### Summative Assessment / Performance Task:

- Unit test
- Interdisciplinary Writing Assignment
- Performance Task, National Treasure

- Exit tickets
- Homework
- Binder Check

<b>Common Core Standards:</b>	<p><b>A.REI.4</b> Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.</p> <p><b>A.REI.5</b> Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.</p> <p><b>A.REI.6</b> Solve systems of linear equations...approximately (e.g. with graphs), focusing on pairs of linear equations in two variables.</p> <p><b>AREI.12</b> Graph the solutions to a linear inequality in two variables as half-plane (excluding the boundary in the case of a strict inequality)...</p> <p><b>.N.Q.1</b> Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently....</p> <p><b>N.Q.2</b> Define appropriate quantities for the purpose of descriptive modeling. *</p> <p><b>A.CED.2</b> Create equations in two or more variables to represent relationships between quantities...</p>
<b>Differentiated Instruction:</b>	choice of homework problems, choice on exit ticket, heterogeneous grouping
<b>ELLs:</b>	<i>ELL</i> – use of dictionaries, translated assessments, translated handouts, visuals/graphic organizer that reinforce spoken word
<b>SWDs:</b>	<i>SWD</i> – small group instruction, modified assessments, skeleton – note handouts, mnemonic strategies, computer assisted instruction, peer mediation
<b>High-Achievers:</b>	<i>Higher Achieving</i> - Challenge and bonus questions, accelerate pacing
<b>Resources/Books</b>	Explorations in CORE Math for Common Core Big Ideas Textbook

- Homework:**
- (6.1) What are systems of equations? How do we solve systems of linear equations by graphing?  
**HW #40:** pp. 239/ #3, 4, 9, 10, 14, 15, 31, 34
- (6.2) How do we solve systems of linear equations by substitution?  
**HW #41:** pp. 245/ #9, 10, 13 – 16, 18
- (6.3) How do we solve systems of linear equations by elimination?



**HW #42:** pp. 251/ # 3, 4, 5, 11, 14, 16

**(6.4)** What are special systems of linear equations?

**HW #43:** pp. 257/ #1, 2, 3 – 8, 9 – 11

**(6.5)** How do we solve verbal problems leading to solving a system of linear equations algebraically?

**HW #44:** Worksheet

**(6.6)** How do we graph and solve linear inequality in two variables?

**HW #45:** pp. 271/ #1, 3 – 5, 19, 21, 25 – 28, 31, 32, 35, 37

**(6.7)** How do we graph and solve systems of linear inequalities in two variables?

**HW #46:** pp. 278/ #7, 8, 12, 13, 15, 16, 28

**(6.8)** How do we graph and solve systems of inequalities that model word problems?

**HW #47:** pp. 279/ # 29, 30, 31, 40

**Review**

**Unit 6 Test**



Manhattan Center for Science and Math High School

Mathematics Department Curriculum

Content/Discipline

**Algebra 1**

Marking Period 3 - Unit 7

**Exponents and Exponential Functions**

Topic and Essential Question

- **How do exponential functions operate?**

Unit/Topics

- How do we evaluate and simplify numeric expressions with integer exponents?
- How can we write and evaluate an  $n$ th root of a number?
- How do we use multiplication properties of exponents to simplify expressions?
- How do we use division properties of exponents to simplify expressions?
- What are characteristics of the graph of an exponential function?
- How do we solve problems involving exponential growth and decay?
- How do we compute compound interest?
- Review
- Test

SWBAT/Objectives

- Students will be able to combine like terms
- Students will be able to simplify expressions with exponents (integer and rational)
- Students will be able to evaluate expressions with rational exponents
- Students will be able to multiply monomials
- Students will be able to divide monomials
- Students will be able to identify characteristics of an exponential equation
- Students will be able to write the equation for a given exponential graph
- Students will be able to evaluate growth and decay problems
- Students will be able to evaluate compound interest

Vocabulary/Key Terms

Like terms, Coefficient, Constant, Rational exponent, Expression, Variable, Exponent, Monomial, Exponential growth/decay, compound interest, principal

Assessments:

Formative Assessments:

- Quizzes
- Do Now responses
- Teacher/student exchange
- Questioning during class discussions
- Exit tickets
- Homework

Summative Assessment / Performance Task:

Unit test

- Binder Check

**Common Core Standards:**

**A.APR.1** 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  
**N.RN.1** Explain how the definition of the meaning of rational exponents follows from the extending properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents  
**N.RN.2** Rewrite expressions involving radicals and rational exponents using the properties of exponents  
**A.SSE.1a** Interpret parts of an expression, such as terms, factors, and coefficients

**Differentiated Instruction:**

choice of homework problems, choice on exit ticket, heterogeneous grouping

**ELLs:**

*ELL* – use of dictionaries, translated assessments, translated handouts, visuals/graphic organizer that reinforce spoken word

**SWDs:**

*SWD* – small group instruction, modified assessments, skeleton – note handouts, mnemonic strategies, computer assisted instruction, peer mediation

**High-Achievers:**

*Higher Achieving* - Challenge and bonus questions, accelerate pacing

**Resources/Books**

Explorations in CORE Math for Common Core  
 Big Ideas Textbook

**Homework:**

- (7.1) How do we evaluate and simplify numeric expressions with integer exponents?  
**HW #48:** pp. 298/ #5 – 12, 13 – 16
  
- (7.2) How can we use multiplication properties of exponents to simplify expressions?  
**HW #49:** pp. 298/ #25 – 30, 35, 41, 42
  
- (7.3) How do we use division properties of exponents to simplify expressions?  
**HW #50:** pp. 298/ #23, 24, 31, 32, 36, 39, 40, 44, 57
  
- (7.4) How can we write and evaluate an  $n$ th root of a number?  
**HW #51:** pp. 303/ #2, 7 – 10, 16, 17, 19 – 21, 30, 33
  
- (7.5) What are characteristics of the graph of an exponential function?  
**HW #52:** pp. 310/ #5 – 8, 15 – 18, 21 – 27, 31, 32
  
- (7.6) How do we solve problems involving exponential growth and decay?

**HW #53:** pp. 319/ #1, 3, 7, 8, 13 – 15, 17, 21, 22, 27 – 29, 41 – 44

(7.7) How do we compute compound interest?

**HW #54:** pp. 321/ #57 – 60, 66, 68

**Review**

**Unit 7 Test**