Grade: 6 Unit: 3	Expressions and Equation	7 Weeks
Progression		
5th Grade	Students learned to use parentheses in numerical expressions and evaluate expressions with these symbols. Wrote simple expressions that record calculations with numbers and interpret numerical expressions without evaluating them. Generated two numerical patterns using two given rules. Identified apparent relationships between corresponding terms. Formed ordered pairs consisting of corresponding terms from the two patterns and graph the ordered pairs on a a coordinate plane.	
6th Grade	**Students will learn to:** **Apply and extend previous understandings of arithmetic to algebraic expressions.** **Reason and solve one-variable equations and inequalities** **Represent and analyze quantitative relationships between dependent and independent variables**	
7th Grade	Students will extend their work: use properties of operations to generate equivalent expression solve real-life and mathematical problems using numerical algebraic expressions and equations	

STUDENT LEARNING GOALS

Mathematics Standards *(Appendices A & B)*

CCSS.MATH.CONTENT.6.EE.A.1
Write and evaluate numerical expressions involving whole-number exponents.

CCSS.MATH.CONTENT.6.EE.A.2.A

Write expressions that record operations with numbers and with letters standing for numbers.

CCSS.MATH.CONTENT.6.EE.A.2.B

Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. CCSS.MATH.CONTENT.6.EE.A.2.C

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).

CCSS.MATH.CONTENT.6.EE.A.3

Apply the properties of operations to generate equivalent expressions.

CCSS.MATH.CONTENT.6.EE.A.4

Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).

CCSS.MATH.CONTENT.6.EE.B.5

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.

CCSS.MATH.CONTENT.6.EE.B.6

Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

CCSS.MATH.CONTENT.6.EE.B.7

Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.

CCSS.MATH.CONTENT.6.EE.B.8

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.

Represent and analyze quantitative relationships between dependent and independent variables.

CCSS.MATH.CONTENT.6.EE.C.9

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. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.

Interdisciplinary Standards	
Technology Integration *(Appendix C)*	**21st Century Skills** *(Appendix D)*
IS1. Information Strategies IS2. Information Use	TCS1. Use of Information TCS5. Problem Solving

Key Vocabulary	
(include vocab from RCC) **Base** **Exponent** **Exponential expression** **Variable** **Term** **Variable term**	**Commutative property of addition** **Associative property of addition** **Distributive property** **Like terms** **Equation** **Inequality** **Dependent variable** **Independent variable**

Enduring Understandings

- I can evaluate numerical expressions that contain exponents, for example 2^4 X 6 = 22
- I can interpret and evaluate algebraic expressions, for example 2(8+7) means twice the sum of 8 and 7
- I can solve equations, for example: if 3 = 1/2k then k = 6
- Solve inequalities, for example: if 3X ≥ 15 then X≥ 5
- Use equations and inequalities to solve word problems
- Write equations to show the relationship between a dependent and independent variables

Essential Questions

- How can I interpret and evaluate numerical and algebraic expressions?
- How can I solve equations and inequalities?
- How can I write equations and inequalities to solve word problems?
-

Assessment Plan	
Summative Assessment(s)/Performance Based Assessments including 21st Century Learning	**Formative and Diagnostic Assessment(s)**
RCC Interim Assessment, Student p 216 -217 RCC Performance Task, Student p 218	STAR Math Assessment (Fall) RCC Embedded Tasks and Assessments

Learning Plan Components	
Text	**Ready Common Core Mathematics Instruction 2**, 2014, Curriculum Associates, ISBN: 978-0-7609-8637-0
Print	**Ready Common Core Mathematics Teacher Resource Book 2**, 2014, Curriculum Associates, ISBN: 978-0-7609-8644-8
Electronic	www.teacher-toolbox.com www.stratfordmath.wikispaces.com www.xtramath.org
Week 1	Students will: • Write numerical expressions involving whole-number exponents • Evaluate numerical expressions involving whole-number exponents

Lessons	Tasks / Activities	Worksheets	Technology
RCC Lesson 15: Numerical Expression with Exponents	Visual (160) Hands On (162) Differentiated (166) Concept Extension Real World	CC Practice (152 – 153)	Teacher Toolbox Ready Lessons Tools for Instruction Interactive Tutorials

Week 2	Students will: • Write, read and evaluate variable expressions • Apply the order of operations on expressions with variables, including those with exponents. • Translate an expression from its word form to an algebraic expression and vice versa. • Identify parts of expressions using appropriate mathematical vocabulary

Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 16: Algebraic Expressions	Visual (169, 173) Hands On (178) Differentiated Concept Extension (174) Real World	CC Practice (164 -165)	**Teacher Toolbox** 1 Ready Lessons Tools for Instruction 1 Interactive Tutorials

Week 3	Students will: • Understand that the properties used with numbers also apply to expressions with variable • Recognize and generate equivalent expressions • Substitute values into expressions to prove equivalency

Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 17: Equivalent Expressions	Visual (182, 186, 187) Hands On (185) Differentiated (190) Concept Extension Real World	CC Practice (176 – 177)	**Teacher Toolbox** 1 Ready Lessons 2 Tools for Instruction 1 Interactive Tutorials

Week 4	Students will: • Understand the differences between equations and inequalities • Know that inequalities represent a range of possible values rather than a single solution. • Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 18: Understand Solutions to Equations	Visual Hands On (192) Differentiated (198) Concept Extension Real World	CC Practice (183)	**Teacher Toolbox** 1 Ready Lessons 2 Tools for Instruction 1 Interactive Tutorials

Week 5	Students will: • Recognize that real-world mathematical problems can be expressed using a variable to represent an unknown • Recognize that both sides of an equation are equal, and whatever operation is performed on one side of the equation must be done on the other side to maintain equality. • Write and solve equations that represent real-world mathematical problems that use variables and **involve not-negative rational numbers**.

Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 19: Solve Equations	Visual Hands On (200, 202) Differentiated Concept Extension Real World (201)	CC Practice (194 -195)	**Teacher Toolbox** 1 Ready Lessons 2 Tools for Instruction 2 Interactive Tutorials

Week 6	Students will: • Write an inequality that represents real-world mathematical problems containing a constraintor a condition (<, >). • Recognize that a variable can stand for an infinite number of solutions when used in inequalities. • Use substitution to determine whether a given number in a specified set makes and equation or inequality true. • Represent inequalities on a number line.

Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 20: Solve Inequalities	Visual (213) Hands On (215) Differentiated (220) Concept Extension Real World	CC Practice (204 – 205)	**Teacher Toolbox** 1 Ready Lessons 2 Tools for Instruction 1 Interactive Tutorials

Week 7	Students will: • Recognize that a change in the independent variable creates a change in dependent variable. • Make a table, graph, or equation to represent a problem context. • Identify relationships between tables, graphs and equations • Recognize when quantitative relationships between dependent and independent variables are linear.

Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 21: TE 221 - 230 Dependent and Independent Variables	Visual Hands On (222, 230) Differentiated (230) Concept Extension Real World (223)	CC Practice (214 – 215)	**Teacher Toolbox** 2 Ready Lessons 2 Tools for Instruction 1 Interactive Tutorials

Summative Assessment	**Performance Task**
RCC Unit 1 Interim Assessment -Student p. 216 -217 -Scoring Guide 231	RCC Unit 1 Performance Task -Student p. 218 -Rubric p. 233