Unit Overview	Content Elaborations	Unit Resources
Students will be able to:		Common Core Model Curriculum
		Holt Middle School Math Course 2: Lessons 2-
apply properties of operations to expand linear		7, 2-8, 2-9, 2-10, All of Chapter 11
expressions with rational coefficients		Unlimited Manipulatives or Tools
		Smart Board Resources
rewrite expressions in different forms		United Streaming Video
1		Study Island
solve real-life and mathematical problems		Hands-On Standards
using numerical and algebraic expressions and		Calculator
equations.		Laptops - Online Algebra Tiles
		Document camera
assess the reasonableness of answers using		Algebra Tiles
mental math and estimation strategies		Pan Balance
		Number Lines
use variables to represent unknown quantities		
solve word problems whose solutions are		
inequalities and then graph the solutions		
Unit Vocabulary	Enduring Understandings (Big Ideas)	Connections
Commutative Property of Addition,	Students learn how to use properties of	It is essential to use real-world word problems
Commutative Property of Multiplication,	operations to generate equivalent expressions.	to develop understanding
Associative Property of Addition, Associative	Students will solve real-life and mathematical	
Property of Multiplication, , Identity Property	problems using numerical and algebraic	Use pictures, diagrams, and explanations
of Addition, Identity Property of	expressions and equations.	to show why solutions work
Multiplication, Inverse Property of Addition,		
Inverse Property of Multiplication, Zero		Develop mental math strategies for problem
Property of Multiplication, Expression,		solving
Equation, Variable, Evaluate, Term (in an		

### **Grade 7 Math Expressions and Equations**

Grade 7 Math Grade 7 Math Start Date: November 19, 2012 End Date : January 15, 2013

expression), Coefficient, Like Terms, Solution	Correlations to other subjects or project
(of an equation), Solve, Isolate the Variable,	applications.
Inequality, Algebraic Expression, Numerical	
Expression, Linear Expression, Nonlinear,	
Rational Number, Algebraic Inequality,	
Solution Set, Function/Rule	

#### Standards

### CC\_Common Core State Standards - Mathematics (2010) - Grade 7

Domain 7.EE Expressions and Equations

Cluster Use properties of operations to generate equivalent expressions.

Standard 7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

Standard 7.EE.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.

Cluster Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

Standard 7.EE.3 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 7.EE.4 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.

7.EE.4.a Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

7.EE.4.b 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.

Student Assessment	Unit Refection
Common Core short Cycles	Teacher comments following instruction and
	assessment
Benchmark Test	
	This could provide a topic for discussion at
Chapter Tests for Holt Middle School Math	department meetings
Course 2: Chapters 2-7, 2-8, 2-9.	
2-10. All of Chapter 11	
,r	
Formative Assessments (teacher made)	

Summative Tests correlated to CCSS		
Expressions and Equations		
Content	Skills	Assessment
A. Apply the commutative and associative properties of	A. Apply the commutative and associative properties of	
addition to add and subtract linear expressions with integers	addition to add and subtract linear expressions with integers	
and rational numbers	and rational numbers	
B. Apply the identity property of addition to develop an	1. identify like terms	
understanding that expressions are equivalent	2. add and subtract like terms	
C. Apply the identity property of multiplication to develop an	3. apply the commutative and/or associative properties to	
understanding that expressions are equivalent	rewrite and simplify expressions	
D. Apply the zero property of multiplication to develop an	B. Apply the identity property of addition to develop an	
understanding that expressions are equivalent	understanding that expressions are equivalent	
E. Apply inverse property of addition to develop an	1. use and understand the identity property of addition	
understanding that expressions are equivalent	which states that the sum of zero and any number or variable is	
F. apply inverse property of multiplication to develop an	the number or variable itself $(4 + 0 = 4, -11 + 0 = -11, y + 0 = -1)$	
understanding that expressions are equivalent	Y)	
G. Apply the distributive property to factor linear expressions	2. apply the identity property to rewrite and simplify	
H. Expand linear expressions	expressions	
1. Understand now to rewrite expressions to snow now	c. Apply the identity property of multiplication to develop an understanding that expressions are equivalent	
L Convert between forms of a number	1 use and understant the identity property of	
K use mental math and estimation to check reasonableness of	multiplication which states that the product of 1 and any	
answers	number or variable is the number or variable itself $(4 \times 1 = 4)$	
L Construct equations with variables using integers postitive	11  x  1 = -11  y   x  1 =  y	
and negative fractions and decimals	2. apply the identity property to rewirte and simplify	
M. Construct and graph inequalities with variables using	expressions ex. $5a - (5a - 7) = 5a - 15a - 7 = 5a - 5a + 7 = 0 + 7$	
integers, postitive and negative fractions and decimals	=7)	
	D. Apply the zero property of multiplication to develop an	
	understanding that expressions are equivalent	
	1. use and understand the zero property of multiplication	
	which states that multiplying any number by 0 gives 0 (88 x 0	
	$= 0, 0 \ge 1005 = 0)$	
	E. Apply inverse property of addition to develop an	
	understanding that expressions are equivalent	
	1. use and understand that the opposite or negative value	
	of a number, which, when added, results in the sum of 0 $(3 + -)$	
	3 = 0, -4 + 4 = 0	
	F. apply inverse property of multiplication to develop an	

understanding that expressions are equivalent	
1. use and understand that if you multiply by the	
reciprocal of the fraction it will result in 1 ex: $8(1/8) = 1$	
G. Apply the distributive property to factor linear expressions	
1. find the greatest common factor of the two numbers	
2. rewrite the factored side by dividing the two terms by	
the GCF ( $v = 6x - 12$ , $v = 6(x - 2)$	
H. Expand linear expressions	
1. apply the distributive property $2(3y - 4x + 5) = 6y - 8x$	
+10	
I. Understand how to rewirte expressions to show how	
quantities are related	
1. choose correct context for real world applications	
2. teach alternative ways of calculating with expressions.	
ex: when calculating a 5% sales tax, teach students two ways	
of writting the expression $(a + 0.05a = 1.05a)$	
J. Convert between forms of a number	
1. convert fractions to decimals	
2. convert decimals to fractions	
3. convert decimals to percents	
4. convert fractions to percents	
5. convert percents to decimals	
6. convert percents to fractions	
K. use mental math and estimation to check reasonableness of	
answers	
1. teach rounding	
2. use conversions to make mental math easy $(25\% \text{ off} =$	
1/4 off, so divide by 4)	
L. Construct equations with variables using integers, postitive	
and negative fractions and decimals	
1. solve equations by using inverse operations	
2. solve word problems by creating and solving one-step	
equations	
3. show the steps to solve equations and identify what	
property of operation should be completed first	
4. build from one-step equation problems to multip-step	
problem situations	
M. Construct and graph inequalities with variables using	
integers, postitive and negative fractions and decimals	
1. read and write inequalities	

2. solve inequalities by adding and subtracting	
3. solve inequalities by multiplying and dividing	
4. solve word problems by creating and solving one-step	
inequalities	
5. solve word problems by creating and solving two-step	
inequalities	
6. Graph the solution set of the inequality on a number	
line	