Unit 3 - Expressions and Equations

Content Area: **Mathematics**
Course(s):
Time Period: **January**
Length: **6-8 weeks**
Status: **Published**

Unit Overview

This unit focuses on the Expressions and Equations (EE) domain.

Essential Questions

“How can you communicate mathematical ideas effectively?”

“How is it helpful to write numbers in different ways?”

“How do you determine if two numbers or expressions are equal?”

“How are symbols, such as <, >, and = useful?”

Content

Powers and Exponents

Numerical Expressions

Algebra: Variables and Expressions

Algebra: Properties

The Distributive Property

Equivalent Expressions

Solve and Write Addition Equations

Solve and Write Subtraction Equations

Solve and Write Multiplication Equations

Solve and Write Division Equations

Functions and Equations

Inequalities

Skills

Represent numbers using exponents

Find the value of expressions using the order of operations.

Write verbal phrases as simple algebraic expressions

Use properties to simplify expressions

Use the Distributive Property to compute multiplication problems mentally and to rewrite algebraic expressions

Use properties to simplify expressions

Solve equations by using mental math and the *guess*, *check*, and *revise* strategy.

Solve and write addition equations

Solve and write subtraction equations

Solve and write multiplication equations

Solve and write division equations

Complete function tables and find function rules
Extend and describe arithmetic sequences using algebraic expressions
Construct and analyze different verbal, tabular, graphical, and algebraic representations of functions
Solve inequalities by using mental math and the guess, check, and revise strategy
Write and graph inequalities

Solve one-step linear inequalities

Assessments

Self-Check Quiz

Chapter Tests

Online Standardized Test Practice

Chapter Project

Teacher Observation

Lessons/Learning Scenarios

Glencoe Math Course 1 Text

Chapter 6: Expressions (15 Days)

Inquiry Lab: Structures of Expressions (1 Day)

SWBAT explore parts of an expression

Lesson 1: Powers and Exponents (1 Day)

SWBAT represent numbers using exponents

Lesson 2: Numerical Expressions (2 Days)

SWBAT find the value of expressions using the order of operations

Lesson 3: Algebra: Variables and Expressions (1 Day)

SWBAT find the value of expressions using the order of operations

Inquiry Lab: Write Expressions (1 Day)

SWBAT use models to write expressions

Lesson 4: Algebra: Write Expressions (1 Day)

SWBAT write verbal phrases as simple algebraic expressions

Problem-Solving Activity: Act-It Out (1 Day)

SWBAT solve problems by acting them out

Lesson 5: Algebra: Properties (2 Days)

SWBAT use properties to simplifiy expressions

Inquiry Lab: The Distributive Property (1 Day)

SWBAT model the Distributive Property

Lesson 6: The Distributive Property (2 Days)

SWBAT use the Distributive Property to compute multiplication problems mentally and to rewrite algebraic expressions

Inquiry Lab: Equivalent Expressions (1 Day)

SWBAT use models to simplify algebraic expressions

Lesson 7: Equivalent Expressions (1 Day)

SWBAT use properties to simplify expressions

Chapter 7: Equations (12 Days)

Lesson 1: Equations (2 Day)

SWBAT solve equations by using mental math and the guess, check, and revise strategy.

Inquiry Lab: Solve and Write Addition Equations (1 Day)

SWBAT solve addition equations using models

Lesson 2: Solve and Write Addition Equations (2 Day)

SWBAT solve and write addition equations

Inquiry Lab: Solve and Write Subtraction Equations (1 Day)

SWBAT solve subtraction equations using models

Lesson 3: Solve and Write Subtraction Equations (1 Day)

SWBAT solve and write subtraction equations

Problem-Solving Investigation: Guess, Check, and Revise (1 Day)

SWBAT solve problems by using the guess, check, and revise strategy

Inquiry Lab: Solve and Write Multiplication Equations (1 Day)

SWBAT solve multiplication equations using models

Lesson 4: Solve and Write Multiplication Equations (1 Day)

SWBAT solve and write multiplication equations

Inquiry Lab: Solve and Write Division Equations (1 Day)

SWBAT solve division equations using models

Lesson 5: Solve and Write Division Equations (1 Day)

SWBAT solve and write division equations

Chapter 8: Functions and Inequalities (13 Days)

Lesson 1: Function Tables (1 Day)

SWBAT complte function tables and find function rules

Lesson 2: Function Rules (1 Day)

SWBAT extend and describe arithmetic sequences using algebraic expressions

Lesson 3: Functions and Equations (2 Days)

SWBAT construct and analyze different verbal, tabular, graphical, and algebraic representations of functions

Lesson 4: Multiple Representations of Functions (2 Days)

SWBAT construct and analyze different verbal, tabular, graphical, and algebraic representations of functions

Problem-Solving Investigation: Make a Table (1 Day)

SWBAT solve problems by making a table

Inquiry Lab: Inequalities (1 Day)

SWBAT use models to determine the truth of inequalities

Lesson 5: Inequalities (2 Days)

SWBAT solve inequalities by using mental math and the guess, check, and revise strategy

Lesson 6: Write and Graph Inequalities (1 Day)

SWBAT write and graph inequalities

Inquiry Lab: Solve One-Step Inequalities (1 Day)

SWBAT solve addition and subtraction inequalities

Lesson 7: Solve One-Step Inequalities (1 Day)

SWBAT solve one-step linear inequalities

Standards

CCSS.Math.Content.6.RP.A.3.a	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
CCSS.Math.Content.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
CCSS.Math.Content.6.NS.B.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
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.
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.

Resources

Glencoe Math, Course 1, McGraw-Hill, 2013

Algebra Tiles
Algebra Tiles Master
Integer Mat Master

Cups

Counters

Equation Mats
Counters Master
Equation Mat Master

Coordinate Planes Master

Number Lines Master

Algebra Expressions and Properties Videos

Click on Response to Intervention/Lesson Tutorials

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Study Jams Commutative, Associative, Identity Properties

Study Jams Distributive Property

Integers and Coordinate Plane

Click on Response to Intervention/Lesson Tutorials

StudyJams integers

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Learnzillion integers and temperature

Learnzillion integers and money

Learnzillion integers and numberline

Learnzillion absolute value

Learnzillion opposites on a numberline

Learnzillion coordinate plane

Learnzillion plot points

Equations and Inequalities

Click on Response to Intervention/Lesson Tutorials

Study Jams Addition and Subtraction Equations

Study Jams Multiplication and Division Equations

Learn Zillion Understand the relationship between two numbers using a number line

Learn Zillion Represent real-world scenarios involving inequalities with number line representations

Learn Zillion Write inequalities given a number line representation