

ACC: Unit 2 : Expression, Equations, Inequalities

Content Area: **Mathematics**
Course(s): **Math 6 Accelerated**
Time Period: **October**
Length: **6 weeks**
Status: **Published**

Unit Summary

The goal for this unit is to develop students' understanding of algebraic expressions, equations, and inequalities and their applications to real life problem solving. Students will use their prior understanding to develop and extend their algebraic reasoning.

Standards

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| MA.6.4.5.6 F.1 | Use technology to gather, analyze, and communicate mathematical information. |
| MA.6.4.5.6 F.4 | Use calculators as problem-solving tools (e.g., to explore patterns, to validate solutions). |
| MA.6.EE.A | Apply and extend previous understandings of arithmetic to algebraic expressions. |
| MA.6.EE.A.1 | Write and evaluate numerical expressions involving whole-number exponents. |
| MA.6.EE.A.2 | Write, read, and evaluate expressions in which letters stand for numbers. |
| MA.6.EE.A.3 | Apply the properties of operations to generate equivalent expressions. |
| MA.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). |
| MA.6.EE.A.2a | Write expressions that record operations with numbers and with letters standing for numbers. |
| MA.6.EE.A.2b | 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. |
| MA.6.EE.A.2c | 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). |
| MA.6.EE.B | Reason about and solve one-variable equations and inequalities. |
| MA.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. |
| MA.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. |
| MA.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. |
| MA.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. |
| MA.6.EE.C | Represent and analyze quantitative relationships between dependent and independent variables. |

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| MA.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. |
| MA.7.EE.A.1 | Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. |
| MA.7.EE.B.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. |
| MA.7.EE.B.4b | 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. |
| MA.7.NS.A.2a | Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. |
| MA.8.EE.A.2 | Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational. |
| MA.8.EE.A.3 | 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. |
| MA.8.EE.A.4 | 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. |
| MA.K-12.1 | Make sense of problems and persevere in solving them. |
| MA.K-12.2 | Reason abstractly and quantitatively. |
| MA.K-12.3 | Construct viable arguments and critique the reasoning of others. |
| MA.K-12.4 | Model with mathematics. |
| MA.K-12.5 | Use appropriate tools strategically. |
| MA.K-12.6 | Attend to precision. |
| MA.K-12.7 | Look for and make use of structure. |
| MA.K-12.8 | Look for and express regularity in repeated reasoning. |
| CAEP.9.2.8.B.3 | Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career. |
| TECH.8.1.8 | Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge. |
| TECH.8.1.8.A | Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations. |
| TECH.8.1.8.A.1 | Demonstrate knowledge of a real world problem using digital tools. |
| TECH.8.1.8.A.CS1 | Understand and use technology systems. |
| TECH.8.1.8.A.CS2 | Select and use applications effectively and productively. |
| TECH.8.1.8.B.CS2 | Create original works as a means of personal or group expression. |

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| TECH.8.1.8.C | Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. |
| TECH.8.1.8.C.CS4 | Contribute to project teams to produce original works or solve problems. |
| TECH.8.1.8.D | Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. |
| TECH.8.1.8.D.1 | Understand and model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics including appropriate use of social media. |
| TECH.8.1.8.D.CS1 | Advocate and practice safe, legal, and responsible use of information and technology. |
| TECH.8.1.8.D.CS2 | Demonstrate personal responsibility for lifelong learning. |
| TECH.8.1.8.D.CS3 | Exhibit leadership for digital citizenship. |
| TECH.8.1.8.E | Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information. |
| TECH.8.1.8.F | Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. |
| TECH.8.1.8.F.CS2 | Plan and manage activities to develop a solution or complete a project. |
| TECH.8.2.8.D.CS2 | Use and maintain technological products and systems. |

Student Learning Objectives

- Students will learn the components of algebraic expressions, equations, and inequalities.
- Students will learn appropriate mathematical vocabulary.
- Students will learn that real world problems can be translated into algebraic expressions, equations, and inequalities.
- Students will learn mathematical properties.
- Students will learn the process for combining like terms.
- Students will learn how to represent an inequality statement on a graph.

Essential Questions

- How can algebraic expressions, equations, and inequalities be used to model and analyze our world?

Enduring Understandings

- Students will understand that algebra allows us to make sense of quantitative relationships and patterns.
- Students will understand that algebraic inequalities, expressions, and equations are used to model real life situations and to help solve problems.

Application

- Students will be able to independently use their learning to evaluate and write equivalent algebraic expressions, equations, and inequalities.

Skills

Students will be skilled at:

- Translating real life problems to algebraic expressions, equations, or inequalities.
- Simplifying and solving expressions, equations, and inequalities using order of operations.
- Evaluating and using expressions, equations, and formulas to solve problems.
- Identifying and combine like terms to simplify algebraic expressions, equations, inequalities.
- Identifying and using mathematical properties to solve algebraic expressions, equations, inequalities.
- Estimating and simplifying radicals.
- Writing and evaluating scientific notation.
- Evaluating algebraic expressions.
- Establishing equivalent expressions.
- Rewriting algebraic expressions using distributive property.
- Identifying and combining like terms to rewrite algebraic expressions and equations.
- Solving systemically algebraic equations and inequalities using mathematical properties and order of operations.
- Graphing solution set for inequality statements.
- Writing a fraction as an expression using negative exponents.