

In Expressions and Equations, students continue to develop their understanding of the order of operations with rational numbers. The order of operations is a set of rules for determining the order in which the operations in an expression are performed. A rational number is a number that can be expressed as a fraction, or ratio of two integers, where the denominator is not zero. Fractions, decimals, integers, and percents are all rational numbers. Students also continue to develop understanding of dependent and independent variables (letters that represent numbers), and use them to represent quantities in real-world or mathematical problems.

Additionally, students use the properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients. Linear expressions are expressions in which no variable is raised to a power other than 1 . For example, $3 x+6$ is a linear expression. A coefficient is a number in front of a variable that indicates the quantity of the variable. For example, 3 is a coefficient in the expression $3 x+6$, and 2 and 5 are coefficients in the equation $2 x+5 y+3=29$.

At this level, students expand their mathematical versatility by using equivalent expressions to solve problems. Students learn that changing the form of an expression can shed light on its role in a problem and on how the quantities in the problem are related. Students assess the reasonableness of answers by using mental computation and estimation strategies.

## The Grade 7 Common Core State Standards for Expressions and Equations specify that students should-

- Use properties of operations to generate equivalent expressions.
- Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

The following hands-on activities enable teachers to help students understand the principles of expressions and equations. The activities will help students use expressions and equations to flexibly tackle algebraic thinking and reasoning tasks.

