Algebra in *MathLinks*: Grade 7

Algebra topics primarily appear in the CCSS-M Expressions and Equations and Ratios and Proportional Relationships domains. These areas are the focus of four units in *MathLinks*: Grade 7, and they extend work introduced in 6th grade.

- In Unit 2, **Percent and Scale**, students analyze and solve problems involving numerical and algebraic expressions and involving percents.

- In Unit 3, **Proportional Relationships**, students make connections between visual contexts, tables, graphs, equations, and word descriptions as they solve problems involving proportional relationships. Special attention is paid to whether two quantities are in a proportional relationship by analyzing tables, graphs, and equations. Students continue to develop flexibility when working with variables, expressions, and equations. Double number lines facilitate the learning of how to solve proportions (i.e., equations in the form $\frac{x}{a} = \frac{b}{c}$).

- In Unit 6, **Expressions**, students use a visual context to write numerical and algebraic expressions, paving the way to greater flexibility working with variables and expressions. Equations of the $y = mx + b$ are explored without formally addressing function, slope, and vertical intercept, which is done in 8th grade.

  The counter manipulative used to develop integer operations in Unit 4 (**Rational Number Addition and Subtraction)** and Unit 5 (**Rational Number Multiplication and Division**) is extended using cups to represent an unknown in an equation. This model gives students a tool for exploring and rewriting more difficult expressions.

- In Unit 7, **Equations and Inequalities,** students extend the use of substitution to solve equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Cups and counters help to facilitate the learning of the procedures. Students also learn to solve inequalities with negative coefficients and open/closed boundary points.

Additionally, in Unit 8 (**Plane and Solid Figures**), Unit 9 (**Length, Area, and Volume**), and Unit 10 (**Sampling**), students apply proportional relationships and algebra to solve problems in other domains.