8.3 Solving Equations: $a(x + b) = c$

Explore Equations With Grouping Symbols

The following notes provide guidelines to help you adapt the Explore Equations With Grouping Symbols section in *MathLinks 9*.

- Provide each pair of students with four cups, four paper clips, ten pennies, three dimes, and three nickels. Have them use these manipulatives to model the diagrams rather than draw the models.
- Review how to change fractions to decimal numbers.

Examples

- Have students complete the Warm Up before starting the Working Examples. In #1b), remind students to put brackets around $t - 1$ before multiplying. Review how to use the distributive property with a positive constant, and then with a negative constant. Demonstrate how to solve when the binomial is a sum and when it is a difference.

Working Example 1:

- Lead a discussion about how to tell whether one side of the equation is a singular term or more than one term.
- In Method 2, remind students that the brackets around $(d + 0.4)$ mean to treat it like a singular term. They should not use this approach with equations such as $3d + 0.4 = -3.9$.
- For part b), explain why there are brackets around $(t - 1)$ and how to know when to use brackets.

Working Example 2:

- Review the meaning and calculation of *average*.
- Read the example as a class, and then discuss how the equation was developed.

Communicate the Ideas, Practise, and Apply

- For #6, encourage students to move the negative up to the numerator so they do not forget about it.
- Encourage students to use brackets, particularly in #7b), #8, and #10.
- For #12, encourage students to brainstorm various ways of solving. If necessary, provide them with a word equation: 3 × (regular price – discount) = amount paid.
- Provide students who need additional practice with **BLM 8–7 Section 8.3 Extra Practice**.

Math Link

- Read and discuss the introduction and part a).
- You may wish to have students complete part b) in pairs.

Common Errors

- Some students may forget to put brackets around binomials when solving equations $\left(\text{e.g., } \frac{(t-1)}{5} = \frac{3}{2}\right)$.

R$_x$ Post an example with a reminder to always bracket the numerator when there is more than one term.

- Some students may incorrectly distribute negative constants when the binomial is a difference. For example, $-4(2x - 0.5) = -8x - 2$.

R$_x$ Encourage students to add the arrows showing the distribution, and to write the second step.

For example, $-4(2x - 0.5) = -4(2x) + (-4)(-0.5) = -8x + 2$.