8.2 Solving Equations: $ax + b = c$, $\frac{x}{a} + b = c$

Explore Equations With Two Operations

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

- Provide each pair of students with four cups, four paper clips, ten pennies, three dimes, and three nickels. Encourage them to model the diagrams in the exercise rather than draw the models.
- Do the exercise as a teacher-led activity.

Examples

- Have students complete the Warm Up to review subtracting fractions and using the order of operations with fractions. Remind students to reduce fractions to lowest terms.
- If students need additional practice using the order of operation with fractions, provide them with **BLM 8–5 Section 8.2 Warm Up**.

Working Example 1:

- Checking a solution using a number line may be difficult for some students; show them how to check their answer by substitution.
- For part b), show students how to use **Master 20 Multiplication Chart** to find common multiples. To find the lowest common multiples of 12 and 15, have them put their fingers on 12 and 15 in the left column, and then trace down the columns until they find the first common number.
- Show students how to use **Master 20 Multiplication Chart** to reduce fractions. If they can find the numerator and the denominator in the same column or row, then both numbers are divisible by the number at the top of the column or row.
- If students are struggling to reduce fractions using the cancellation method, allow them to multiply the numerators and denominators and then reduce the singular fractions.

  For example, $12\left(\frac{k}{3}\right) - 12\left(\frac{1}{2}\right) = 12\left(-\frac{7}{4}\right)$

  $$\frac{12k}{3} - \frac{12}{2} = -\frac{84}{4}$$

  $$4k - 6 = -21$$

- Remind students to keep the negative signs in the numerator when simplifying fractions.

Working Example 3:

- Have students use **BLM 8–2 Canadian Coins and Their Values**, if necessary. Point out that the question is being solved in dollars. An alternative would be to work in pennies, which means the equation would be $5m + 495 = 1875$.

Communicate the Ideas, Practise, and Apply

- For #11, allow students to solve the equation using whatever method they prefer.
- Provide students who need additional practice with **BLM 8–6 Section 8.2 Extra Practice**.

Math Link

- Read and discuss the introduction.
- Discuss what would be a good variable to use.
- Students may benefit from working in pairs to complete part b).

Common Errors

- Some students may mix up the procedures for operations with fractions.

R$_x$ Have students make flash cards with prompts to remind them when to apply certain procedures. Post examples close to their work area.