

## Summarize

Ask students whether they now think that every equation of the form  $Ax + By = C$  can be written in an equivalent  $y = mx + b$  form. Ask what it means that the two equations are equivalent. Focus on Question A for a moment, and ask if any of the students in the Problem wrote the correct slope-intercept form of the original equation. Invite students in the class to try to guess what the students in the Problem were thinking.

- Why would these students be confused?
- How did they get tripped up?
- What about in other parts Question A? Why did those students get confused?
- If you were their teacher, how would you help them make sense of this algebra?

Revisit the question from the Launch.

- Is there a way to change a linear equation from the  $Ax + By = C$  form to an equivalent  $y = mx + b$  form and vice versa?

Finally, it is not the case that all equations of form  $Ax + By = C$  can be written in  $y = mx + b$  form. In the special case where  $B = 0$ , we are left with  $Ax = C$ , which describes a vertical line. Vertical lines have no slope so there can't be a slope-intercept form of the equation. For all other lines, however, we may write equations in both forms.

**ACE**

Assignment Guide for Problem 1.2

Applications: 9–21 | Connections: 36–50  
Extensions: 63

## Answers to Problem 1.2

**A.** The work of Jared and Mia lead to correct equivalent forms. Molly and Ali get incorrect results.

**Jared:** In step (1), he subtracted  $12x$  from both sides of the equation. In step (2), he divided both sides of the equation by 3.

**Molly:** In step (1), she correctly subtracted  $12x$  from both sides of the equation. In step (2), she failed to divide both terms on the right side by 3. In step (3), she correctly rearranged the terms.

**Mia:** In step (1) she divided both sides of the equation by 3. In step (2), she subtracted  $4x$  from both sides of the equation. In step (3), she rearranged the order of terms.

**Ali:** In step (1), he correctly subtracted  $12x$  from both sides of the equation. In step (2), he correctly divided both sides of the equation by 3. In step (3), he forgot that subtraction is not commutative.

- B.**
1.  $y = x - 4$
  2.  $y = -2x + 9$
  3.  $y = -2x - 3$
  4.  $y = \frac{c - ax}{d}$  or  $y = \frac{c}{d} - \frac{a}{dx}$
- C.** Answers will vary, as there are multiple equivalent forms for all equations in standard form. The answers given below use the smallest (in absolute value) whole-number coefficients.
1.  $3x + y = 5$
  2.  $-3x + 4y = 1$
  3.  $x - 2y = -3$
  4.  $gx - fy = 18$  or  $-gx + fy = -18$
- D.**
1. standard form:  $5b + 4.75h = 72.50$
  2. slope-intercept form:  $y = 3.75x - 25$
  3. standard form:  $5g + 3w = 50$