Name _____ Class _____ Date _____

3-3

Solving Equations

COMMON CORE

CC.7.EE.4a

Essential question: *How do you solve equations that contain multiple operations?*

1 EXPLORE Solving Two-Step Equations

Carrie and Freddy collect stamps. Carrie notes that she has twelve less than five times the number of stamps Freddy has. Carrie has 23 stamps. Let f be the number of stamps that Freddy has.

A Write an equation that represents Carrie's collection. $5f - 12 = 23$

B Method 1: Solve the equation by covering up the term with the variable.

$5f - 12 = 23$

$\bullet - 12 = 23$ Cover the term containing the variable.
Think: "Some number minus 12 equals 23."

$\bullet = 35$ What number minus 12 equals 23?
Now uncover the term.

$5f = \frac{35}{5}$ *Think*: 5 times some number equals 35.
5 times 7 equals 35.

$f = 7$

C Method 2: Solve the equation by undoing the operations.
Step 1: Make a table.

First, list the operations in the equation according to the order in which they are applied to the variable.

Operations in the Equation	To Solve
1. First f is multiplied by 5.	1. First ADD 12 to both sides of the equation.
2. Then, 12 is SUBTRACT.	2. Then DIVIDE both sides by 5.

Then, starting with the last operation in the equation write the *opposite* of the step. Continue writing the opposite until every step is accounted for.

Step 2: Apply the steps in the "to solve" column to solve the equation.

$5f - 12 = 23$

$5f - 12 + 12 = 23 + 12$

$\frac{5f}{5} = \frac{35}{5}$

$f = 7$

Freddy has 7 stamps.