

Name \_\_\_\_\_

Pd 112 Date September 25, 2017

Section 1.C.3

## Write Multi-Step Equations

Scenario	Define Variable & Write Equation
Marcy buys some apples that cost \$1 each. He also spends \$4 on other fruit. Kelsey buys some apples that cost \$2 each at another store. Altogether they spent \$10. How many apples did they buy?	$a = \text{apples}$ $1x + 4 + 2x = 10$
Mr. Sellers prints 5 fewer papers than Ms. Russell prints. Ms. Draper prints twice as many as Mr. Sellers prints. Ms. Draper printed 80 papers. How many papers did Ms. Russell print?	$p = \text{papers printed}$ $2(p-5) = 80$
A cab company charges \$2 for getting a ride plus \$1.50 per mile. Four girlfriends split the cab fare. They each pay \$2. How many miles was their trip?	$m = \text{miles}$ $\frac{2 + 1.50m}{4} = 2$

## Solve Multi-Step Equations

Example	Words	You Try
1) $(3x) + 7 - 8x = -3$ $-5x + 7 = -3$ $\frac{-7}{-7} \quad \frac{-7}{-7}$ $\frac{-5x}{-5} = \frac{-10}{-5}$ $x = 2$	1. combine like terms 2. get rid of constant terms. 3. make coefficient be 1	3) $2(-4y) + 6 + 2y = -4$ $-6y + 8 = -4$ $\frac{-8}{-8} \quad \frac{-8}{-8}$ $\frac{-6y}{6} = \frac{-12}{6}$ $y = -2$
2) $3 + 2(7x - 3) - 9x = 7$ $3 + 14x - 6 - 9x = 7$ $5x - 3 = 7$ $\frac{+3}{+3} \quad \frac{+3}{+3}$ $\frac{5x}{5} = \frac{10}{5}$ $x = 2$	1. Distributive property 2. combine like terms 3. solve 2-step equation 4. something as $\neq 5$ <small>COULD</small>	4) $-5(2x - 1) + 9x - 2 = -8$ $-10x + 5 + 9x - 2 = -8$ $-1x - 3 = -8$ $\frac{+3}{+3} \quad \frac{+3}{+3}$ $\frac{-1x}{-1} = \frac{-5}{-1}$ $x = -5$

## Solving Equations with More Fractions

Example	Words	You Try
<p>5) <math>\cancel{4} \left( \frac{3x}{4} + \frac{9}{4} \right) = (3) \cancel{4}</math></p> <p><math>\cancel{4} \cdot \frac{3x}{\cancel{4}} + \cancel{4} \cdot \frac{9}{\cancel{4}} = 12</math></p> <p><math>3x + 9 = 12</math></p> <p><math>\quad -9 \quad -9</math></p> <hr/> <p><math>\frac{3x}{3} = \frac{3}{3}</math></p> <p><math>x = 1</math></p> <p><i>Handwritten notes:</i>  <math>\frac{12}{4} = 3x</math>  <math>\frac{36}{4} = 9x</math></p>	<p>1. multiply by the denominator</p> <p>2. solve 2-step equation</p>	<p>7) <math>\cancel{7} \left( \frac{5}{7}x - \frac{1}{7} \right) = (2) \cancel{7}</math></p> <p><math>5x - 1 = 14</math></p> <p><math>\quad +1 \quad +1</math></p> <hr/> <p><math>\frac{5x}{5} = \frac{15}{5}</math></p> <p><math>x = 3</math></p>
<p>6) <math>\cancel{3} \cdot \cancel{4} \left( \frac{2}{3}x + 2 - \frac{3}{4}x \right) = (1) \cancel{3} \cdot \cancel{4}</math></p> <p><math>\cancel{3} \cdot \cancel{4} \cdot \frac{2}{\cancel{3}}x + \cancel{3} \cdot \cancel{4} \cdot 2 + \cancel{3} \cdot \cancel{4} \cdot \frac{3}{\cancel{4}}x = 12</math></p> <p><math>8x + 24 - 9x = 12</math></p> <p><math>-1x + 24 = 12</math></p> <p><math>\quad -24 \quad -24</math></p> <hr/> <p><math>\frac{-1x}{1} = \frac{-12}{1}</math></p> <p><math>x = 12</math></p> <p><i>Handwritten notes:</i>  <math>12 \cdot \frac{2}{3}x</math>  <math>\frac{24x}{3}</math>  <math>8x</math></p>	<p>1. multiply by both denominators</p> <p>2. simplify</p> <p>3. solve.</p>	<p>8) <math>\cancel{3} \cdot \cancel{2} \left( \frac{10}{3}n + \frac{2}{3} - \frac{5}{2}n \right) = \left( \frac{7}{3} \right) \cancel{3} \cdot \cancel{2}</math></p> <p><math>20n + 4 - 15n = 14</math></p> <p><math>5n + 4 = 14</math></p> <p><math>\quad -4 \quad -4</math></p> <hr/> <p><math>5n = 10</math></p> <p><math>n = 2</math></p>

### Key Ideas:

Simplify First by distributive property and combining like terms.

Clear the fractions by multiplying all terms on both sides by the denominator.

Finally, solve the simpler, 2 steps equation: add/subtract THEN multiply/divide.