Study Guide
3.1-3.6 Quiz

3.1: Solve One-Step Equations

- Be able to use inverse operations to isolate the variable and solve one-step equations

Ex: $\frac{7}{2}\cdot\frac{2}{7}n=-5\cdot\frac{7}{2}$

$n=-\frac{35}{2}$

Ex: $-5+x=-4$

$+5 \quad +5$

$x=1$

Ex: $1-x=-2$

$-1 \quad -1$

$-x=-3$

$x=3$

3.2/3.3: Solve 2/Multi-Step Equations

- **Be able to use inverse operations and reverse PEMDAS to solve multi-step equations**

Ex: $4w+2w=24$

$\frac{6w}{6}=\frac{24}{6}$

$w=4$

Ex: $\frac{x}{2}+5=11$

$-5 \quad -5$

$2\cdot\frac{x}{2}=6\cdot 2$

$x=12$

Ex: $5x-4(x-3)=17$

$5x+-4(x+-3)=17$

$5x+-4x+12=17$

$1x+12=17$

$-12 \quad -12$

$x=5$

Ex: $\frac{4}{3}\cdot\frac{3}{4}(z-6)=12\cdot\frac{4}{3}$

$z-6=16$

$z=22$

Ex: $-4=2(x-2)-3(1-x)$ ***rewrite subtraction as + neg.***

$-4=2x-4-3+3x$

$-4=5x-7$

$+7 \quad +7$

$\frac{3}{5}=\frac{5x}{5}$

$x=\frac{3}{5}$ *Keep answer as a fraction, not a decimal

3.4: Solve equations with variables on both sides

- **Be able to solve equations with variables on both sides by moving variable terms together**

Ex: $3m-25-8m=m-14$

$-5m-25=m-14$

$+5m \quad +5m$

$-25=6m-14$

$+14 \quad +14$

$\frac{-11}{6}=\frac{6m}{6}$

$m=-\frac{11}{6}$

Ex: $4(m-3)=2(6-2m)$

$4m-12=12-4m$

$+4m \quad +4m$

$8m-12=12$

$+12 \quad +12$

$\frac{8m}{8}=\frac{24}{8}$

$m=3$

- **Be able to identify when an equation has no solution, infinite solutions or 0 as the solution**

Ex: $-5(3a-4)=7a+27-7$

$-15a + 20 = 7a + 20$
$+15a \quad +15a$
$20 = 22a + 20$
$-20 \quad -20$
$\frac{0}{22} = \frac{22a}{22}$
$a = 0$

Ex: $4(3x+2)=2(6x+4)$

$12x + 8 = 12x + 8$
$-12x \quad -12x$
$8 = 8$
All real numbers

Ex: $5z-6=(z-1)5$

$5z - 6 = 5z - 5$
$-5z \quad -5z$
$-6 = -5$
No solution

3.5 – 3.6: Set up and solve proportions

- **Be able to solve proportions using cross – products**

Ex: $\frac{36}{54}=\frac{2x}{6}$

$\frac{216}{108} = \frac{108x}{108}$
$2 = x$

Ex: $\frac{m+3}{8}=\frac{40}{64}$

$64(m + 3) = 320$
$64m + 192 = 320$
$-192 \quad -192$
$\frac{64m}{64} = \frac{128}{64}$
$m = 2$

Ex: $\frac{7}{112}=\frac{c-3}{8}$

$56 = 112(c - 3)$
$56 = 112c - 336$
$+336 \quad +336$
$\frac{392}{112} = \frac{112c}{112}$
$\frac{7}{2} = c$

- **Be able to set up a proportion from a word – problem and solve.**

Ex: A map has a scale of 1 cm to 15 km. What is the actual distance if two cities are 6 cm apart on a map?

$\frac{1}{15} = \frac{6}{x}$

$x = 90$ km

Ex: A recipe yields that 12 buttermilk biscuits calls for 2 cups of flour. How much flour is needed to make 30 biscuits?

$\frac{12}{2} = \frac{30}{x}$

$x = 5$ cups