Name: KEY Hour: _____ Date: _____

# NOTES: Sections 3.1 – 3.2 – Solving One Step Equations

Goals: #1 – I can solve equations using addition and subtraction.

#2 – I can solve equations using multiplication and division.

*Homework: Sections 3.1 – 3.2 Worksheet*

**Exploration #1:** Work with a partner.

1. What does the word *inverse* mean?
   opposite
   undo
2. What does the word *isolate* mean?
   alone

**Notes:**

Inverse Operations are two operations that "undo" each other.

Examples:

add 3
inverse: subtract 3

multiply by 3
inverse: divide by 3

Inverse operations help us isolate the variable on one side of an equation.
↳ get variable by itself

**Example #1:** Solve the following equations.

1. Solve $x - 5 = -13$ for $x$.

$x - 5 = -13$
$+5 \quad +5$
$\boxed{x = -8}$

check: $-8 - 5 \stackrel{?}{=} -13$
$-13 = -13$ ✓

2. Solve $-8 = n - (-4)$ for $n$.

$-8 = n + 4$
$-4 \quad -4$
$\boxed{-12 = n}$

check: $-8 \stackrel{?}{=} -12 - (-4)$
$-8 = -12 + 4$
$-8 = -8$ ✓

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**You practice:** Solve the following equations.

1. $-2 = x - 4$

$+4 \quad +4$

$\boxed{2 = x}$

Check:

$-2 \stackrel{?}{=} 2 - 4$

$-2 = -2$ ✓

2. $3 = x - (-11)$

$3 = x + 11$

$-11 \quad -11$

$\boxed{-8 = x}$

Check:

$3 \stackrel{?}{=} -8 - (-11)$

$3 \stackrel{?}{=} -8 + 11$

$3 = 3$ ✓

**Example #2:** Solve the following equations.

1. Solve $-4x = 1$

$\frac{-4 \cdot x}{-4} = \frac{1}{-4}$

$\boxed{x = -\frac{1}{4}}$

Check:

$-4\left(-\frac{1}{4}\right) \stackrel{?}{=} 1$

$\frac{-4}{1} \times -\frac{1}{4} \stackrel{?}{=} 1$

$\frac{4}{4} \stackrel{?}{=} 1$

$1 = 1$ ✓

2. Solve $\frac{y}{5} = -30$

$5 \cdot \frac{y}{5} = -30 \cdot 5$

$\boxed{y = -150}$

Check:

$\frac{-150}{5} \stackrel{?}{=} -30$

$-30 = -30$ ✓

3. Solve $10 = -\frac{2}{3}m$

$\left(-\frac{3}{2}\right) \cdot 10 = -\frac{2}{3}m \cdot \left(-\frac{3}{2}\right)$

$\frac{-3}{1} \cdot \frac{10^{5}}{1} = m$

$\boxed{-15 = m}$

Check:

$10 \stackrel{?}{=} -\frac{2}{3}(-15)$

$10 \stackrel{?}{=} -\frac{2}{1} \cdot -\frac{15^{5}}{1}$

$10 = 10$ ✓

**You practice:** Solve the following equations.

1. $\frac{-3x}{-3} = \frac{-9}{-3}$

$\boxed{x = 3}$

Check:

$-3(3) \stackrel{?}{=} -9$

$-9 = -9$ ✓

2. $\frac{r}{3} = 11 \cdot 3$

$3 \cdot$

$\boxed{r = 33}$

Check:

$\frac{33}{3} \stackrel{?}{=} 11$

$11 = 11$ ✓

3. $-6 = \frac{2}{7}p \cdot \frac{7}{2}$

$\frac{7}{2} \cdot$

$\frac{7}{1} \cdot \frac{-6^{3}}{1} = p$

$\boxed{-21 = p}$

Check:

$-6 \stackrel{?}{=} \frac{2}{1} \cdot \frac{-21^{3}}{1}$

$-6 = -6$ ✓