Math 7 Notes
(Section 6-2)
Solve One-Step Multiplication & Division Equations

We will be solving equations <u>algebraically using proper steps</u> based on these properties:

Multiplication Property of Equality
If $a = b$ then $ac = bc$

Division Property of Equality
If $a = b$ and $c \neq 0$ then $\frac{a}{c} = \frac{b}{c}$

<u>Solve</u>: $-7y = 28$

Notice that only one operation is being done to the variable.

$\frac{-7y}{-7} = \frac{28}{-7}$

REWRITE the original equation. Since the variable y is being multiplied by -7, we need to divide both sides of the equation by -7

$1y = -4$

$\boxed{y = -4}$

We choose to divide so that the coefficient of y is 1 (the identity of multiplication)

<u>Check</u>: $-7y = 28$

$-7(-4) \overset{?}{=} 28$

$28 = 28 \checkmark$

<u>Solve</u>: $\frac{a}{-3} = -12$

Notice that only one operation is being done to the variable.
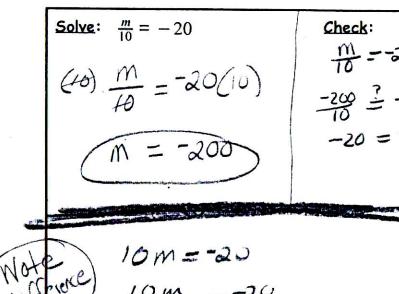
$(-3)\frac{a}{(-3)} = -12(-3)$

REWRITE the original equation. Since the variable y is being divided by -3, we need to multiply both sides of the equation by -3

$\boxed{a = 36}$

<u>Check</u>: $\frac{a}{-3} = -12$

$\frac{36}{-3} \overset{?}{=} -12$

$-12 = -12 \checkmark$

We choose to multiply so that the coefficient of a is 1 (the identity of multiplication)

<u>Solve</u>: $\frac{m}{10} = -20$

$(10)\frac{m}{10} = -20(10)$

$\boxed{m = -200}$

<u>Check</u>:

$\frac{m}{10} = -20$

$\frac{-200}{10} \overset{?}{=} -20$

$-20 = -20 \checkmark$

Note difference

$10m = -20$

$\frac{10m}{10} = \frac{-20}{10}$

$m = -2$

Box 1 (top left)

Solve: $-9y = 36$

$$\frac{-9y}{-9} = \frac{36}{-9}$$

skip → $1y = -4$

$$\boxed{y = -4}$$

Check:
$-9y = 36$
$-9(-4) \overset{?}{=} 36$
$36 = 36$ ✓

Box 2 (top right)

Solve: $\frac{h}{-6} = -3$

$$(-6) \cdot \frac{h}{(-6)} = -3(-6)$$

$$\boxed{h = 18}$$

Check:
$\frac{h}{-6} = -3$
$\frac{18}{-6} \overset{?}{=} -3$
$-3 = 3$ ✓

Box 3 (bottom left)

Solve: $\frac{h}{3} = -24$

$$(3)\left[\frac{h}{3} = -24\right](3)$$

$$\boxed{h = -72}$$

Check:
$\frac{h}{3} = -24$
$\frac{-72}{3} \overset{?}{=} -24$
$-24 = -24$ ✓

$$3\overline{)\,72}$$
24
$\frac{9}{2}$
-12

Box 4 (bottom right)

Solve: $8n = -24$

$$\frac{8n}{8} = \frac{-24}{8}$$

$$\boxed{n = -3}$$

Ck $8n = -24$
$8(-3) \overset{?}{=} -24$
$-24 = -24$ ✓

Note Difference

Check:
$$\frac{8}{-8} + n = \frac{-24}{-8}$$

$$\boxed{n = -32}$$