Solving Equations

Chapter Review

One-Step Equations

$x - 6 = -14$
$+6 \quad +6$
$x = -8$

add 6 to both sides to get x by itself

$\frac{-3y}{-3} = \frac{30}{-3}$
$y = -10$

here divide both sides by -3 to isolate y
* watch your integers!

$m + 7 = -2$
$-7 \quad -7$
$m = -9$

subtract 7 from both sides to isolate m

$\frac{2}{3}n = 6$
$\frac{3}{2} \cdot \frac{2}{3}n = \frac{3}{2} \cdot \frac{6}{1}$
$n = 9$

OK, when you need to clear a fraction to isolate variable, multipy both sides by the recriprocal - in this case 3/2
* Know your fractions!

Two-Step Equations

$$\frac{2}{5}m + 3 = 2$$
$$-3 \quad -3$$
$$\frac{2}{5}m = -1$$

$$\frac{5}{2} \cdot \frac{2}{5}m = \frac{5}{2} \cdot -1$$

$$m = -5/2$$

Isolate variable term first use + or − in this case subtract 3 from both sides

Then × or ÷ to solve the remaining one-step equation

Multi-Step Equations

Steps to follow

1. Distribute, combine like terms
2. All variable terms on left side
3. Numbers on right
4. Solve the basic one-step equation

$$-3(x-6) + 4(x+1) = 7x - 10$$
$$-3x + 18 + 4x + 4 = 7x - 10$$
$$x + 22 = 7x - 10$$
$$-7x \quad -22 \quad -7x \quad -22$$
$$-6x = -32$$
$$-6x = -32$$
$$x = \frac{-32}{-6} = \frac{16}{3}$$

Formulas and Literal Equations

Solve for the indicated variable

$P = 2l + 2w$, l

OK, only think of "l" as a variable

$P = 2l + 2w$

think of these variables as numbers

So, solve for l as any other equation, for example $10 = 2l + 2(3)$

$$P = 2l + 2w$$

$$2l + 2w = P$$
$$-2w \quad -2w$$

← isolate the term with l, $2l$

$$2l = P - 2w$$

solve for l, divide both sides by 2

$$\frac{2l}{2} = \frac{P - 2w}{2}$$

$$l = \frac{P - 2w}{2}$$

← solution