1.3 SOLVING LINEAR EQUATIONS

<u>Equation</u> - MUST have an equal sign

<u>Linear Equation</u> - MUST have one variable and an equal sign (the graph will be a line)

<u>EXAMPLES:</u> Solve for the variable.

1. $\boxed{x} + 9 = 15$

$ -9 \quad -9$

$\boxed{x = 6}$

2. $-3y = 36$

$\dfrac{-3y}{-3} \quad \dfrac{36}{-3}$

$\boxed{y = -12}$

3. $12n - 3 = 4n + 21$

$-4n -4n$

$8n - 3 = 21$

$ +3 +3$

$\dfrac{8n}{8} = \dfrac{24}{8}$

$\boxed{n = 3}$

4. $5(m - 2) = -4(2m + 7) + m$

$5m - 10 = -8m - 28 + 1m$

$5m - 10 = -7m - 28$

$+7m +7m$

$12m - 10 = -28$

$ +10 +10$

$\dfrac{12m}{12} = \dfrac{-18}{12}$

$\boxed{m = -\dfrac{3}{2} \text{ or } -1.5}$

5. $6(3 - d) = -5(2d + 9) + 18$

$18 - 6d = -10d \quad \boxed{-45 + 18}$

$18 - 6d = -10d - 27$

$\underline{\quad + 10d \qquad + 10d \quad}$

$18 + 4d = -27$

$\underline{-18 \qquad\quad -18}$

$\dfrac{4d}{4} = \dfrac{-45}{4}$

$\boxed{d = -\dfrac{45}{4} \text{ or } -11.25}$

6. $-1(g + 2) - 2g = -2(g + 1)$

$-g - 2 \quad -2g = -2g - 2$

$-3g - 2 = -2g - 2$

$\underline{+2g \qquad\quad +3g \quad}$

$\underline{-2 = g - 2}$

$\underline{+2 \qquad + 2}$

$\boxed{0 = g}$

$-3g - 2 = -2g - 2$

$\underline{+2g \qquad\quad +2g}$

$-g - 2 = -2$

$\underline{+2 \qquad +2}$

$\dfrac{-g}{-1} = \dfrac{0}{}$

$\boxed{g = 0}$

7. $\dfrac{7}{2}p - 1 = 2p + 5$

$\underline{-2p \qquad\quad -2p}$

$\dfrac{3}{2}p - 1 = 5$

$\underline{\quad +1 \qquad +1}$

$\dfrac{2}{3} \cdot \dfrac{3}{2}p = 6 \cdot \dfrac{2}{3}$

$\boxed{p = 4}$

8. $\dfrac{2}{3}w + \dfrac{1}{5} = 2w - \dfrac{3}{10}$