Solving Multi-step Equations

Sections ~~~~~~
3.3

Solving for the variable

- **GOAL:** To get the variable by itself

- **Steps:**
  - "Undo" by performing the opposite operation
  - Follow the <u>REVERSE</u> of the order of operations

Examples:

1. $2x + 4 = 6$

$-4 \quad -4$

$2x = 2$
$\overline{2} \quad \overline{2}$

$\boxed{x = 1}$

2. $-5x + 3 = -12$

$-3 \quad -3$

$-5x = -15$
$\overline{-5} \quad \overline{-5}$

$\boxed{x = 3}$

3. $6 = -a + 4$

$-4 \quad -4$

$2 = -a$

$\boxed{-2 = a}$

4. $5m - 6 = 4$

$+6 \quad +6$

$5m = 10$
$\overline{5} \quad \overline{5}$

$\boxed{m = 2}$

Examples:

5. $-3x - 5 = 7$ $\boxed{x = -4}$

$+5 \quad +5$

$\dfrac{-3x}{-3} = \dfrac{12}{-3}$

6. $\dfrac{x}{4} - 7 = 5$

$+7 \quad +7$

$4 \cdot \dfrac{x}{4} = 12 \cdot 4$

$\boxed{x = 48}$

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

$-5 \quad -5$

$\left(\dfrac{x}{-2} = -3 \right) -2$

$\boxed{x = 6}$

8. $12 = -4c - 4$

$+4 \quad +4$

$\dfrac{16}{-4} = \dfrac{-4c}{-4}$

$\boxed{-4 = c}$

Examples

9.) $3(x - 4) = 5$

$3x - 12 = 5$
$+12 \quad +12$

$\dfrac{3x}{3} = \dfrac{17}{3}$

$\boxed{x = \dfrac{17}{3}}$

10.) $-4(2x - 1) = 4$

$-8x + 4 = 4$
$-4 \quad -4$

$\dfrac{-8x}{-8} = \dfrac{0}{-8}$

$\boxed{x = 0}$

11.) $-5(a + 2) = 25$

$-5a - 10 = 25$
$+10 \quad +10$

$\dfrac{-5a}{-5} = \dfrac{35}{-5}$

$\boxed{a = -7}$

12.) $-16 = 4(3x + 5)$

$-16 = 12x + 20$
$-20 -20$

$\dfrac{-36}{12} = \dfrac{12x}{12}$

$\boxed{-3 = x}$

Classwork

- Pg 148 # 3-9, 10-15

⑥ $5(x-7)=90$

$5x-35=90$
$+35 \quad +35$

$\dfrac{5x}{5} = \dfrac{125}{5}$

$x = 25$

⑤ $3x - x + 15 = 41$

$2x + 15 = 41$
$-15 \quad -15$

$\dfrac{2x}{2} = \dfrac{26}{2}$

$x = 13$

⑧ $6x - 4(-3x + 2) = 10$

$6x + 12x - 8 = 10$

$18x - 8 = 10$
$+8 \quad +8$

$\dfrac{18x}{18} = \dfrac{18}{18}$

$x = 1$

⑦ $\dfrac{3}{4}(x+6) = 12$

$.75(x+6) = 12$

$.75x + 4.5 = 12$
$-4.5 \quad -4.5$

$\dfrac{.75x}{.75} = \dfrac{7.5}{.75}$

$x = 10$

$2x + 5 = 17$
$-5 \quad -5$

$\dfrac{2x}{2} = \dfrac{12}{2}$

$x = 6$

Closure

- Pg 148 # 1-2

Homework

- Pg 148 # 16-36 even