

## 5-2 Solving Equations w/ Variables of Each Side

Addition Property of Equality  
add the same number to both sides.

Subtraction Property of Equality  
subtract the same number from both sides

**Goal:** Get all variable on the same side.  
Get all of the constants on the other side.

$$\begin{array}{r}
 3x + 8 \\
 -1x \\
 \hline
 2x = 8 \\
 \frac{2}{2}x = \frac{8}{2} \\
 x = 4
 \end{array}$$

**Then Solve:**

$$\begin{array}{r|l}
 D & U \\
 \hline
 \cdot 2 & \div 2
 \end{array}$$

$$\begin{array}{r} 7x = 5x + 4 \\ -5x \quad -5x \\ \hline 2x = 4 \quad \text{D/U} \\ \frac{2x}{2} = \frac{4}{2} \quad \text{2|2} \\ \hline x = 2 \end{array}$$

$$\begin{array}{l} 3x - 2 = \cancel{x} + 4 \\ \underline{-1x} \\ 2x - 2 = 4 + 2 \\ \frac{2x}{2} - \frac{2}{2} = \frac{6}{2} \\ \textcircled{x=3} \end{array} \quad \begin{array}{r|l} D & U \\ \hline \cdot 2 & +2 \\ -2 & \div 2 \end{array}$$

$$\begin{array}{r} 7y + 8 = 4y - 10 \\ -4y \quad -4y \\ \hline 3y + 8 = -10 \\ -8 \quad -8 \\ \hline 3y = -18 \\ \frac{3y}{3} = \frac{-18}{3} \\ y = -6 \end{array}$$

$$\begin{array}{r|l} D & u \\ \hline \cdot 3 & -8 \\ +8 & \div 3 \end{array}$$

$$\begin{array}{r} 2x + 3 = 3x - 2 \\ -3x \quad -3x \\ \hline -x + 3 = -2 \quad | \quad \text{Dicy} \\ \quad 3 = -3 \quad | \quad -3 \\ \quad \quad = -5 \quad | \quad +3 \\ \quad \quad = -1 \quad | \quad + - ? \\ \hline \textcircled{x = 5} \end{array}$$

$$\begin{array}{r} 5p + 15 = p - 49 \\ -p \quad \quad \quad -p \\ \hline 4p + 15 = -49 \\ -15 \quad \quad \quad -15 \\ \hline 4p = -64 \\ \div 4 \quad \quad \quad \div 4 \\ \hline p = -16 \end{array}$$

$\begin{array}{r} D/U \\ \hline \cdot 4 \quad \div -15 \\ +15 \quad \div 4 \end{array}$

A. one time fee = \$160.00  
 25.00 for each session  
 $y = 25x + 60.00$

for each  
slope  
this # is multiplied  
by the variable  
=  $25x$

B. yearly = 450.00 Beginning Number  
 10.00 for each session  
 $y = 10x + 450$

Slope-Intercept form  
of a line

$$y = mX + b$$

slope y intercept

Beginning Number  
 Where the graph starts  
on the y axis  
y intercept

$$\begin{array}{r} 25x + 60 = 10x + 450 \\ -10x \quad -10x \\ \hline 15x + 60 = 450 \end{array}$$

$$\begin{array}{r} 15x + 60 = 450 \\ -60 \quad -60 \\ \hline 15x = 390 \end{array}$$

$$\frac{15x}{15} = \frac{390}{15}$$

$$x = 26$$

$$y = 85d + 75 \quad d = \text{per day}$$

$$y = 100d + 30$$

$$\begin{array}{r} 85d + 75 = 100d + 30 \\ -30 \quad \quad -30 \\ \hline \end{array}$$

$$\begin{array}{r} D/U \\ \hline \cdot 15 \quad \cdot 15 \end{array}$$

$$\begin{array}{r} 75d + 45 = 100d \\ -75d \\ \hline 45 = 15d \\ \frac{45}{15} = \frac{15d}{15} \end{array}$$

$$\boxed{3 = d}$$



Slope  
for each  
per day  
per