

4/10

1-2 Solving Linear Equations

Ex:

$$\begin{array}{r} 7x + 2 = 23 \\ -2 \quad -2 \\ \hline \end{array}$$

$$\begin{array}{r} \cancel{7}x = \frac{21}{\cancel{7}} \\ \hline \end{array}$$

$$x = 3$$

Conditional Equation -
an equation with one or no solutions.

Ex:

$$5y + 1 = 8y - 5 + 6y$$

Combine the like terms

$$\begin{array}{r} 5y + 1 = 14y - 5 \\ -5y \quad -5y \\ \hline \end{array}$$

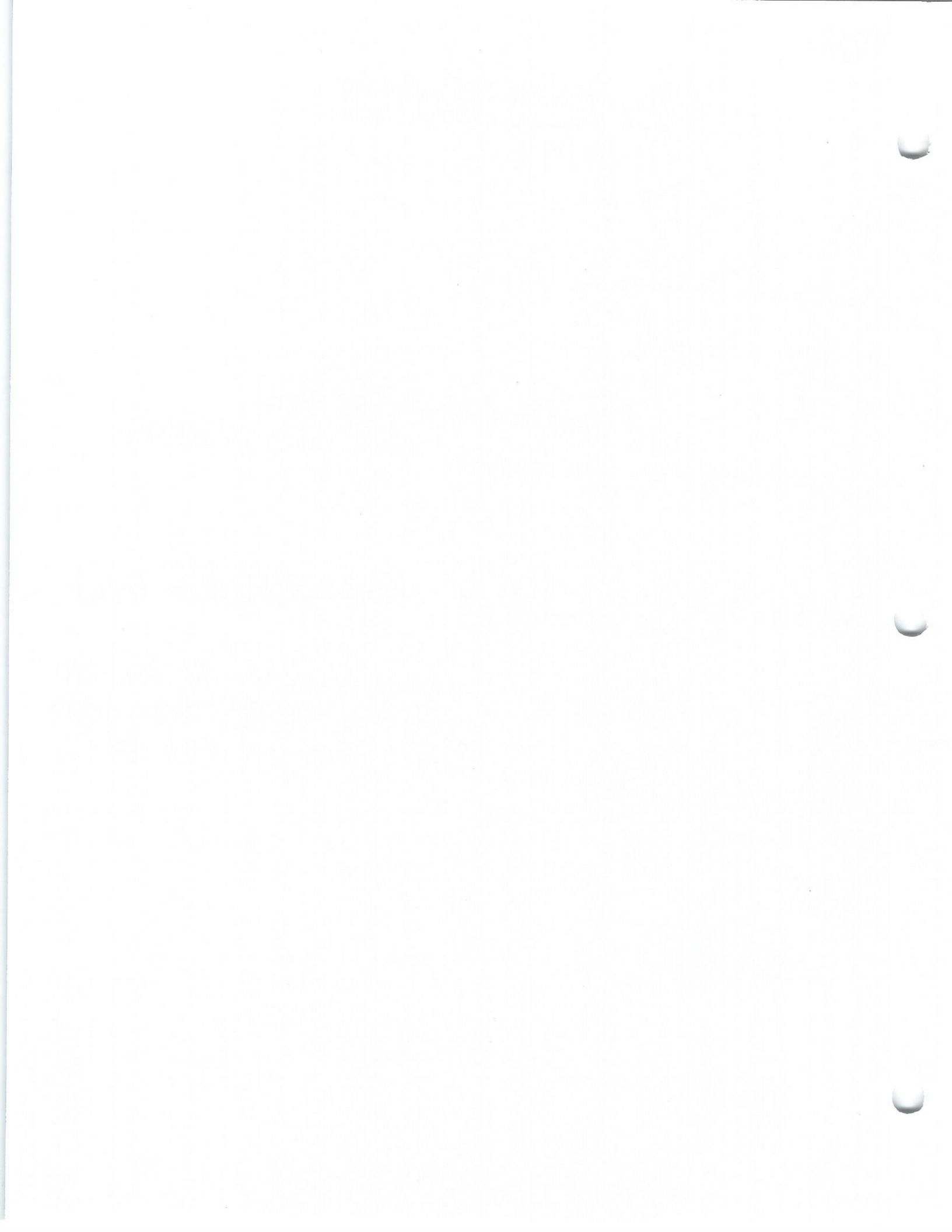
Since the right side has more y's than the left let's isolate our y's on the right side.

$$\begin{array}{r} 1 = 9y - 5 \\ +5 \quad +5 \\ \hline \end{array}$$

$$\frac{6}{9} = \frac{9y}{9}$$

$$y = \frac{6}{9} = \frac{2}{3}$$

reduce the fraction



Ex:

$$2x + 6 = 2(x + 5)$$

$$2x + 6 = 2x + 10$$

$$\begin{array}{r} -2x \\ \hline 6 = 10 \end{array}$$

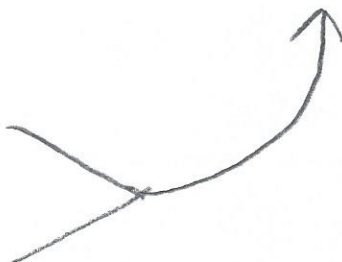
Conditional Equation

$$6 = 10$$

No Solution

observations

- 1) Variable disappeared
- 2) False statement



Ex:

$$9x - 10 = 5x + 2(2x - 5)$$

$$9x - 10 = 5x + 4x - 10$$

$$\boxed{9x - 10 = 9x - 10}$$

$$\begin{array}{r} -9x \\ \hline -10 = -10 \end{array}$$

$$-10 = -10$$

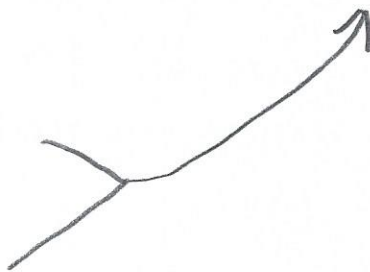
Identity

Solution Set - All Real Numbers.

Everything works!

observations

- 1) Variable disappeared
- 2) True statement



Equations w/ Fractions :

Ex:

$$\frac{10x + 3}{5x + 6} \quad \cancel{\frac{1}{2}}$$

Cross multiply

$$1(5x + 6) = 2(10x + 3)$$

$$5x + 6 = 20x + 6$$

$$\begin{array}{r} -5x \qquad \qquad -5x \\ \hline \end{array}$$

$$6 = 15x + 6$$

$$\begin{array}{r} -6 \qquad \qquad -6 \\ \hline \end{array}$$

$$\frac{0}{15} = \frac{15x}{15}$$

$$\boxed{0 = x}$$

Conditional Equation
has one solution.

EX: $\frac{x}{2} + 4 = 13 - \frac{x}{4}$

1) Identify the LCM of your denominators.

If you cannot figure out the LCM then just multiplying the denominators together still gives a common multiple. (8)

2) Multiply each term by the LCM or CM you found.

$$\frac{4x}{1} \cdot \frac{x}{2} + 4(8) = 13(8) - \frac{2x}{1} \cdot \frac{x}{4}$$

$$4x + 32 = 104 - 2x$$

$$+2x \qquad \qquad \qquad +2x$$

$$6x + 32 = 104$$

$$- 32 \qquad \qquad - 32$$

$$\frac{6x}{6} = \frac{72}{6}$$

$$x = 12$$

