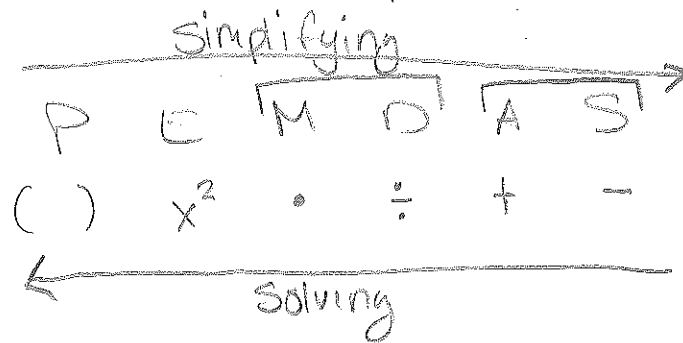


How do I solve?

The objective of solving is to isolate the variable.

First: Simplify, if necessary

- combine like terms
- PEMDAS to guide order



Second: if necessary - move the variable of interest to one side of the equal sign

Third: undo operations on the variable by doing the inverse operations AND PEMDAS in reverse to guide order

operations	inverse operations
•	÷
$x^2$	√
+	-

# POSSIBLE OUTCOMES

Soln = Solution

One soln, multiple solns, no soln, all solns

NO SOLN: occurs when the final statement is FALSE!

ex) solve 
$$\begin{array}{r} x-1 = -3+x \\ +3 \quad +3 \end{array}$$

$$\begin{array}{r} \cancel{x} + 2 = \cancel{x} \\ -\cancel{x} \quad -\cancel{x} \end{array}$$

$2 = 0$  FALSE  $\Rightarrow$  no soln

ALL SOLNS: occurs when the final statement is always TRUE!

ex) solve  $2 + 2x = 2(x+1)$

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

$$\begin{array}{r} 2x = 2x \\ -2x \quad -2x \end{array}$$

$0 = 0$  TRUE  $\Rightarrow$  infinite soln  
all soln

## Solving w/ Fractions

one fraction = one fraction  $\Rightarrow$  cross multiply

Gen. Rule

ex) solve  $\frac{3}{x} = \frac{9}{10}$  assume  $x \neq 0$

$$\frac{a}{b} = \frac{c}{d}$$
$$ad = bc$$

$$\frac{9x}{9} = \frac{30}{9}$$

$$x = \frac{30}{9} = \frac{10}{3}$$

GCF  
greatest common factor



# Manipulation Examples

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Given  $C = 2\pi r$ , solve for "r"

$$\frac{C}{2\pi} = \frac{2\pi r}{2\pi}$$

$$r = \frac{C}{2\pi}$$

Given  $y = mx + b$ , solve "m"

$$\frac{y}{\cancel{b}} = \frac{m}{\cancel{b}}x + \frac{b}{\cancel{b}}$$

$$\frac{y-b}{x} = \frac{mx}{x} \quad \text{assume } x \neq 0$$

$$m = \frac{y-b}{x}$$