1.3 Solving Eqn with Variables on Both sides

3 possibilites

① One Solution

② Infinitely many solutions (All real #'s)

③ No real solution

① One Solution

EX] Solve $3x-10+4x=-2(x-4)+9$

$3x-10+4x=-2x+8+9$

$7x-10=-2x+17$

$+10 \quad +10$

$7x=-2x+27$

$+2x \quad +2x$

$\frac{9x}{9}=\frac{27}{9}$

$\boxed{x=3}$ ← one solution

② Infinitely Many Solutions

EX] Solve $6x+4=2(3x+2)$

$6x+4=6x+4$

$-6x \quad -6x$

$4=4$ ↑ True!

$\boxed{\text{All real \#'s}}$

Any time you end up with a true statement after variables are gone, the answer is all real #'s

③ No real solution

Ex] Solve $4x-3=2(2x+7)$

$4x-3=4x+14$

$-4x \quad -4x$

$-3 \neq 14$ ← FALSE!

NO solution

DNE

Anytime you end up with a false statement after variables are gone, the answer is no solution!

Examples: solve & state how many solutions

① $28+7n=7+7(n+3)$

② $3(x+4)=3x+17$

③ $-3v+17=-(v-7)$

④ $-8(x+4)=-32-8x$

⑤ $2(x+3)=2x+17$

⑥ $24+8x=-4(1-3x)$