Name: _____ **Date:** _____ **HW #11 Variables on Both Sides**

Solve each equation on your own paper. See paper for work below

1) $6r + 7 = 13 + 7r$

$r = -6$

2) $13 - 4x = 1 - x$

$x = 4$

3) $-7x - 3x + 2 = -8x - 8$

$x = 5$

4) $-8 - x = x - 4x$

$x = 4$

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

$\emptyset$

6) $\frac{x - 6}{3x + 2} = \frac{7}{11}$

$x = -8$

7) $-8n + 4(1 + 5n) = -6n - 14$

$n = -1$

8) $-6n - 20 = -2n + 4(1 - 3n)$

$n = 3$

9) $8x + 4(4x - 3) = 4(6x + 4) - 4$

$\emptyset$

10) $3(1 - 3x) = 2(-4x + 7)$

$x = -11$

11) $4(-8x + 5) = -32x - 26$

$\emptyset$

12) $-3(x - 1) + 8(x - 3) = 6x + 7 - 5x$

$x = 7$

HW #1

① $6r+7=13+7r$

$-6r \qquad -6r$

$7=13+r$

$-13 \quad -13$

$\boxed{-6=r}$

② $13-4x=1-x$

$+4x \quad +4x$

$13=1+3x$

$-1 \quad -1$

$\frac{12}{3}=\frac{3x}{3}$

$\boxed{4=x}$

③ $-7x-3x+2=-8x-8$

$-10x+2=-8x-8$

$+10x \quad +10x$

$2=2x-8$

$+8 \quad +8$

$\frac{10}{2}=\frac{2x}{2}$

$\boxed{5=x}$

④ $-8-x=x-4x$

$-8-x=-3x$

$+x \quad +x$

$\frac{-8}{-2}=\frac{-2x}{-2}$

$\boxed{4=x}$

⑤ $5+2x=2x+6$

$\emptyset$ b/c same coeff diff. const

⑥ $\frac{x-6}{3x+2}=\frac{7}{11}$

$11(x-6)=7(3x+2)$

$11(x)+11(-6)=7(3x)+7(2)$

$11x-66=21x+14$

$-11x \qquad -11x$

$-66=10x+14$

$-14 \quad -14$

$\frac{-80}{10}=\frac{10x}{10}$

$\boxed{-8=x}$

(7) $-8n+4(1+5n) = -6n-14$

$-8n+4(1)+4(5n) = -6n-14$

$-8n+4+20n = -6n-14$

$12n+4 = -6n-14$

$+6n \quad +6n$

$18n+4 = -14$

$-4 \quad -4$

$\frac{18n}{18} = \frac{-18}{18}$

$n = -1$

(8) $-6n-20 = -2n+4(1-3n)$

$-6n-20 = -2n+4(1)+4(-3n$

$-6n-20 = -2n+4-12n$

$-6n-20 = -14n+4$

$+14n \quad +14n$

$8n-20 = 4$

$+20 \quad +20$

$\frac{8n}{8} = \frac{24}{8}$

$n = 3$

(9) $8x+4(4x-3) = 4(6x+4)-4$

$8x+4(4x)+4(-3) = 4(6x)+4(4)-4$

$8x+16x-12 = 24x+16-4$

$24x-12 = 24x+12$

same coeff

diff const $\emptyset$

(10) $3(1-3x) = 2(-4x+7)$

$3(1)+3(-3x) = 2(-4x)+2(7$

$3-9x = -8x+14$

$+9x \quad +9x$

$3 = x+14$

$-14 \quad -14$

$-11 = x$

(11) $4(-8x+5) = -32x-26$

$4(-8x)+4(5) = -32x-26$

$-32x+20 = -32x-26$

same coeff

diff const. $\emptyset$

(12) $-3(x-1)+8(x-3) = 6x+7-5x$

$-3(x)-3(-1)+8(x)+8(-3) = x+7$

$-3x+3+8x-24 = x+7$

$5x-21 = x+7$

$-x \quad -x$

$4x-21 = 7$

$+21 \quad +21$

$\frac{4x}{4} = \frac{28}{4}$

$x = 7$