① combine like terms
② put all the variables on same side
③ use inverse operations to solve equation

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Solving Multi-Step Equations

Date_____ Period____

Solve each equation.

1) $4n - 2n = 4$

2) $-12 = 2 + 5v + 2v$

3) $3 = x + 3 - 5x$

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

5) $-12 = 3 - 2k - 3k$

$-12 = 3 - 5k$

$-3 \quad -3$

$\frac{-15}{-5} = \frac{-5k}{-5}$

$\div -5 \quad \div -5$

$+3 \quad -3$

$k = 3$

6) $-1 = -3r + 2r$

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

8) $-3(4r - 8) = -36$

$-12r + 24 = -36$

$-24 \quad -24$

$\frac{-12r}{-12} = \frac{-60}{-12}$

$r = 5$

$\frac{-3(4r - 8)}{-3} = \frac{-36}{-3}$

$4r - 8 = 12$

$+8 \quad +8$

$\frac{4r}{4} = \frac{20}{4}$

$r = 5$

9) $24 = 6(-x - 3)$

10) $75 = 3(-6n - 5)$

11) $-3(1+6r)=14-r$

12) $6(6v+6)-5=1+6v$

13) $-4k+2(5k-6)=-3k-39$

14) $-16+5n=-7(-6+8n)+3$

15) $10p+9-11-p=-2(2p+4)-3(2p-2)$

$9p-2=-4p-8-6p+6$

$9p-2=-10p-2$

$+10p \quad +10p$

$19p-2=-2$

$19p-2=-2$

$+2 \quad +2$

$\frac{19p}{19}=\frac{0}{19}$

$p=0$

16) $-10n+3(8+8n)=-6(n-4)$

17) $10(x+3)-(-9x-4)=x-5+3$

18) $12(2k+11)=12(2k+12)$

19) $-12(x-12)=-9(1+7x)$

20) $-11+10(p+10)=4-5(2p+11)$

Critical thinking question:

21) Explain two ways you could solve $20=5(-3+x)$

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Solve each equation.

1) $4n - 2n = 4$

{2}

2) $-12 = 2 + 5v + 2v$

{−2}

3) $3 = x + 3 - 5x$

{0}

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

{−6}

5) $-12 = 3 - 2k - 3k$

{3}

6) $-1 = -3r + 2r$

{1}

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

{−4}

8) $-3(4r - 8) = -36$

{5}

9) $24 = 6(-x - 3)$

{−7}

10) $75 = 3(-6n - 5)$

{−5}

11) $-3(1+6r)=14-r$

{−1}

12) $6(6v+6)-5=1+6v$

{−1}

13) $-4k+2(5k-6)=-3k-39$

{−3}

14) $-16+5n=-7(-6+8n)+3$

{1}

15) $10p+9-11-p=-2(2p+4)-3(2p-2)$

{0}

16) $-10n+3(8+8n)=-6(n-4)$

{0}

17) $10(x+3)-(-9x-4)=x-5+3$

{−2}

18) $12(2k+11)=12(2k+12)$

No solution.

19) $-12(x-12)=-9(1+7x)$

{−3}

20) $-11+10(p+10)=4-5(2p+11)$

{−7}

Critical thinking question:

21) Explain two ways you could solve $20=5(-3+x)$

(1) Divide by 5 first, or (2) Distribute the 5 first.