

WWK (page 43 & 44)

Terms	parts of an algebraic expression separated by addition or subtraction	$7x - 9y - 3$ (3 terms)
Coefficient	the numerical part of the term	$7x$
Constant Term	the term that is just numerical (no variable)	$7x - 9y - 3$
Like Terms	terms that have the same variables with the same exponents	$3x$ & $7x$ or $4y$ & $9y$ or $5x^2$ & $3x^2$
Equation	two algebraic expressions joined by an equal sign	$3x + 5 = -2x - 7$
Linear Equation	your highest exponent is one	$y = 3x - 6$

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TOC page 47 Solving Linear Equations

Solving One Step Equations

Add
Add the same # to each side of the equal sign.

Ex: $x - 3 = 5$
 $+3 +3$
 $x = 8$

Ex: $b + 2 = 7$
 $-2 -2$
 $b = 5$

Subtract
Subtract the same # from each side of the equal sign.

Multiply
Multiply the same # to each side of the equal

Ex: $x \cdot \frac{1}{8} = 3$ (8)
 $x = 24$

Ex: $2c = 24$
 $\frac{2}{2} \frac{24}{2}$
 $c = 12$

Divide
Divide the same # to each side of the equal sign.

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Multi-Step Equations

$$2(x-4) + 5x = -22$$

$$2x - 8 + 5x = -22$$

$$\begin{array}{r} 2x - 8 = -22 \\ +8 \quad +8 \\ \hline 2x = -14 \\ \hline x = -7 \end{array}$$

$$x = -7$$

Given

Distribute

Combine like terms

Addition

Subtraction

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Example 1: Solve the equation.

a) $x - 5 = 12$

$$\begin{array}{r} x - 5 = 12 \\ +5 \quad +5 \\ \hline x = 17 \end{array}$$

b) $x + 11 = -4$

$$\begin{array}{r} x + 11 = -4 \\ -11 \quad -11 \\ \hline x = -15 \end{array}$$

c) $x = 12 \cdot 3$

$$\begin{array}{r} x = 12 \cdot 3 \\ \hline x = 36 \end{array}$$

d) $-4x = 84$

$$\begin{array}{r} -4x = 84 \\ \hline x = -21 \end{array}$$

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Example 2: Solve and check

$$\begin{array}{r} 4x + 5 = 29 \\ -5 \quad -5 \\ \hline 4x = 24 \\ \frac{4x}{4} = \frac{24}{4} \\ x = 6 \end{array}$$

$$\begin{array}{l} 4x + 5 = 29 \\ 4(6) + 5 = 29 \\ 24 + 5 = 29 \\ 29 = 29 \\ \checkmark \end{array}$$

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Example 3: Solve the equation

$$\begin{array}{r} 6(x-3) + 7x = -57 \\ 6x - 18 + 7x = -57 \\ 13x - 18 = -57 \\ +18 \quad +18 \\ \hline 13x = -39 \\ \frac{13x}{13} = \frac{-39}{13} \\ x = -3 \end{array}$$

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Example 4 Solve the equation

$$\begin{array}{r} 2x + 9 = 8x - 3 \\ -2x \quad \downarrow \quad -2x \\ \hline 9 = 6x - 3 \\ +3 \quad \downarrow \quad +3 \\ \hline 12 = 6x \\ \underline{6} \quad \downarrow \quad 6 \\ \boxed{2 = x} \end{array}$$

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Example 5: Solve
 $3x + 7 = 3(x+1)$

$$\begin{array}{r} 3x + 7 = 3x + 3 \\ \downarrow -3 \quad \downarrow -3 \\ \hline 3x + 4 = 3x \\ -3x \quad \downarrow \quad -3x \\ \hline 4 = 0 \text{ Not true} \\ \boxed{\text{no solution}} \end{array}$$

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Example 6: Solve

$$3(x-1)+9=8x+6-5x$$

$$3x-3+9=8x+6-5x$$

$$\begin{array}{r} 3x+6=3x+6 \\ \downarrow -6 \quad \downarrow -6 \\ \hline \end{array}$$

all real
#'s

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

$x=x$ True Statement

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#2-20
even

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