

PA Worksheet U2-1
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Name: Key

Date: _____

C1: Solve for x.

$$\begin{array}{r} x + 6 = 9 \\ -6 \quad -6 \\ \hline x = 3 \end{array}$$

$$\begin{array}{r} x + 6 = 4 \\ +6 \quad +6 \\ \hline x = 10 \end{array}$$

$$\begin{array}{r} x + 10 = 15 \\ -10 \quad -10 \\ \hline x = 5 \end{array}$$

$$\begin{array}{r} x - 1 = 9 \\ +1 \quad +1 \\ \hline x = 10 \end{array}$$

$$\begin{array}{r} x + 5 = 13 \\ -5 \quad -5 \\ \hline x = 8 \end{array}$$

$$\begin{array}{r} x + 7 = 2 \\ +7 \quad +7 \\ \hline x = 9 \end{array}$$

$$\begin{array}{r} x + 17 = 20 \\ -17 \quad -17 \\ \hline x = 3 \end{array}$$

$$\begin{array}{r} x - 9 = 0 \\ +9 \quad +9 \\ \hline x = 9 \end{array}$$

$$\begin{array}{r} x + 4 = 6 \\ -4 \quad -4 \\ \hline x = 2 \end{array}$$

$$\begin{array}{r} x + 6 = 10 \\ +6 \quad +6 \\ \hline x = 16 \end{array}$$

$$\begin{array}{r} x + 18 = 30 \\ -18 \quad -18 \\ \hline x = 12 \end{array}$$

$$\begin{array}{r} x - 8 = 10 \\ +8 \quad +8 \\ \hline x = 18 \end{array}$$

C2: Determine if the given value for x is a solution to the given equation.

1. $5x + 8 = -7$ $x = -3$

$$\begin{aligned} 5(-3) + 8 &= -7 \\ -15 + 8 &= -7 \\ -7 &= -7 \checkmark \\ \text{yes} \end{aligned}$$

2. $-2x + 9 = 1$ $x = 4$

$$\begin{aligned} -2(4) + 9 &= 1 \\ -8 + 9 &= 1 \\ 1 &= 1 \checkmark \\ \text{yes} \end{aligned}$$

3. $7x - 10 = 25$ $x = -2$

$$\begin{aligned} 7(-2) - 10 &= 25 \\ -14 - 10 &= 25 \\ -24 &= 25 \\ \text{NO} \end{aligned}$$

4. $2(3x + 2) = -14$ $x = 3$

$$\begin{aligned} 2(3(3) + 2) &= -14 \\ 2(9 + 2) &= -14 \\ 2(11) &= -14 \\ 22 &= -14 \\ \text{NO} \end{aligned}$$

5. $4x - 17 = -2x - 5$ $x = 2$

$$\begin{aligned} 4(2) - 17 &= -2(2) - 5 \\ 8 - 17 &= -4 - 5 \\ -9 &= -9 \checkmark \\ \text{yes} \end{aligned}$$

6. $4x + 7x - 10 = 12$ $x = -1$

$$\begin{aligned} 4(-1) + 7(-1) - 10 &= 12 \\ -4 + (-7) - 10 &= 12 \\ -11 - 10 &= 12 \\ -21 &= 12 \\ \text{NO} \end{aligned}$$

PA Worksheet U2-2
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Name: Kay

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C1: Please solve each equation below for the given variable.

1. $x + 4 = -3$

$$\begin{array}{r} -4 \quad -4 \\ x + 4 = -3 \\ \hline x = -7 \end{array}$$

2. $x - 9 = 6$

$$\begin{array}{r} +9 \quad +9 \\ x - 9 = 6 \\ \hline x = 15 \end{array}$$

3. $x + (-2) = 1$

$$\begin{array}{r} -2 \quad -2 \\ x + (-2) = 1 \\ \hline x = 3 \end{array}$$

4. $x - 11 = -9$

$$\begin{array}{r} +11 \quad +11 \\ x - 11 = -9 \\ \hline x = 2 \end{array}$$

5. $x + 5 = -1$

$$\begin{array}{r} -5 \quad -5 \\ x + 5 = -1 \\ \hline x = -6 \end{array}$$

6. $x - (-7) = 12$

$$\begin{array}{r} +7 \quad +7 \\ x - (-7) = 12 \\ \hline x = 5 \end{array}$$

7. $x + 10 = 14$

$$\begin{array}{r} -10 \quad -10 \\ x + 10 = 14 \\ \hline x = 4 \end{array}$$

8. $x - 9 = -9$

$$\begin{array}{r} +9 \quad +9 \\ x - 9 = -9 \\ \hline x = 0 \end{array}$$

9. $x + (-7) = -1$

$$\begin{array}{r} -7 \quad -7 \\ x + (-7) = -1 \\ \hline x = 6 \end{array}$$

10. $x - (-10) = -11$

$$\begin{array}{r} +10 \quad +10 \\ x - (-10) = -11 \\ \hline x = -21 \end{array}$$

11. $x + 9 = -2$

$$\begin{array}{r} -9 \quad -9 \\ x + 9 = -2 \\ \hline x = -11 \end{array}$$

12. $x - 17 = 3$

$$\begin{array}{r} +17 \quad +17 \\ x - 17 = 3 \\ \hline x = 20 \end{array}$$

C2: Determine if the given value for x is a solution to the given equation.

1. $4x + 8 = 20$ $x = 3$

$$\begin{aligned} 4(3) + 8 &= 20 \\ 12 + 8 &= 20 \\ 20 &= 20 \checkmark \\ \text{yes} \end{aligned}$$

2. $-2x - 4 = -12$ $x = 1$

$$\begin{aligned} -2(1) - 4 &= -12 \\ -2 - 4 &= -12 \\ -6 &= -12 \\ \text{NO} \end{aligned}$$

3. $6x + 2 = -4$ $x = -1$

$$\begin{aligned} 6(-1) + 2 &= -4 \\ -6 + 2 &= -4 \\ -4 &= -4 \checkmark \\ \text{yes} \end{aligned}$$

4. $3(2x + 7) = 33$ $x = 2$

$$\begin{aligned} 3(2(2) + 7) &= 33 \\ 3(4 + 7) &= 33 \\ 3(11) &= 33 \\ 33 &= 33 \checkmark \end{aligned}$$

5. $2(-2x - 5) = -6$ $x = 0$

$$\begin{aligned} 2(-2(0) - 5) &= -6 \\ 2(0 - 5) &= -6 \\ 2(-5) &= -6 \\ -10 &= -6 \end{aligned}$$

6. $7(2x - 5) = 7$ $x = 3$

$$\begin{aligned} 7(2(3) - 5) &= 7 \\ 7(6 - 5) &= 7 \\ 7(1) &= 7 \\ 7 &= 7 \checkmark \end{aligned}$$

PA Worksheet U2-3

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Name: Kay

Date: _____

C1: Please solve each equation below for the given variable.

1. $6x = 18$

$x = 3$

2. $4x = 24$

$x = 6$

3. $10x = 100$

$x = 10$

4. $7x = 77$

$x = 11$

5. $\frac{x}{6} = 5 \cdot 6$

$x = 30$

6. $\frac{x}{10} = 7 \cdot 10$

$x = 70$

7. $\frac{x}{3} = 9 \cdot 3$

$x = 27$

8. $\frac{x}{13} = 2 \cdot 13$

$x = 26$

9. $2x = 16$

$x = 8$

10. $8x = 56$

$x = 7$

11. $12x = 108$

$x = 9$

12. $3x = 51$

$x = 17$

13. $\frac{x}{7} = 7 \cdot 7$

$x = 49$

14. $\frac{x}{9} = 6 \cdot 9$

$x = 54$

15. $\frac{x}{2} = 24 \cdot 2$

$x = 48$

16. $\frac{x}{4} = 30 \cdot 4$

$x = 120$

C2: Determine if the given value for x is a solution to the given inequality.

1. $4x + 3 < -3$ $x = -3$

$4(-3) + 3 < -3$
 $-12 + 3 < -3$
 $-9 < -3$ ✓
 yes

2. $-2x - 4 > 10$ $x = -5$

$-2(-5) - 4 > 10$
 $10 - 4 > 10$
 $6 > 10$
 NO

3. $6x - 12 \geq 7$ $x = -1$

$6(-1) - 12 \geq 7$
 $-6 - 12 \geq 7$
 $-18 \geq 7$
 NO

4. $-9x + 1 \leq 12$ $x = -1$

$-9(-1) + 1 \leq 12$
 $9 + 1 \leq 12$
 $10 \leq 12$ ✓
 yes

5. $2(x - 5) > -6$ $x = 0$

$2(0 - 5) > -6$
 $2(-5) > -6$
 $-10 > -6$
 NO

6. $7(2x + 1) \leq -35$ $x = -5$

$7(2(-5) + 1) \leq -35$
 $7(-10 + 1) \leq -35$
 $7(-9) \leq -35$
 $-63 \leq -35$ ✓

PA Worksheet U2-4

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Name: Kay

Date: _____

C1: Please solve each equation below for the given variable.

$$1. \frac{3x}{-3} = \frac{15}{-3}$$

$$x = -5$$

$$2. \frac{7x}{7} = \frac{-28}{7}$$

$$x = -4$$

$$3. \frac{4x}{-4} = \frac{-36}{-4}$$

$$x = 9$$

$$4. \frac{5x}{5} = \frac{65}{5}$$

$$x = 13$$

$$5. \frac{x}{-3} = -3 \cdot -3$$

$$x = 9$$

$$6. \frac{x}{7} = -5 \cdot 7$$

$$x = -35$$

$$7. \frac{x}{10} = 3 \cdot 10$$

$$x = 30$$

$$8. \frac{x}{-8} = 4 \cdot -8$$

$$x = -32$$

$$9. \frac{6x}{-6} = \frac{-66}{-6}$$

$$x = 11$$

$$10. \frac{11x}{11} = \frac{99}{11}$$

$$x = 9$$

$$11. \frac{9x}{9} = \frac{-63}{9}$$

$$x = -7$$

$$12. \frac{12x}{-12} = \frac{48}{-12}$$

$$x = -4$$

$$13. \frac{2}{3}x = -4 \cdot \frac{3}{2}$$

$$x = -6$$

$$14. \frac{-4}{9}x = 8 \cdot \frac{-9}{4}$$

$$x = -18$$

$$15. \frac{2}{5}x = -8 \cdot \frac{5}{2}$$

$$x = -20$$

$$16. \frac{-5}{8}x = -10 \cdot \frac{-8}{5}$$

$$x = 16$$

C2: Determine if the given value for x is a solution to the given equation or inequality.

1. $6x - 5 = 19$ $x = 4$

$$6(4) - 5 = 19$$

$$24 - 5 = 19$$

$$19 = 19 \checkmark$$

yes

4. $5x - 12 \geq 8$ $x = 4$

$$5(4) - 12 \geq 8$$

$$20 - 12 \geq 8$$

$$8 \geq 8 \checkmark$$

yes

2. $-7x + 8 = -6$ $x = -2$

$$-7(-2) + 8 = -6$$

$$14 + 8 = -6$$

$$22 = -6$$

NO

5. $4(-2x + 5) < -12$ $x = -5$

$$4(-2(-5) + 5) < -12$$

$$4(10 + 5) < -12$$

$$4(15) < -12$$

$$60 < -12$$

N/D

3. $5(2x - 3) + 3 = -2$ $x = -1$

$$5(2(-1) - 3) + 3 = -2$$

$$5(-2 - 3) + 3 = -2$$

$$5(-5) + 3 = -2$$

$$-25 + 3 = -2$$

$$-22 = -2$$

NO

6. $-2(6x - 3) \leq -30$ $x = -5$

$$-2(6(-5) - 3) \leq -30$$

$$-2(-30 - 3) \leq -30$$

$$-2(-33) \leq -30$$

$$66 \leq -30$$

Review Assignment for Unit 2 Quiz 1

Solve each equation.

1) $-16v = 176$

$$\begin{array}{r|l} -16v & 176 \\ \hline -16 & -16 \\ \hline v & -11 \end{array}$$

2) $-12x = 240$

$$\begin{array}{r|l} -12x & 240 \\ \hline -12 & -20 \\ \hline x & -20 \end{array}$$

3) $13 + r = -4$

$$\begin{array}{r|l} 13+r & -4 \\ \hline -13 & -13 \\ \hline r & -17 \end{array}$$

4) $-17 + k = -1$

$$\begin{array}{r|l} -17+k & -1 \\ \hline +17 & +17 \\ \hline k & 16 \end{array}$$

5) $-7m = 126$

$$\begin{array}{r|l} -7m & 126 \\ \hline -7 & -18 \\ \hline m & 18 \end{array}$$

6) $\frac{x}{19} = -14$

$$19 \cdot \frac{x}{19} = -14 \cdot 19$$

$$x = -266$$

7) $x + (-18) = -36$

$$\begin{array}{r|l} x-18 & -36 \\ \hline +18 & +18 \\ \hline x & -18 \end{array}$$

8) $v + 19 = 39$

$$\begin{array}{r|l} v+19 & 39 \\ \hline -19 & -19 \\ \hline v & 20 \end{array}$$

9) $-17 + x = 1$

$$\begin{array}{r|l} -17+x & 1 \\ \hline +17 & +17 \\ \hline x & 18 \end{array}$$

10) $p - 1 = -2$

$$\begin{array}{r|l} p-1 & -2 \\ \hline +1 & +1 \\ \hline p & -1 \end{array}$$

11) $m + (-3) = 0$

$$\begin{array}{r|l} m-3 & 0 \\ \hline +3 & +3 \\ \hline m & 3 \end{array}$$

12) $x + (-17) = -18$

$$\begin{array}{r|l} x-17 & -18 \\ \hline +17 & +17 \\ \hline x & -1 \end{array}$$

13) $-2k = 30$

$$\begin{array}{r|l} -2k & 30 \\ \hline -2 & -15 \\ \hline k & -15 \end{array}$$

14) $-10x = 130$

$$\begin{array}{r|l} -10x & 130 \\ \hline -10 & -13 \\ \hline x & -13 \end{array}$$

$$15) m - (-17) = 17$$

$$\begin{array}{r} m+17 = 17 \\ -17 \quad -17 \\ \hline m = 0 \end{array}$$

Evaluate each expression.

$$16) 8 \div (|3| - -2 - 1)$$

$$8 \div (3 + 2 - 1)$$

$$8 \div (5 - 1)$$

$$8 \div 4 = 2$$

$$18) (4 \cdot 2) \div (3 - -1)$$

$$8 \div 4$$

$$2$$

$$20) -4 - -3 + 3^3 - 1$$

$$-4 + 3 + 27 - 1$$

$$-1 + 27 - 1$$

$$26 - 1 = 25$$

Determine if the given value for x is a solution to the given equation or inequality.

$$21.) 6x + 7 = 19 ; x = 2$$

$$6(2) + 7 = 19$$

$$12 + 7 = 19$$

$$19 = 19 \checkmark \text{ yes}$$

$$22.) 9x - 10 = -28 ; x = 2$$

$$9(2) - 10 = -28$$

$$18 - 10 = -28$$

$$8 = -28$$

NO SOL.

$$23.) 6(x+2) + 6x = 0 ; x = -1$$

$$6(-1+2) + 6(-1) = 0$$

$$6(1) + -6 = 0$$

$$6 + -6 = 0$$

$$0 = 0 \checkmark \text{ yes}$$

$$24.) 7x - 5x = -10 + 20 ; x = 5$$

$$7(5) - 5(5) = -10 + 20$$

$$35 - 25 = 10$$

$$10 = 10 \checkmark$$

yes

$$17) \quad 4(-4x - 5) \geq 25 ; x=1$$

$$4(-4(1) - 5) \geq 25$$

$$4(-4 - 5) \geq 25$$

$$4(-9) \geq 25$$

$$-36 \geq 25$$

NO SOL

$$27) \quad 8x + 9 > -10 ; x = -3$$

$$8(-3) + 9 > -10$$

$$-24 + 9 > -10$$

$$-15 > -10$$

NO SOL

$$26) \quad -3(-3x + 8) < -50 ; x = -2$$

$$-3(-3(-2) + 8) < -50$$

$$-3(6 + 8) < -50$$

$$-3(14) < -50$$

$$-42 < -50$$

NO SOL

$$28) \quad 5x - 7 \leq 3 ; x = -2$$

$$5(-2) - 7 \leq 3$$

$$-10 - 7 \leq 3$$

$$-17 \leq 3$$

yes

PA Worksheet U2-5
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Name: KEY Date: _____

C1: Please solve each equation below for the given variable.

$$\begin{array}{r} 1. \quad 5x + 11 = -14 \\ -11 \quad -11 \\ \hline 5x = -25 \\ \hline x = -5 \end{array}$$

$$\begin{array}{r} 2. \quad -7x - 13 = 36 \\ +13 \quad +13 \\ \hline -7x = 49 \\ \hline x = -7 \end{array}$$

$$\begin{array}{r} 3. \quad 2x - 8 = -10 \\ +8 \quad +8 \\ \hline 2x = -2 \\ \hline x = -1 \end{array}$$

$$\begin{array}{r} 4. \quad 3x + 7 = -14 \\ -7 \quad -7 \\ \hline 3x = -21 \\ \hline x = -7 \end{array}$$

$$\begin{array}{r} 5. \quad -12x + 36 = 36 \\ -36 \quad -36 \\ \hline -12x = 0 \\ \hline x = 0 \end{array}$$

$$\begin{array}{r} 6. \quad -9x - 11 = 25 \\ +11 \quad +11 \\ \hline -9x = 36 \\ \hline x = -4 \end{array}$$

$$\begin{array}{r} 7. \quad 4x - 12 = 20 \\ +12 \quad +12 \\ \hline 4x = 32 \\ \hline x = 8 \end{array}$$

$$\begin{array}{r} 8. \quad 6x - 8 = 40 \\ +8 \quad +8 \\ \hline 6x = 48 \\ \hline x = 8 \end{array}$$

$$\begin{array}{r} 9. \quad -5x + 13 = -12 \\ -13 \quad -13 \\ \hline -5x = -25 \\ \hline x = 5 \end{array}$$

C2: Solve each equation below.

$$\begin{array}{r} 1. \quad \frac{2}{3}x = 8 \cdot \frac{3}{2} \\ \hline x = 12 \end{array}$$

$$\begin{array}{r} 2. \quad \frac{-3}{5}x = 15 \cdot \frac{-5}{3} \\ \hline x = -25 \end{array}$$

$$\begin{array}{r} 3. \quad \frac{4}{9}x = -8 \cdot \frac{9}{4} \\ \hline x = -18 \end{array}$$

$$\begin{array}{r} 4. \quad \frac{1}{6}x = -7 \cdot \frac{6}{1} \\ \hline x = -42 \end{array}$$

$$\begin{array}{r} 5. \quad \frac{-2}{7}x = -4 \cdot \frac{7}{2} \\ \hline x = -14 \end{array}$$

$$\begin{array}{r} 6. \quad \frac{6}{11}x = 6 \cdot \frac{11}{6} \\ \hline x = 11 \end{array}$$

PA Worksheet U2-6

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Name: Key

Date: _____

C1: Please solve each equation below for the given variable.

1. $4x + 11 = -5$

$$\begin{array}{r} -11 \\ -11 \end{array}$$

$$\begin{array}{r} 4x = -16 \\ 4 \end{array}$$

$$\boxed{x = -4}$$

2. $-7x + 18 = -3$

$$\begin{array}{r} -18 \\ -18 \end{array}$$

$$\begin{array}{r} -7x = -21 \\ -7 \end{array}$$

$$\boxed{x = 3}$$

3. $3x - 13 = 8$

$$\begin{array}{r} +13 \\ +13 \end{array}$$

$$\begin{array}{r} 3x = 21 \\ 3 \end{array}$$

$$\boxed{x = 7}$$

4. $5x + 4x + 8 = 35$

$$\begin{array}{r} 9x + 8 = 35 \\ -8 \end{array}$$

$$\begin{array}{r} 9x = 27 \\ 9 \end{array}$$

$$\boxed{x = 3}$$

5. $9 + 6x - 7 = -20$

$$\begin{array}{r} 6x + 2 = -20 \\ -2 \end{array}$$

$$\begin{array}{r} 6x = -22 \\ 6 \end{array}$$

$$\boxed{x = -\frac{11}{3}}$$

6. $-8x + 7 = 12 - 21$

$$\begin{array}{r} -8x + 7 = -9 \\ -7 \end{array}$$

$$\begin{array}{r} -8x = -16 \\ -8 \end{array}$$

$$\boxed{x = 2}$$

7. $14 - 6x + 2 = -20$

$$\begin{array}{r} -6x + 16 = -20 \\ -16 \end{array}$$

$$\begin{array}{r} -6x = -36 \\ -6 \end{array}$$

$$\boxed{x = 6}$$

8. $10x + 9 - 7x = 33$

$$\begin{array}{r} 3x + 9 = 33 \\ -9 \end{array}$$

$$\begin{array}{r} 3x = 24 \\ 3 \end{array}$$

$$\boxed{x = 8}$$

9. $6x + 9x = 15 + 30$

$$\begin{array}{r} 15x = 45 \\ 15 \end{array}$$

$$\boxed{x = 3}$$

C2: Solve each equation below.

1. $x + 8 = 13.7$

$$\begin{array}{r} -8 \\ -8 \end{array}$$

$$\boxed{x = 5.7}$$

2. $x - 1.3 = -7.4$

$$\begin{array}{r} +1.3 \\ +1.3 \end{array}$$

$$\boxed{x = -6.1}$$

$$\begin{array}{r} 3.8x = 75.2 \\ 8 \end{array}$$

$$\boxed{x = 9.4}$$

$$\begin{array}{r} 6.9x = -306.9 \\ 6.9 \end{array}$$

$$\boxed{x = -20.7}$$

5. $-3.36 = x + 5.12$

$$\begin{array}{r} -5.12 \\ -5.12 \end{array}$$

$$\boxed{-8.48 = x}$$

6. $-.504 + x = -18$

$$\begin{array}{r} +.504 \\ +.504 \end{array}$$

$$\boxed{x = -17.496}$$

7. $3.498 = -.53x$

$$\begin{array}{r} -.53 \\ -.53 \end{array}$$

$$\boxed{-6.6 = x}$$

$$\begin{array}{r} -7.12x = -7.12 \end{array}$$

$$\boxed{1 = x}$$

PA Worksheet U2-7

Name: Key

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C1: Please solve each equation below for the given variable.

1. $3(2x + 5) = -9$

$$\begin{array}{r} 6x + 15 = -9 \\ -15 \quad -15 \\ \hline 6x = -24 \\ \hline x = -4 \end{array}$$

2. $-2(4x - 6) = 28$

$$\begin{array}{r} -8x + 12 = 28 \\ -12 \quad -12 \\ \hline -8x = 16 \\ \hline x = -2 \end{array}$$

3. $6(2x - 10) = 12$

$$\begin{array}{r} 12x - 60 = 12 \\ +60 \quad +60 \\ \hline 12x = 72 \\ \hline x = 6 \end{array}$$

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

$$\begin{array}{r} 9x - 12 = 6 \\ +12 \quad +12 \\ \hline 9x = 18 \\ \hline x = 2 \end{array}$$

5. $-4(2x + 2) = -40$

$$\begin{array}{r} -8x - 8 = -40 \\ +8 \quad +8 \\ \hline -8x = -32 \\ \hline x = 4 \end{array}$$

6. $8(x - 2) = 24$

$$\begin{array}{r} 8x - 16 = 24 \\ +16 \quad +16 \\ \hline 8x = 40 \\ \hline x = 5 \end{array}$$

7. $5(2x - 6) = -80$

$$\begin{array}{r} 10x - 30 = -80 \\ +30 \quad +30 \\ \hline 10x = -50 \\ \hline x = -5 \end{array}$$

8. $-9(2x - 6) = -36$

$$\begin{array}{r} -18x + 54 = -36 \\ -54 \quad -54 \\ \hline -18x = -90 \\ \hline x = 5 \end{array}$$

9. $-(6x - 24) = 48$

$$\begin{array}{r} -6x + 24 = 48 \\ -24 \quad -24 \\ \hline -6x = 24 \\ \hline x = -4 \end{array}$$

C2: Find the value for x that will make the two fractions equivalent.

1. $\frac{1}{2} = \frac{x}{10}$

$$\begin{array}{r} 2x = 10 \\ \hline x = 5 \end{array}$$

2. $\frac{3}{4} = \frac{x}{20}$

$$\begin{array}{r} 4x = 60 \\ \hline x = 15 \end{array}$$

3. $\frac{2}{5} = \frac{6}{x}$

$$\begin{array}{r} 2x = 30 \\ \hline x = 15 \end{array}$$

4. $\frac{3}{7} = \frac{9}{x}$

$$\begin{array}{r} 3x = 63 \\ \hline x = 21 \end{array}$$

5. $\frac{x}{12} = \frac{21}{36}$

$$\begin{array}{r} 36x = 252 \\ \hline x = 7 \end{array}$$

6. $\frac{x}{9} = \frac{35}{45}$

$$\begin{array}{r} 45x = 315 \\ \hline x = 7 \end{array}$$

PA Worksheet U2-8

Name: Key

Date: _____

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C1: Please solve each equation below for the given variable.

1. $3x + 2x - 5 = 23$

$$\begin{array}{r} 5x - 5 = 23 \\ +5 \quad +5 \\ \hline 5x = 28 \\ \frac{5x}{5} = \frac{28}{5} \\ x = 5.6 \end{array}$$

2. $-3 + 7x - 10 = 22$

$$\begin{array}{r} 7x - 13 = 22 \\ +13 \quad +13 \\ \hline 7x = 35 \\ \frac{7x}{7} = \frac{35}{7} \\ x = 5 \end{array}$$

3. $7 - 3x = 21 - 17$

$$\begin{array}{r} 7 - 3x = 4 \\ -7 \quad -7 \\ \hline -3x = -3 \\ \frac{-3x}{-3} = \frac{-3}{-3} \\ x = 1 \end{array}$$

4. $8(2x - 9) = -32$

$$\begin{array}{r} 16x - 72 = -32 \\ +72 \quad +72 \\ \hline 16x = 40 \\ \frac{16x}{16} = \frac{40}{16} \\ x = 2.5 \end{array}$$

5. $3(5x - 10) = 120$

$$\begin{array}{r} 15x - 30 = 120 \\ +30 \quad +30 \\ \hline 15x = 150 \\ \frac{15x}{15} = \frac{150}{15} \\ x = 10 \end{array}$$

6. $2(4x + 3) - 12x = 13$

$$\begin{array}{r} 8x + 6 - 12x = 13 \\ -4x + 6 = 13 \\ -6 \quad -6 \\ \hline -4x = 7 \\ \frac{-4x}{-4} = \frac{7}{-4} \\ x = -1.75 \end{array}$$

7. $-6(-2x - 3) + 3x = -12$

$$\begin{array}{r} 12x + 18 + 3x = -12 \\ 15x + 18 = -12 \\ -18 \quad -18 \\ \hline 15x = -30 \\ \frac{15x}{15} = \frac{-30}{15} \\ x = -2 \end{array}$$

8. $3(x + 7) - 11 = 16$

$$\begin{array}{r} 3x + 21 - 11 = 16 \\ 3x + 10 = 16 \\ -10 \quad -10 \\ \hline 3x = 6 \\ \frac{3x}{3} = \frac{6}{3} \\ x = 2 \end{array}$$

9. $5(4x - 2) - 2x + 5 = 13$

$$\begin{array}{r} 20x - 10 - 2x + 5 = 13 \\ 18x - 5 = 13 \\ +5 \quad +5 \\ \hline 18x = 18 \\ \frac{18x}{18} = \frac{18}{18} \\ x = 1 \end{array}$$

C2: Cross multiply to solve for x.

1. $\frac{4}{5} = \frac{x}{15}$

$$\begin{array}{r} 5x = 60 \\ \frac{5x}{5} = \frac{60}{5} \\ x = 12 \end{array}$$

2. $\frac{7}{10} = \frac{x}{40}$

$$\begin{array}{r} 10x = 280 \\ \frac{10x}{10} = \frac{280}{10} \\ x = 28 \end{array}$$

3. $\frac{3}{8} = \frac{9}{x}$

$$\begin{array}{r} 3x = 72 \\ \frac{3x}{3} = \frac{72}{3} \\ x = 24 \end{array}$$

4. $\frac{2}{3} = \frac{20}{x}$

$$\begin{array}{r} 2x = 60 \\ \frac{2x}{2} = \frac{60}{2} \\ x = 30 \end{array}$$

5. $\frac{x}{6} = \frac{20}{24}$

$$\begin{array}{r} 24x = 120 \\ \frac{24x}{24} = \frac{120}{24} \\ x = 5 \end{array}$$

6. $\frac{x}{11} = \frac{28}{44}$

$$\begin{array}{r} 44x = 308 \\ \frac{44x}{44} = \frac{308}{44} \\ x = 7 \end{array}$$

PA Worksheet U2-9

Name: Kely

Date: _____

/12

C1: Please solve each equation below for the given variable.

1. $12 - 4x = -18 + 11x$

$$\begin{array}{r} -11x \quad -11x \\ 12 - 15x = -18 \\ -12 \quad -12 \\ -15x = -30 \\ \underline{-15} \quad \underline{-15} \\ x = 2 \end{array}$$

2. $24x - 8 + 10x = -2(4 - 7x)$

$$\begin{array}{r} 34x - 8 = -8 + 14x \\ -14x \quad -14x \\ 20x - 8 = -8 \\ +8 \quad +8 \\ 20x = 0 \\ \underline{20} \quad \underline{20} \quad x = 0 \end{array}$$

3. $-21x + 15 = -5x + 7$

$$\begin{array}{r} +5x \quad +5x \\ -16x + 15 = 7 \\ -15 \quad -15 \\ -16x = -8 \\ \underline{-16} \quad \underline{-16} \\ x = \frac{1}{2} \end{array}$$

4. $9(-5 - x) = -10 - 2x$

$$\begin{array}{r} -45 - 9x = -10 - 2x \\ +2x \quad +2x \\ -45 - 7x = -10 \\ +45 \quad +45 \\ -7x = 35 \\ \underline{-7} \quad \underline{-7} \quad x = -5 \end{array}$$

5. $-5x - 6 + 4x = x + 2$

$$\begin{array}{r} -1x - 6 = x + 2 \\ -x \quad -x \\ -2x - 6 = 2 \\ +6 \quad +6 \\ -2x = 8 \\ \underline{-2} \quad \underline{-2} \\ x = -4 \end{array}$$

6. $4x - 3x = 5x - 28$

$$\begin{array}{r} 1x = 5x - 28 \\ -5x \quad -5x \\ -4x = -28 \\ \underline{-4} \quad \underline{-4} \\ x = 7 \end{array}$$

C2: Cross multiply to solve for x.

1. $\frac{2}{5} = \frac{x+2}{10}$

$$\begin{array}{r} 5(x+2) = 20 \\ 5x + 10 = 20 \\ -10 \quad -10 \\ 5x = 10 \\ \underline{5} \quad \underline{5} \quad x = 2 \end{array}$$

4. $\frac{8}{12} = \frac{32}{x-10}$

$$\begin{array}{r} 8(x-10) = 384 \\ 8x - 80 = 384 \\ +80 \quad +80 \\ 8x = 464 \\ \underline{8} \quad \underline{8} \end{array}$$

2. $\frac{7}{6} = \frac{x-3}{30}$

$$\begin{array}{r} 6(x-3) = 210 \\ 6x - 18 = 210 \\ +18 \quad +18 \\ 6x = 228 \\ \underline{6} \quad \underline{6} \\ x = 38 \end{array}$$

5. $\frac{9}{9} = \frac{72}{x+4}$

$$\begin{array}{r} 72(x+4) = 360 \\ 72x + 288 = 360 \\ -288 \quad -288 \\ 72x = 72 \\ \underline{72} \quad \underline{72} \end{array}$$

3. $\frac{4}{7} = \frac{24}{x+5}$

$$\begin{array}{r} 4(x+5) = 168 \\ 4x + 20 = 168 \\ -20 \quad -20 \\ 4x = 148 \\ \underline{4} \quad \underline{4} \\ x = 37 \end{array}$$

6. $\frac{20}{20} = \frac{60}{x-6}$

$$\begin{array}{r} 60(x-6) = 900 \\ 60x - 360 = 900 \\ +360 \quad +360 \\ 60x = 1260 \\ \underline{60} \quad \underline{60} \end{array}$$

PA Worksheet U2-10

Name: Key

Date: _____

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C1: Please solve each equation below for the given variable.

1. $-5x + 12 = 7x + 36$

$$\begin{array}{r} -7x \quad -7x \\ -12x + 12 = 36 \\ -12 \quad -12 \\ -12x = 24 \\ \underline{-12} \quad \underline{-12} \end{array}$$

$x = -2$

2. $2x - 13 = 6x - 37$

$$\begin{array}{r} -6x \quad -6x \\ -4x - 13 = -37 \\ +13 \quad +13 \\ -4x = -24 \\ \underline{-4} \quad \underline{-4} \end{array}$$

$x = 6$

3. $15x + 35 = 10x + 100$

$$\begin{array}{r} -10x \quad -10x \\ 5x + 35 = 100 \\ -35 \quad -35 \\ 5x = 65 \\ \underline{5} \quad \underline{5} \end{array}$$

$x = 13$

4. $-8x - 20 = -15x + 29$

$$\begin{array}{r} +15x \quad +15x \\ 7x - 20 = 29 \\ +20 \quad +20 \\ 7x = 49 \\ \underline{7} \quad \underline{7} \end{array}$$

$x = 7$

5. $3(3x + 9) = 18x - 54$

$$\begin{array}{r} 9x + 27 = 18x - 54 \\ -18x \quad -18x \\ -9x + 27 = -54 \\ -27 \quad -27 \\ -9x = -81 \\ \underline{-9} \quad \underline{-9} \end{array}$$

$x = 9$

6. $4(2x - 16) = 2(8x + 16)$

$$\begin{array}{r} 8x - 64 = 16x + 32 \\ -16x \quad -16x \\ -8x - 64 = 32 \\ +64 \quad +64 \\ -8x = 96 \\ \underline{-8} \quad \underline{-8} \end{array}$$

$x = -12$

C2: Cross multiple to solve for x.

1. $\frac{6}{7} = \frac{x-3}{14}$

$$\begin{array}{r} 7(x-3) = 84 \\ 7x - 21 = 84 \\ +21 \quad +21 \\ 7x = 105 \\ \underline{7} \quad \underline{7} \end{array}$$

$x = 15$

2. $\frac{3}{10} = \frac{x+4}{30}$

$$\begin{array}{r} 10(x+4) = 90 \\ 10x + 40 = 90 \\ -40 \quad -40 \\ 10x = 50 \\ \underline{10} \quad \underline{10} \end{array}$$

$x = 5$

3. $\frac{4}{9} = \frac{20}{x+5}$

$$\begin{array}{r} 4(x+5) = 180 \\ 4x + 20 = 180 \\ -20 \quad -20 \\ 4x = 160 \\ \underline{4} \quad \underline{4} \end{array}$$

$x = 40$

4. $\frac{7}{5} = \frac{42}{x-1}$

$$\begin{array}{r} 7(x-1) = 210 \\ 7x - 7 = 210 \\ +7 \quad +7 \\ 7x = 217 \\ \underline{7} \quad \underline{7} \end{array}$$

5. $\frac{x-9}{8} = \frac{40}{24}$

$$\begin{array}{r} 24(x-9) = 320 \\ 24x - 216 = 320 \\ +216 \quad +216 \\ 24x = 536 \\ \underline{24} \quad \underline{24} \end{array}$$

6. $\frac{x-2}{2} = \frac{30}{12}$

$$\begin{array}{r} 12(x-2) = 60 \\ 12x - 24 = 60 \\ +24 \quad +24 \\ 12x = 84 \\ \underline{12} \quad \underline{12} \end{array}$$

Pre-Algebra Worksheet U2-11

Name: Kay

Date: _____

Please solve each equation below for the given variable, and then check your answer.

Solve	Check	Solve	Check
$1. -9x + 17 = 71$ $\begin{array}{r} -17 \quad -17 \\ -9x = 54 \\ \underline{-9} \quad \underline{-9} \\ x = -6 \end{array}$	$1. -9x + 17 = 71$ $\begin{array}{l} -9(-6) + 17 = 71 \\ 54 + 17 = 71 \\ 71 = 71 \checkmark \end{array}$	$2. 5x + 27 = -38$ $\begin{array}{r} -27 \quad -27 \\ 5x = -65 \\ \underline{5} \quad \underline{5} \\ x = -13 \end{array}$	$2. 5x + 27 = -38$ $\begin{array}{l} 5(-13) + 27 = -38 \\ -65 + 27 = -38 \\ -38 = -38 \checkmark \end{array}$

Solve	Check	Solve	Check
$3. 4(4x - 5) = 76$ $\begin{array}{r} 16x - 20 = 76 \\ +20 \quad +20 \\ 16x = 96 \\ \underline{16} \quad \underline{16} \\ x = 6 \end{array}$	$3. 4(4x - 5) = 76$ $\begin{array}{l} 4(4(6) - 5) = 76 \\ 4(24 - 5) = 76 \\ 4(19) = 76 \\ 76 = 76 \checkmark \end{array}$	$4. -12x + 7 = -51 + 10$ $\begin{array}{r} -12x + 7 = -41 \\ -7 \quad -7 \\ -12x = -48 \\ \underline{-12} \quad \underline{-12} \\ x = 4 \end{array}$	$4. -12x + 7 = -51 + 10$ $\begin{array}{l} -12(4) + 7 = -51 + 10 \\ -48 + 7 = -41 \\ -41 = -41 \checkmark \end{array}$
Solve	Check	Solve	Check
$5. 15x - 3 = 5x + 53$ $\begin{array}{r} -5x \quad -5x \\ 10x - 3 = 53 \\ +3 \quad +3 \\ 10x = 56 \\ \underline{10} \quad \underline{10} \\ x = 5.6 \end{array}$	$5. 15x - 3 = 5x + 53$ $\begin{array}{l} 15(5.6) - 3 = 5(5.6) + 53 \\ 84 - 3 = 28 + 53 \\ 81 = 81 \checkmark \end{array}$	$6. 4x - 9 = -4x - 25$ $\begin{array}{r} +4x \quad +4x \\ 8x - 9 = -25 \\ +9 \quad +9 \\ 8x = -16 \\ \underline{8} \quad \underline{8} \\ x = -2 \end{array}$	$6. 4x - 9 = -4x - 25$ $\begin{array}{l} 4(-2) - 9 = -4(-2) - 25 \\ -8 - 9 = 8 - 25 \\ -17 = -17 \checkmark \end{array}$

Solve	Check
$7. -10(2x - 7) = 5(2x - 14)$ $\begin{array}{r} -20x + 70 = 10x - 70 \\ -10x \quad -10x \\ \hline -30x + 70 = -70 \\ -70 \quad -70 \\ \hline -30x = -140 \\ \underline{-30} \quad \underline{-30} \end{array}$ $x = 4.\bar{6}$	$7. -10(2x - 7) = 5(2x - 14)$ $\begin{array}{l} -10(2(4.\bar{6}) - 7) = 5(2(4.\bar{6}) - 14) \\ -10(9.\bar{3} - 7) = 5(9.\bar{3} - 14) \\ -10(2.\bar{3}) = 5(-4.\bar{6}) \\ -23.\bar{3} = -23.\bar{3} \quad \checkmark \end{array}$

Solve	Check
$8. 2(-3x + 8) + 3x = 3(6x - 2) - 20$ $\begin{array}{r} -6x + 16 + 3x = 18x - 6 - 20 \\ \hline -3x + 16 = 18x - 26 \\ -18x \quad -18x \\ \hline -21x + 16 = -26 \\ -16 \quad -16 \\ \hline -21x = -42 \\ \underline{-21} \quad \underline{-21} \end{array}$ $x = 2$	$8. 2(-3x + 8) + 3x = 3(6x - 2) - 20$ $\begin{array}{l} 2(-3(2) + 8) + 3(2) = 3(6(2) - 2) - 20 \\ 2(-6 + 8) + 6 = 3(12 - 2) - 20 \\ 2(2) + 6 = 3(10) - 20 \\ 4 + 6 = 30 - 20 \\ 10 = 10 \quad \checkmark \end{array}$

C2: Simplify each expression using your knowledge of order of operations.

1. $(7 \cdot 3 + 9) \div (5 \cdot -2)$ 2. $(10 - (-2)) + (12 \div 4)^2$ 3. $\frac{(32 - 4 \cdot 4)}{5^2 + 3 - 12}$

$$(21 + 9) \div (-10)$$

$$30 \div -10$$

$$\boxed{-3}$$

$$12 + (3)^2$$

$$12 + 9$$

$$\boxed{21}$$

$$\frac{32 - 16}{25 + 3 - 12} = \frac{16}{28 - 12} = \frac{16}{16} = \boxed{1}$$

$$4. 5[(10 \cdot 4) - 3^2 + (13 + (-3) - 8)]$$

$$5[40 - 9 + (10 - 8)]$$

$$5[31 + (10 - 8)]$$

$$5[31 + 2]$$

$$5[33]$$

$$\boxed{165}$$

$$5. \frac{(12 \cdot 3 \div (-18))^3}{(5 - (-7) + 6)}$$

$$\frac{(36 \div (-18))^3}{12 + 6} = \frac{(-2)^3}{18} = \frac{-8}{18} = \boxed{-\frac{4}{9}}$$

Pre-Algebra Worksheet U2-12

Name: _____

Date: _____

C1: Please solve each equation below for the given variable, and then check your answer.

Solve	Check	Solve	Check
$1. 6x + 19 = -11$ $\begin{array}{r} -19 \quad -19 \\ 6x = -30 \\ \underline{6} \quad \underline{6} \\ x = -5 \end{array}$	$1. 6x + 19 = -11$ $6(-5) + 19 = -11$ $-30 + 19 = -11$ $-11 = -11 \checkmark$	$2. -11x - 27 = 17$ $\begin{array}{r} -11(-4) - 27 = 17 \\ 44 - 27 = 17 \\ 17 = 17 \checkmark \end{array}$	$2. -11x - 27 = 17$ $\begin{array}{r} +27 \quad +27 \\ -11x = 44 \\ \underline{-11} \quad \underline{-11} \\ x = -4 \end{array}$

Solve	Check	Solve	Check
$3. -2(3x + 9) = -36$ $\begin{array}{r} -6x - 18 = -36 \\ +18 \quad +18 \\ -6x = -18 \\ \underline{-6} \quad \underline{-6} \\ x = 3 \end{array}$	$3. -2(3x + 9) = -36$ $-2(3(3) + 9) = -36$ $-2(9 + 9) = -36$ $-2(18) = -36$ $-36 = -36 \checkmark$	$4. 5x + 9 + 7x = 35$ $\begin{array}{r} 12x + 9 = 35 \\ -9 \quad -9 \\ 12x = 26 \\ \underline{12} \quad \underline{12} \\ x = 2.1\bar{6} \end{array}$	$4. 5x + 9 + 7x = 35$ $5(2.1\bar{6}) + 9 + 7(2.1\bar{6}) = 35$ $10.8\bar{3} + 9 + 15.1\bar{6} = 35$ $34.9\bar{9} = 35 \checkmark$
Solve	Check	Solve	Check
$5. -4x + 9 = -6x + 59$ $\begin{array}{r} +6x \quad +6x \\ 2x + 9 = 59 \\ -9 \quad -9 \\ 2x = 50 \\ \underline{2} \quad \underline{2} \\ x = 25 \end{array}$	$5. -4x + 9 = -6x + 59$ $-4(25) + 9 = -6(25) + 59$ $-100 + 9 = -150 + 59$ $-91 = -91 \checkmark$	$6. 11x - 1 = 8x + 20$ $\begin{array}{r} -8x \quad -8x \\ 3x - 1 = 20 \\ +1 \quad +1 \\ 3x = 21 \\ \underline{3} \quad \underline{3} \\ x = 7 \end{array}$	$6. 11x - 1 = 8x + 20$ $11(7) - 1 = 8(7) + 20$ $77 - 1 = 56 + 20$ $76 = 76 \checkmark$

Solve	Check
$7. -4(3x - 6) = 6(2x + 12)$ $\begin{array}{r} -12x + 24 = 12x + 72 \\ -12x \quad -12x \\ \hline -24x + 24 = 72 \\ -24 \quad -24 \\ \hline -24x = 48 \\ -24 \quad -24 \\ \hline x = -2 \end{array}$	$7. -4(3x - 6) = 6(2x + 12)$ $\begin{array}{l} -4(3(-2) - 6) = 6(2(-2) + 12) \\ -4(-6 - 6) = 6(-4 + 12) \\ -4(-12) = 6(8) \\ 48 = 48 \checkmark \end{array}$

Solve	Check
$8. 3(7x - 10) = 6x + 11 + 5x + 19$ $\begin{array}{r} 21x - 30 = 11x + 30 \\ -11x \quad -11x \\ \hline 10x - 30 = 30 \\ +30 \quad +30 \\ \hline 10x = 60 \\ \frac{10}{10} \quad \frac{60}{10} \\ \hline x = 6 \end{array}$	$8. 3(7x - 10) = 6x + 11 + 5x + 19$ $\begin{array}{l} 3(7(6) - 10) = 6(6) + 11 + 5(6) + 19 \\ 3(42 - 10) = 36 + 11 + 30 + 19 \\ 3(32) = 47 + 30 + 19 \\ = 77 + 19 \\ 96 = 96 \checkmark \end{array}$

C2: Simplify each expression using your knowledge of order of operations.

1. $\frac{(10 - (-5)) \div 3}{5^2 \div 5}$

$$\frac{15 \div 3}{25 \div 5} = \frac{5}{5} = \boxed{1}$$

2. $(7 - 35 \div 7)^2 + 12$

$$\begin{array}{l} (7 - 5)^2 + 12 \\ (2)^2 + 12 \\ 4 + 12 \\ \boxed{16} \end{array}$$

3. $(40 \div 10 \cdot 3^2) \div (7 + 3 - 9)^2$

$$\begin{array}{l} (4 \cdot 9) \div (10 - 9)^2 \\ 36 \div (1)^2 \\ 36 \div 1 \\ \boxed{36} \end{array}$$

4. $\frac{(8 + 3 \cdot (-8)) - 6}{(9 + (-5) + 1)}$

$$\frac{(8 - 24) - 6}{4 + 1} = \frac{-16 - 6}{5} = \boxed{-\frac{22}{5}}$$

5. $3^2 - [(3 \cdot (-6) \div (-2)) + (4 - 8 + 6)]$

$$\begin{array}{l} 9 - [(-18 \div (-2)) + (-4 + 6)] \\ 9 - [9 + 2] \\ 9 - 11 \\ \boxed{-2} \end{array}$$

Pre-Algebra Solving Equations Review Sheet

Name: _____

Date: _____

Please solve each equation below for the given variable, and then check your answer.

Solve	Check	Solve	Check
$1. x + (-11) = -2$ $\begin{array}{r} x - 11 = -2 \\ +11 \quad +11 \\ \hline x = 9 \end{array}$	$1. x + (-11) = -2$ $9 + (-11) = -2$ $-2 = -2 \checkmark$	$2. x - 10 = -17$ $\begin{array}{r} x - 10 = -17 \\ +10 \quad +10 \\ \hline x = -7 \end{array}$	$2. x - 10 = -17$ $-7 - 10 = -17$ $-17 = -17 \checkmark$

Solve	Check	Solve	Check
$3. -14x = -112$ $\begin{array}{r} -14x = -112 \\ -14 \quad -14 \\ \hline x = 8 \end{array}$	$3. -14x = -112$ $-14(8) = -112$ $-112 = -112 \checkmark$	$4. 8x = -80$ $\begin{array}{r} 8x = -80 \\ 8 \quad 8 \\ \hline x = -10 \end{array}$	$4. 8x = -80$ $8(-10) = -80$ $-80 = -80 \checkmark$

Solve	Check	Solve	Check
$5. 13x - 19 = 7$ $\begin{array}{r} 13x - 19 = 7 \\ +19 \quad +19 \\ \hline 13x = 26 \\ 13 \quad 13 \\ \hline x = 2 \end{array}$	$5. 13x - 19 = 7$ $13(2) - 19 = 7$ $26 - 19 = 7$ $7 = 7 \checkmark$	$6. -6x + 22 = -38$ $\begin{array}{r} -6x + 22 = -38 \\ -22 \quad -22 \\ \hline -6x = -60 \\ -6 \quad -6 \\ \hline x = 10 \end{array}$	$6. -6x + 22 = -38$ $-6(10) + 22 = -38$ $-60 + 22 = -38$ $-38 = -38 \checkmark$

Solve	Check	Solve	Check
$7. 8(-3x + 5) = -56$ $\begin{array}{r} -24x + 40 = -56 \\ -40 \quad -40 \\ \hline -24x = -96 \\ -24 \quad -24 \\ \hline x = 4 \end{array}$	$7. 8(-3x + 5) = -56$ $8(-3(4) + 5) = -56$ $8(-12 + 5) = -56$ $8(-7) = -56$ $-56 = -56 \checkmark$	$8. 4x + 3x + 1 = 8$ $\begin{array}{r} 7x + 1 = 8 \\ -1 \quad -1 \\ \hline 7x = 7 \\ 7 \quad 7 \\ \hline x = 1 \end{array}$	$8. 4x + 3x + 1 = 8$ $4(1) + 3(1) + 1 = 8$ $4 + 3 + 1 = 8$ $8 = 8 \checkmark$

Solve	Check	Solve	Check
9. $-6x - 4 = -9x + 23$ $+9x \quad +9x$ $3x - 4 = 23$ $+4 \quad +4$ $3x = 27$ $\frac{3x}{3} = \frac{27}{3}$ $x = 9$	9. $-6x - 4 = -9x + 23$ $-6(9) - 4 = -9(9) + 23$ $-54 - 4 = -81 + 23$ $-58 = -58 \checkmark$	10. $2x + 12 = -8x + 22$ $+8x \quad +8x$ $10x + 12 = 22$ $-12 \quad -12$ $10x = 10$ $\frac{10x}{10} = \frac{10}{10}$ $x = 1$	10. $2x + 12 = -8x + 22$ $2(1) + 12 = -8(1) + 22$ $2 + 12 = -8 + 22$ $14 = 14 \checkmark$

Solve	Check
11. $4(5x + 9) = -2(7x + 12)$ $20x + 36 = -14x - 24$ $+14x \quad +14x$ $34x + 36 = -24$ $-36 \quad -36$ $34x = -60$ $\frac{34x}{34} = \frac{-60}{34}$	11. $4(5x + 9) = -2(7x + 12)$ $4(5(-1.76) + 9) = -2(7(-1.76) + 12)$ $4(-8.82 + 9) = -2(-12.35 + 12)$ $4(-.18) = -2(-.35)$ $-.72 = .70 \checkmark$

$$x = -1.76$$

Solve	Check
12. $3(4x + 6) + 2(3x + 6) = 5(2x + 4) + 2$ $12x + 18 + 6x + 12 = 10x + 20 + 2$ $18x + 30 = 10x + 22$ $-10x \quad -10x$ $8x + 30 = 22$ $-30 \quad -30$ $8x = -8$ $\frac{8x}{8} = \frac{-8}{8}$	12. $3(4x + 6) + 2(3x + 6) = 5(2x + 4) + 2$ $3(4(-1) + 6) + 2(3(-1) + 6) = 5(2(-1) + 4) + 2$ $3(-4 + 6) + 2(-3 + 6) = 5(-2 + 4) + 2$ $3(2) + 2(3) = 5(2) + 2$ $6 + 6 = 10 + 2$ $12 = 12 \checkmark$

$$x = -1$$

Pre-Algebra Unit 2 Review Packet

Name: Kay

Concept I: Distributive Property and Combining Like Terms

Simplify each expression below using your knowledge of the distributive property and combining like terms.

1. $6(-3x + 2)$

$-18x + 12$

2. $5(3x + 11)$

$15x + 55$

3. $-7(x + 9)$

$-7x - 63$

4. $-2(-7x + 10)$

$14x - 20$

5. $3(11x - 5)$

$33x - 15$

6. $-4(-4x + 8)$

$16x - 32$

7. $4x + 9 - 5x + 10$

$-x + 19$

8. $13x - 5x + 10 - 4$

$8x + 6$

9. $-7x - 16 + 5x + 19x$

$17x - 16$

10. $6 + 9x - 7x + 6x - 15$

$8x - 9$

11. $-4x + 10x - 6 + 17 + 12x$

$18x + 11$

12. $3x + 10 - 7 - 9x + 1$

$-6x + 4$

13. $5(6x - 3) + 15$

$30x - 15 + 15$

$30x$

14. $-5(3x - 3) + 6x$

$-15x + 15 + 6x$

$-9x + 15$

15. $8(-9x + 7) - 22x$

$-72x + 56 - 22x$

$-94x + 56$

16. $-5(2x + 4) - 3 + 8x$

$-10x - 20 - 3 + 8x$

$-2x - 23$

17. $-3 + 9x - 4(2x + 11)$

$-3 + 9x - 8x - 44$

$x - 47$

18. $7 + 6(-8x + 4) + 17x$

$7 - 48x + 24 + 17x$

$-31x + 31$

19. $4(-3 + 3x) + 5(9x - 1)$

$-12 + 12x + 45x - 5$

$57x - 17$

20. $6(-15x + 2) + 3(-7x + 12)$

$-90x + 12 - 21x + 36$

$-112x + 48$

21. $7(3x + 9) - 7(7x + 1)$

$21x + 63 - 49x - 7$

$-28x + 56$

Concept II: Solving 1-step equation with addition or subtraction.

1. $x + 5 = -9$

$$\begin{array}{r} -5 \quad -5 \\ \hline x = -14 \end{array}$$

2. $x - 8 = 12$

$$\begin{array}{r} +8 \quad +8 \\ \hline x = 20 \end{array}$$

3. $x + 12 = 16$

$$\begin{array}{r} -12 \quad -12 \\ \hline x = 4 \end{array}$$

4. $x - (-8) = 13$

$$\begin{array}{r} x + 8 = 13 \\ -8 \quad -8 \\ \hline x = 5 \end{array}$$

5. $x - 6.43 = -9.45$

$$\begin{array}{r} +6.43 \quad +6.43 \\ \hline x = -3.02 \end{array}$$

6. $6 + x = -13$

$$\begin{array}{r} -6 \quad -6 \\ \hline x = -19 \end{array}$$

7. $9 - x = 18$

$$\begin{array}{r} -9 \quad -9 \\ \hline -x = 9 \\ \hline -1 \quad -1 \\ \hline x = -9 \end{array}$$

8. $x + (-6) = -21$

$$\begin{array}{r} x - 6 = -21 \\ +6 \quad +6 \\ \hline x = -15 \end{array}$$

9. $-8 + x = 19$

$$\begin{array}{r} +8 \quad +8 \\ \hline x = 27 \end{array}$$

10. $12 + x = -13$

$$\begin{array}{r} -12 \quad -12 \\ \hline x = -25 \end{array}$$

11. $7.1 - x = 9.8$

$$\begin{array}{r} -7.1 \quad -7.1 \\ \hline -x = 2.7 \\ \hline -1 \quad -1 \\ \hline x = -2.7 \end{array}$$

12. $x - (-12) = -10$

$$\begin{array}{r} x + 12 = -10 \\ -12 \quad -12 \\ \hline x = -22 \end{array}$$

13. $x - 23 = 40$

$$\begin{array}{r} +23 \quad +23 \\ \hline x = 63 \end{array}$$

14. $x + 7 = 102$

$$\begin{array}{r} -7 \quad -7 \\ \hline x = 95 \end{array}$$

15. $x - 9.45 = -13.57$

$$\begin{array}{r} +9.45 \quad +9.45 \\ \hline x = -4.12 \end{array}$$

16. $x + (-5) = 23$

$$\begin{array}{r} x - 5 = 23 \\ +5 \quad +5 \\ \hline x = 28 \end{array}$$

Concept III: Solving 1-step equations with multiplication and division.

$$\begin{array}{r|l} 1. & 4x = -32 \\ & \frac{4}{4} \end{array}$$

$$\boxed{x = -8}$$

$$\begin{array}{r|l} 2. & -8x = 56 \\ & \frac{-8}{-8} \end{array}$$

$$\boxed{x = -7}$$

$$\begin{array}{r|l} 3. & -5x = -100 \\ & \frac{-5}{-5} \end{array}$$

$$\boxed{x = 20}$$

$$\begin{array}{r|l} 4. & 13x = 78 \\ & \frac{13}{13} \end{array}$$

$$\boxed{x = 6}$$

$$\begin{array}{r|l} -4. & \frac{x}{-4} = 5 \cdot -4 \\ & \frac{5 \cdot -4}{5 \cdot -4} \end{array}$$

$$\boxed{x = -20}$$

$$\begin{array}{r|l} -8. & \frac{x}{-8} = -4 \cdot -8 \\ & \frac{-4 \cdot -8}{-8} \end{array}$$

$$\boxed{x = 32}$$

$$\begin{array}{r|l} 3. & \frac{x}{3} = 9 \cdot 3 \\ & \frac{9 \cdot 3}{3} \end{array}$$

$$\boxed{x = 27}$$

$$\begin{array}{r|l} 8. & \frac{x}{8} = -6 \cdot 8 \\ & \frac{-6 \cdot 8}{8} \end{array}$$

$$\boxed{x = -48}$$

$$\begin{array}{r|l} 9. & -6.7x = 34.7 \\ & \frac{-6.7}{-6.7} \end{array}$$

$$\boxed{x = -5.18}$$

$$\begin{array}{r|l} 10. & 3.45x = 9.8 \\ & \frac{3.45}{3.45} \end{array}$$

$$\boxed{x = 2.84}$$

$$\begin{array}{r|l} 11. & -2.2x = -13.4 \\ & \frac{-2.2}{-2.2} \end{array}$$

$$\boxed{x = 6.09}$$

$$\begin{array}{r|l} 12. & 5x = -135 \\ & \frac{5}{5} \end{array}$$

$$\boxed{x = -27}$$

$$\begin{array}{r|l} 13. & \frac{x}{13} = 52 \cdot 13 \\ & \frac{52 \cdot 13}{13} \end{array}$$

$$\boxed{x = 676}$$

$$\begin{array}{r|l} -10. & \frac{x}{-10} = -4 \cdot -10 \\ & \frac{-4 \cdot -10}{-10} \end{array}$$

$$\boxed{x = 40}$$

$$\begin{array}{r|l} -9. & \frac{x}{-9} = 13 \cdot -9 \\ & \frac{13 \cdot -9}{-9} \end{array}$$

$$\boxed{x = -117}$$

$$\begin{array}{r|l} 23. & \frac{x}{23} = 4 \cdot 23 \\ & \frac{4 \cdot 23}{23} \end{array}$$

$$\boxed{x = 92}$$

Concept IV: Solving Multi-Step Equations.

1. $6x - 7 = 11$

$$+7 \quad +7$$

$$\frac{6x}{6} = \frac{18}{6}$$

$$x = 3$$

2. $-3x + 9 = -3$

$$-9 \quad -9$$

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

$$x = 4$$

3. $7x - 4 = -25$

$$+4 \quad +4$$

$$\frac{7x}{7} = \frac{-21}{7}$$

$$x = -3$$

4. $4(x - 3) = 32$

$$4x - 12 = 32$$

$$+12 \quad +12$$

$$\frac{4x}{4} = \frac{44}{4}$$

$$x = 11$$

5. $-6(2x - 4) = -48$

$$-12x + 24 = -48$$

$$-24 \quad -24$$

$$\frac{-12x}{-12} = \frac{-72}{-12}$$

$$x = 6$$

6. $3(8x - 12) = 60$

$$24x - 36 = 60$$

$$+36 \quad +36$$

$$\frac{24x}{24} = \frac{96}{24}$$

$$x = 4$$

7. $9x + 6 - 3x = 24 - 12$

$$6x + 6 = 12$$

$$-6 \quad -6$$

$$\frac{6x}{6} = \frac{6}{6}$$

$$x = 1$$

8. $12 + 7x + 3 = 18 + 18$

$$7x + 15 = 36$$

$$-15 \quad -15$$

$$\frac{7x}{7} = \frac{21}{7}$$

$$x = 3$$

9. $-4x + 12 - 6x = -38$

$$-10x + 12 = -38$$

$$-12 \quad -12$$

$$\frac{-10x}{-10} = \frac{-50}{-10}$$

$$x = 5$$

10. $3(2x + 3) + 3 = 45$

$$6x + 9 + 3 = 45$$

$$6x + 12 = 45$$

$$-12 \quad -12$$

$$\frac{6x}{6} = \frac{33}{6}$$

$$x = 5.5$$

11. $8(3x - 2) - 20x = -20$

$$24x - 16 - 20x = -20$$

$$4x - 16 = -20$$

$$+16 \quad +16$$

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

$$x = -1$$

12. $-2(x + 6) - 8 = 40$

$$-2x - 12 - 8 = 40$$

$$-2x - 20 = 40$$

$$+20 \quad +20$$

$$\frac{-2x}{-2} = \frac{60}{-2}$$

$$x = -30$$

Concept V: Solving Equations with Variables on Both Sides of the Equation.

1. $6x - 8 = -2x + 24$

$$\begin{array}{r} +2x \quad +2x \\ 6x - 8 = -2x + 24 \\ +8 \quad +8 \\ -8x = 32 \\ \underline{-8} \quad \underline{-8} \\ x = -4 \end{array}$$

2. $-4x + 12 = 6x - 18$

$$\begin{array}{r} -6x \quad -6x \\ -4x + 12 = 6x - 18 \\ -12 \quad -12 \\ -10x = -30 \\ \underline{-10} \quad \underline{-10} \\ x = 3 \end{array}$$

3. $8x - 12 = 6x - 24$

$$\begin{array}{r} -6x \quad -6x \\ 8x - 12 = 6x - 24 \\ +12 \quad +12 \\ 2x = -12 \\ \underline{2} \quad \underline{2} \\ x = -6 \end{array}$$

4. $-7(2x + 3) = -2x + 11$

$$\begin{array}{r} -14x - 21 = -2x + 11 \\ +2x \quad +2x \\ -12x - 21 = 11 \\ +21 \quad +21 \\ -12x = 32 \\ \underline{-12} \quad \underline{-12} \\ x = -2.75 \end{array}$$

5. $4(-2x - 4) = -3(x - 3)$

$$\begin{array}{r} -8x - 16 = -3x + 9 \\ +3x \quad +3x \\ -5x - 16 = 9 \\ +16 \quad +16 \\ -5x = 25 \\ \underline{-5} \quad \underline{-5} \\ x = -5 \end{array}$$

6. $10x - 6 = 3(2x - 6)$

$$\begin{array}{r} 10x - 6 = 6x - 18 \\ -6x \quad -6x \\ 4x - 6 = -18 \\ +6 \quad +6 \\ 4x = -12 \\ \underline{4} \quad \underline{4} \\ x = -3 \end{array}$$

7. $6(2x - 4) + 3(2x + 2) = 50 - 6 + 20$

$$\begin{array}{r} 12x - 24 + 6x + 6 = 64 \\ \underline{12x} \quad \underline{-24} \quad \underline{6x} \quad \underline{6} \\ 18x - 18 = 64 \\ +18 \quad +18 \\ 18x = 82 \\ \underline{18} \quad \underline{18} \\ x = 4.5 \end{array}$$

8. $-3(5x - 4) + 10x - 5 = -7x + 49$

$$\begin{array}{r} -15x + 12 + 10x - 5 = -7x + 49 \\ \underline{-15x} \quad \underline{12} \quad \underline{10x} \quad \underline{-5} \\ -5x + 7 = -7x + 49 \\ +7x \quad +7x \\ 2x + 7 = 49 \\ -7 \quad -7 \\ 2x = 42 \\ \underline{2} \quad \underline{2} \\ x = 21 \end{array}$$

9. $7(2x + 3) + 8(3x - 9) = 6(3x - 3) + 7(-2x - 11)$

$$\begin{array}{r} 14x + 21 + 24x - 72 = 18x - 18 - 14x - 77 \\ \underline{14x} \quad \underline{21} \quad \underline{24x} \quad \underline{-72} \\ 38x - 51 = 4x - 95 \\ -4x \quad -4x \\ 34x - 51 = -95 \\ +51 \quad +51 \\ 34x = -44 \\ \underline{34} \quad \underline{34} \\ x = -1.29 \end{array}$$

Concept VI: Solving Proportions.

Use your knowledge of proportions to solve for x below.

$$1. \frac{3}{7} = \frac{x}{35}$$

$$\frac{7x}{7} = \frac{105}{7}$$

$$\boxed{x=15}$$

$$4. \frac{8}{x} = \frac{72}{90}$$

$$\frac{72x}{72} = \frac{720}{72}$$

$$\boxed{x=10}$$

$$7. \frac{x+5}{7} = \frac{48}{56}$$

$$\begin{array}{r} 56(x+5) = 336 \\ 56x + 280 = 336 \\ -280 \quad -280 \end{array}$$

$$\frac{56x}{56} = \frac{56}{56}$$

$$\boxed{x=1}$$

$$10. \frac{5}{9} = \frac{x+8}{x+24}$$

$$\begin{array}{r} 9(x+8) = 5(x+24) \\ 9x + 72 = 5x + 120 \\ -5x \quad -5x \end{array}$$

$$\frac{4x}{4} = \frac{48}{4}$$

$$\boxed{x=12}$$

$$2. \frac{8}{9} = \frac{48}{x}$$

$$\frac{8x}{8} = \frac{432}{8}$$

$$\boxed{x=54}$$

$$5. \frac{1}{12} = \frac{x+2}{72}$$

$$12(x+2) = 72$$

$$\begin{array}{r} 12x + 24 = 72 \\ -24 \quad -24 \\ 12x = 48 \\ 12 \quad 12 \end{array}$$

$$\boxed{x=4}$$

$$8. \frac{4}{x-10} = \frac{20}{65}$$

$$20(x-10) = 260$$

$$\begin{array}{r} 20x - 200 = 260 \\ +200 \quad +200 \end{array}$$

$$\frac{20x}{20} = \frac{460}{20}$$

$$\boxed{x=23}$$

$$11. \frac{x-5}{x-2} = \frac{21}{30}$$

$$30(x-5) = 21(x-2)$$

$$\begin{array}{r} 30x - 15 = 21x - 42 \\ -21x \quad -21x \end{array}$$

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

$$\boxed{x=-3}$$

$$3. \frac{x}{13} = \frac{18}{39}$$

$$\frac{39x}{39} = \frac{234}{39}$$

$$\boxed{x=6}$$

$$6. \frac{7}{11} = \frac{42}{x-9}$$

$$7(x-9) = 462$$

$$\begin{array}{r} 7x - 63 = 462 \\ +63 \quad +63 \end{array}$$

$$\frac{7x}{7} = \frac{525}{7}$$

$$\boxed{x=75}$$

$$9. \frac{3}{5} = \frac{x-5}{x+7}$$

$$5(x-5) = 3(x+7)$$

$$\begin{array}{r} 5x - 25 = 3x + 21 \\ -3x \quad -3x \end{array}$$

$$\frac{2x}{2} = \frac{46}{2}$$

$$\boxed{x=23}$$

$$12. \frac{x-10}{x-9} = \frac{42}{48}$$

$$48(x-10) = 42(x-9)$$

$$\begin{array}{r} 48x - 480 = 42x - 378 \\ -42x \quad -42x \end{array}$$

$$\frac{6x}{6} = \frac{102}{6}$$

$$\boxed{x=17}$$

Concept VII: Determining if a Number is a Solution of an Equation or Inequality.

1. $6x + 7 = 19$ $x = 2$

$$6(2) + 7 = 19$$

$$12 + 7 = 19$$

$$19 = 19 \checkmark$$

yes

2. $-4x + 9 = -3$ $x = -4$

$$-4(-4) + 9 = -3$$

$$16 + 9 = -3$$

$$25 = -3$$

NO

3. $9x - 10 = -28$ $x = 2$

$$9(2) - 10 = -28$$

$$18 - 10 = -28$$

$$8 = -28$$

NO

4. $5(2x + 4) = -10$ $x = -3$

$$5(2(-3) + 4) = -10$$

$$5(-6 + 4) = -10$$

$$5(-2) = -10$$

$$-10 = -10 \checkmark$$

yes

7. $6(x + 2) + 6x = 0$ $x = -1$

$$6(-1 + 2) + 6(-1) = 0$$

$$6(1) + -6 = 0$$

$$6 + -6 = 0$$

$$0 = 0 \checkmark$$

yes

5. $7x - 5x = -10 + 20$ $x = 5$

$$7(5) - 5(5) = -10 + 20$$

$$35 - 25 = 10$$

$$10 = 10 \checkmark$$

yes

6. $8(2x + 3) = 45 - 2$ $x = 1$

$$8(2(1) + 3) = 45 - 2$$

$$8(2 + 3) = 43$$

$$8(5) = 43$$

$$40 = 43$$

NO

8. $4x + 6 + 6x - 10 = -28 + 4$ $x = -2$

$$4(-2) + 6 + 6(-2) - 10 = -28 + 4$$

$$-8 + 6 - 12 - 10 = -24$$

$$-2 - 12 - 10 = -24$$

$$-14 - 10 = -24$$

$$-24 = -24 \checkmark$$

yes

9. $-5x - 7 \leq 3$ $x = -2$

$$-5(-2) - 7 \leq 3$$

$$10 - 7 \leq 3$$

$$3 \leq 3 \checkmark$$

yes

10. $8x + 9 > -10$ $x = -3$

$$8(-3) + 9 > -10$$

$$-24 + 9 > -10$$

$$-15 > -10$$

NO

11. $5x - 12 < -14$ $x = 1$

$$5(1) - 12 < -14$$

$$5 - 12 < -14$$

$$-7 < -14$$

NO

12. $4(-4x - 5) \geq 25$ $x = 1$

$$4(-4(1) - 5) \geq 25$$

$$4(-4 - 5) \geq 25$$

$$4(-9) \geq 25$$

$$-36 \geq 25$$

13. $7(2x + 3) \leq 50$ $x = 2$

$$7(2(2) + 3) \leq 50$$

$$7(4 + 3) \leq 50$$

$$7(7) \leq 50$$

$$49 \leq 50 \checkmark$$

14. $-3(-3x + 8) < -50$ $x = -2$

$$-3(-3(-2) + 8) < -50$$

$$-3(6 + 8) < -50$$

$$-3(14) < -50$$

$$-42 < -50$$