Name Key Period____ Date 2009-2010

Algebra 2: Review Worksheet A

Topic 1: Review of Basic Algebra

Directions: Calculators are not allowed.

1) Give the reciprocal of each of the following numbers.

A) $\frac{6}{7}$ $\frac{7}{6}$ B) 3 $\frac{1}{3}$

C) $-\frac{8}{5}$ $-\frac{5}{8}$ D) $-2\frac{1}{2} \rightarrow -\frac{5}{2} \rightarrow -\frac{2}{5}$

2) Give the opposite of each of the following numbers.

A) $-3\frac{1}{2}$ $3\frac{1}{2}$ B) 5 -5 C) $\frac{1}{2}$ $-\frac{1}{2}$

3) Use the distributive property to remove the parentheses from each expression.

A) $6(2c + 3)$ $12c+18$ B) $3(6y - 2)$ $18y-6$

C) $-4(7 - 8x)$ $-28+32x$ D) $(3n - 9)2$ $6n-18$

E) $a(b + 5)$ $ab+5a$ F) $-3(2a + b)$ $-6a-3b$

4) A) What is the product of -9 and 4? -36

B) What is the sum of 5 and $3\frac{1}{2}$? $8\frac{1}{2}$

C) What is the quotient of 8 and -4? $\frac{8}{-4} = -2$

D) What is the quotient or -4 and 8? $\frac{-4}{8} = -\frac{1}{2}$

E) What is the difference of -8 and 5? $-8-5 = -13$

F) What is the difference of 5 and -8? $5--8 = 5+8 = 13$

5) Evaluate.

A) $4x^2 - x + 3$ when $x = -3$ B) $2a^2 + (a - b)$ when $a = 3$ and $b = -1$

C) $(2 - 5n) \div n^2$ when $n = 2$ D) $8y - 3c^2$ when $y = \frac{1}{4}$ and $c = -1$

6) Sketch a number line graph of each of the following inequalities.

A) $-1 < x < 4$

B) $x > 3$ or $x \leq -2$

7) Solve for the specified variable.

A) Solve for T: $P = \pi T$

B) Solve for n: $5n + 2k = 8$

C) Solve for B: $A = \frac{1}{2}Bh$

D) Solve for c: $A = 5(c - b)$

E) Solve for y: $ay - 3y = n$

F) Solve for x: $c^2x + 7x = T$

G) Solve for P: $L = Pn^3 + P$

H) Solve for m: $A = \frac{2}{3}(m + c)$

8) Solve for the variable in each of the following equations.

A) $5(x - 3) + 5 = -1$

B) $8x - (2x - 5) = 3x + 4$

C) $\frac{3}{4}n + \frac{1}{6}n = 4$

D) $-3(2 - 2y) + (3y - 1) = 2(4 - 2y)$

9) Solve for the variable in each of the following inequalities.

A) $4c - 3 < 9$

B) $-8y + 2(y - 3) \geq 12$

C) $5n + 8 > 3n + 2$

D) $-y - (3y + 7) \leq 2(y + 1)$

E) $2 + (1 - x) > 4(2x - 3)$

F) $-\frac{1}{8}y + 2 \leq -5$

10) Solve for x in each of the following absolute value equations and inequalities.

A) $|3x + 2| = 10$

B) $\left|\frac{1}{2}x - 4\right| = 2$

C) $3|-2x + 3| = 6$

D) $5|x - 4| - 1 = 9$

E) $|3x + 5| \leq 1$

F) $|6 - 3x| > 6$

G) $3|2x - 4| < 9$

H) $2|6 + 2x| - 4 \geq 8$

I) $5 - 2|x - 3| = -3$

J) $3 + 2|x + 1| = 5$

K) $\frac{|x-5|}{2} < 3$

L) $\frac{|x+2|}{6} \geq 1$

M) $\left|\frac{2x+7}{5}\right| \leq 3$

N) $\left|\frac{4x-4}{3}\right| > 8$

Algebra 2 : Topic 1 // Review Worksheet A

5) A) $4x^2 - x + 3 \; ; x = -3$

$4(-3)^2 - (-3) + 3$

$4(9) + 3 + 3$

$36 + 3 + 3$

$39 + 3$

$\boxed{42}$

B) $2a^2 + (a - b) \; ; a = 3 \; ; b = -1$

$2(3)^2 + (3 - -1)$

$2(9) + (3 + 1)$

$18 + 4$

$\boxed{22}$

C) $(2 - 5n) \div n^2 \; ; n = 2$

$(2 - 5(2)) \div 2^2$

$(2 - 10) \div 2^2$

$-8 \div 2^2$

$-8 \div 4$

$\boxed{-2}$

D) $8y - 3c^2 \; ; y = \frac{1}{4} \; ; c = -1$

$8\left(\frac{1}{4}\right) - 3(-1)^2$

$8\left(\frac{1}{4}\right) - 3(1)$

$2 - 3$

$\boxed{-1}$

7) A) $\frac{P}{\pi} = \frac{\pi T}{\pi} \rightarrow \boxed{T = \frac{P}{\pi}}$

B) $5n + 2k = 8$

$-2k \quad -2k$

$\frac{5n}{5} = \frac{8 - 2k}{5} \rightarrow \boxed{n = \frac{8 - 2k}{5}}$

C) $\cdot 2 \; A = \frac{1}{2} Bh \cdot 2$

$\frac{2A}{h} = \frac{Bh}{h} \rightarrow \boxed{B = \frac{2A}{h}}$

D) $\frac{A}{5} = \frac{5(c - b)}{5}$

$\frac{A}{5} = c - b$

$+b \quad +b$

$\boxed{c = \frac{A}{5} + b}$

7) E) $ay - 3y = n$

$\frac{y(a-3)}{a-3} = \frac{n}{a-3}$

$\boxed{y = \frac{n}{a-3}}$

F) $c^2x + 7x = T$

$\frac{x(c^2+7)}{c^2+7} = \frac{T}{c^2+7}$

$\boxed{x = \frac{T}{c^2+7}}$

G) $L = Pn^3 + P$

$\frac{L}{n^3+1} = \frac{P(n^3+1)}{n^3+1}$

$\boxed{P = \frac{L}{n^3+1}}$

H) $\frac{3}{2}A = \frac{2}{3}(m+c) \times \frac{3}{2}$

$\frac{3}{2}A = m + c$

$-c \quad -c$

$\boxed{m = \frac{3}{2}A - c}$

8) A) $5(x-3) + 5 = -1$

$-5 \quad -5$

$5(x-3) = -6$

$5x - 15 = -6$

$+15 \quad +15$

$\frac{5x}{5} = \frac{9}{5}$

$\boxed{x = 9/5}$

B) $8x - (2x - 5) = 3x + 4$

$8x - 2x + 5 = 3x + 4$

$6x + 5 = 3x + 4$

$-3x \quad -5 \quad -3x \quad -5$

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

$\boxed{x = \frac{-1}{3}}$

8) c) $12\left(\frac{3}{4}n + \frac{1}{6}n = 4\right)$

$\frac{36}{4}n + \frac{12}{6}n = 48$

$9n + 2n = 48$

$\frac{11n}{11} = \frac{48}{11}$

$\boxed{n = \frac{48}{11}}$

→ or $n = 4\frac{4}{11}$

d) $-3(2-2y) + (3y-1) = 2(4-2y)$

$-6 + 6y + 3y - 1 = 8 - 4y$

$9y - 7 = 8 - 4y$

$+4y \quad +7 \quad +7 \quad +4y$

$\frac{13y}{13} = \frac{15}{13}$

$\boxed{y = \frac{15}{13}}$

9) A) $4c - 3 < 9$

$+3 \quad +3$

$\frac{4c}{4} < \frac{12}{4}$

$\boxed{c < 3}$

B) $-8y + 2(y-3) \geq 12$

$-8y + 2y - 6 \geq 12$

$-6y - 6 \geq 12$

$+6 \quad +6$

$\frac{-6y}{-6} \geq \frac{18}{-6}$ → $\boxed{y \leq -3}$

notice signs flip

c) $5n + 8 > 3n + 2$

$-3n \quad -8 \quad -3n \quad -8$

$\frac{2n}{2} > \frac{-6}{2}$ → $\boxed{n > -3}$

d) $-y - (3y+7) \leq 2(y+1)$

$-y - 3y - 7 \leq 2y + 2$

$-4y - 7 \leq 2y + 2$

$-2y \quad +7 \quad -2y \quad +7$

$\frac{-6y}{-6} \leq \frac{9}{-6}$ → $\boxed{y \geq \frac{-3}{2}}$

9) E) $2+(1-x) > 4(2x-3)$

$2+1-x > 8x-12$

$3-x > 8x-12$

$-3 \quad -8x \quad -8x \quad -3$

$-9x > -15$

$-9 \quad -9$

$\boxed{x < \frac{5}{3}}$

F) $-\frac{1}{8}y + 2 \leq -5$

$-2 \quad -2$

$\left(-\frac{8}{1}\right)-\frac{1}{8}y \leq -7\left(-\frac{8}{1}\right)$

$\boxed{y \geq 56}$

↙ my daughter's sticker :)

10) A) $|3x+2| = 10$

$3x+2 = 10 \quad -2 \quad -2$

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

$\boxed{x = \frac{8}{3}}$

$3x+2 = -10 \quad -2 \quad -2$

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

$\boxed{x = -4}$

B) $\left|\frac{1}{2}x-4\right| = 2$

$\frac{1}{2}x-4 = 2 \quad +4 \quad +4$

$2 \cdot \frac{1}{2}x = 6 \cdot 2$

$\boxed{x = 12}$

$\frac{1}{2}x-4 = -2 \quad +4 \quad +4$

$2 \cdot \frac{1}{2}x = 2 \cdot 2$

$\boxed{x = 4}$

C) $\frac{3|-2x+3|}{3} = \frac{6}{3}$

$|-2x+3| = 2$

$-2x+3 = 2 \quad -3 \quad -3$

$\frac{-2x}{-2} = \frac{-1}{-2}$

$\boxed{x = \frac{1}{2}}$

$-2x+3 = -2 \quad -3 \quad -3$

$\frac{-2x}{-2} = \frac{-5}{-2}$

$\boxed{x = \frac{5}{2}}$

D) $5|x-4| - 1 = 9 \quad +1 \quad +1$

$\frac{5|x-4|}{5} = \frac{10}{5}$

$|x-4| = 2$

$x-4 = 2 \quad +4 \quad +4$

$\boxed{x = 6}$

$x-4 = -2 \quad +4 \quad +4$

$\boxed{x = 2}$

10) E) $|3x+5| \leq 1$

$3x+5 \leq 1$ $\quad -5 \quad -5$

$\frac{3x}{3} \leq \frac{-4}{3}$

$x \leq -\frac{4}{3}$

$3x+5 \geq -1$ $\quad -5 \quad -5$

$\frac{3x}{3} \geq \frac{-6}{3}$

$x \geq -2$

F) $|6-3x| > 6$

$6-3x > 6$ $\quad -6 \quad -6$

$\frac{-3x}{-3} > \frac{0}{-3}$

$x < 0$

$6-3x < -6$ $\quad -6 \quad -6$

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

$x > 4$

G) $\frac{3|2x-4|}{3} < \frac{9}{3}$

$|2x-4| < 3$

$2x-4 < 3$ $\quad +4 \quad +4$

$\frac{2x}{2} < \frac{7}{2}$

$x < \frac{7}{2}$

$2x-4 > -3$ $\quad +4 \quad +4$

$\frac{2x}{2} > \frac{1}{2}$

$x > \frac{1}{2}$

H) $2|6+2x| - 4 \geq 8$ $\quad +4 \quad +4$

$\frac{2|6+2x|}{2} \geq \frac{12}{2}$

$|6+2x| \geq 6$

$6+2x \geq 6$ $\quad -6 \quad -6$

$\frac{2x}{2} \geq \frac{0}{2}$

$x \geq 0$

$6+2x \leq -6$ $\quad -6 \quad -6$

$\frac{2x}{2} \leq \frac{-12}{2}$

$x \leq -6$

10) I) $-5 \quad -2|x-3| = -3$
$\quad\quad\quad\quad\quad -5$
$\quad\quad\quad\quad\quad -5$
$\frac{-2|x-3|}{-2} = \frac{-8}{-2}$
$|x-3| = 4$
$x-3 = 4$ $\quad$ $x-3 = -4$
$+3 \quad +3$ $\quad$ $+3 \quad +3$
$\boxed{x = 7}$ $\quad$ $\boxed{x = -1}$

J) $-3 \quad 3+2|x+1| = 5$
$\quad\quad\quad\quad -3$
$\frac{2|x+1|}{2} = \frac{2}{2}$
$|x+1| = 1$
$x+1 = 1$ $\quad$ $x+1 = -1$
$-1 \quad -1$ $\quad$ $-1 \quad -1$
$\boxed{x = 0}$ $\quad$ $\boxed{x = -2}$

K) $2 \cdot \frac{|x-5|}{2} < 3 \cdot 2$
$|x-5| < 6$
$x-5 < 6$ $\quad$ $x-5 > -6$
$+5 \quad +5$ $\quad$ $+5 \quad +5$
$\boxed{x < 11}$ $\quad$ $\boxed{x > -1}$

L) $6 \cdot \frac{|x+2|}{6} \geq 1 \cdot 6$
$|x+2| \geq 6$
$x+2 \geq 6$ $\quad$ $x+2 \leq -6$
$-2 \quad -2$ $\quad$ $-2 \quad -2$
$\boxed{x \geq 4}$ $\quad$ $\boxed{x \leq -8}$

M) $\left|\frac{2x+7}{5}\right| \leq 3$
5. $\frac{2x+7}{5} \leq 3 \cdot 5$ $\quad$ 5. $\frac{2x+7}{5} \geq -3 \cdot 5$
$2x+7 \leq 15$ $\quad$ $2x+7 \geq -15$
$-7 \quad -7$ $\quad$ $-7 \quad -7$
$\frac{2x}{2} \leq \frac{8}{2}$ $\quad$ $\frac{2x}{2} \geq \frac{-22}{2}$
$\boxed{x \leq 4}$ $\quad$ $\boxed{x \geq -11}$

N) $\left|\frac{4x-4}{3}\right| > 8$
3. $\frac{4x-4}{3} > 8 \cdot 3$ $\quad$ 3. $\frac{4x-4}{3} < -8 \cdot 3$
$4x-4 > 24$ $\quad$ $4x-4 < -24$
$+4 \quad +4$ $\quad$ $+4 \quad +4$
$\frac{4x}{4} > \frac{28}{4}$ $\quad$ $\frac{4x}{4} < \frac{-20}{4}$
$\boxed{x > 7}$ $\quad$ $\boxed{x < -5}$