Algebra 1
Unit 4 Practice Assessment #1

Name	Date	Hour

Common Core Domain and Performance Outcome	Exceeds 4	Meets 3	Approaching 2	Does Not Meet 1
Reasoning with Equations and Inequalities 4a: solve equations and inequalities in one variable	• Student can meet the criteria for a 3 and also solve equations containing fractions and decimals. • Student made no mistakes	• Student can correctly use properties to solve equations and inequalities • Student can identify when there is one solution, no solution, or infinitely many solutions • Student can graph the solution to an inequality on a number line • Minor errors can be made, including mistakes with positives and negatives and computation	• Student can solve one-step equations and inequalities, but have trouble with multi-step and with variables on both sides	• Student has some correct steps but work is not consistent

Solve each equation.

1. $2x + 7 = 5$

$2x = -2$

$x = -1$

2. $\frac{2x+7}{3} = 7$

$2x+7 = 21$

$2x = 14$

$x = 7$

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

$5x + 10 = 5x + 15 - 5$

$5x + 10 = 5x + 10$

identity

infinitely many solutions

4. $\frac{3}{2} = \frac{3x-4}{7}$

$2(3x-4) = 3 \cdot 7$

$6x - 8 = 21$

$6x = 29$

$x = \frac{29}{6}$

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

$8x - 6 = 3x - 1$

$5x = 5$

$x = 1$

6. $\left(\frac{-3x}{5} + \frac{x}{7} = \frac{2}{5}\right) 35$

$-21x + 5x = 14$

$-16x = 14$

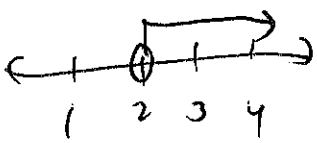
$x = \frac{14}{16} \rightarrow x = \frac{7}{8}$

Solve the inequality and graph the solution on a number line.

7. $6x + 2 > 14$

$6x > 12$

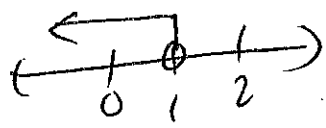
$x > 2$



8. $-7x + 3 > 2x - 6$

$-9x > -9$

$x < 1$



Common Core Domain and Performance Outcome	Exceeds 4	Meets 3	Approaching 2	Does Not Meet 1
Creating Equations and Reasoning with Equations and Inequalities 4b: rewrite formulas in terms of a specific variable and solve literal equations	• Student can write answer in a simplified form • Student made no mistakes	• Student can solve literal equations •. Minor errors can be made, including mistakes with positives and negatives and computation	• Student can solve one-step literal equations, but have trouble with multi-step literal equations	• Student has some correct steps but work is not consistent

9. Solve for y:

$3x - 4y = 12$

$-4y = -3x + 12$

$y = \frac{3}{4}x - 3$

10. Solve the given equation for W.

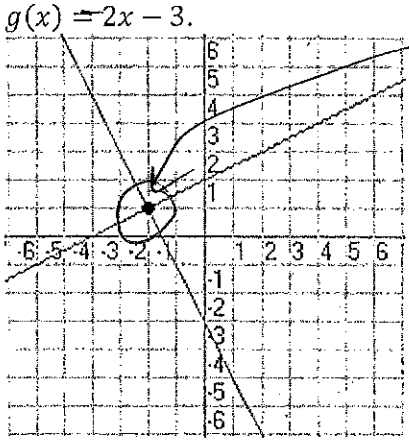
Equation $P = 2L + 2W$

$2W = P - 2L$

$W = \frac{P-2L}{2}$

Common Core Domain and Performance Outcome	Exceeds 4	Meets 3	Approaching 2	Does Not Meet 1
Reasoning with Equations and Inequalities 4c: solve equations using multiple methods (tables, graphs, technology, intersection of graphs)	• Student made no mistakes	• Student can identify the solution using the graph • Student can verify the solution • Minor errors can be made, including misreading the graph	• Student can identify the solution on the graph but is unable to verify the solution	• Student does not know how to use the graph to find the solution to the equation

11. Below is the graph of $f(x) = \frac{1}{2}x + 2$ and $g(x) = -2x - 3$.



a. Using the graph, circle and state the solution to the equation $\frac{1}{2}x + 2 = -2x - 3$.

$x = -2$

b. Show why your answer in part a is the solution to the equation.

$\frac{1}{2}(-2) + 2 = -2(-2) - 3$

$-1 + 2 = 4 - 3$

$1 = 1$ ✓

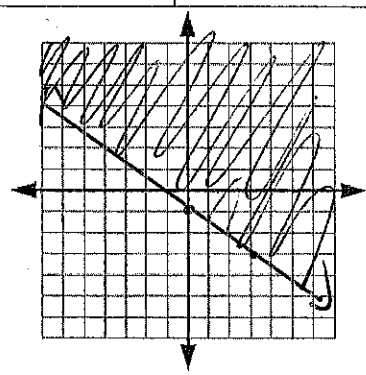
Common Core Domain and Performance Outcome	Exceeds 4	Meets 3	Approaching 2	Does Not Meet 1
Reasoning with Equations and Inequalities 4d: explain each step when solving an equation using properties of equality and justify solutions	• Student made no mistakes	• Student can explain how to solve an equation using properties • Student can justify the solution • Minor errors can be made, including mistakes with positives and negatives and computation	• Student cannot provide reasons for multiple steps in a problem	• Student shows procedural knowledge but cannot give reasons for any steps

12. Solve the following equation. Justify each step and justify (check) your solution.

Equation	Reasons
$2 + 4(x - 3) = 11 - 3x$	distributive property
$2 + 4x - 12 = 11 - 3x$	simplify
$-10 + 4x = 11 - 3x$	addition property of =
$7x = 21$	division property of =
$x = 3$	

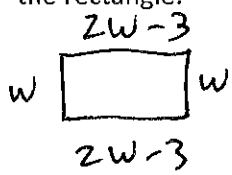
Common Core Domain and Performance Outcome	Exceeds 4	Meets 3	Approaching 2	Does Not Meet 1
Creating Equations and Reasoning with Equations and Inequalities 4e: graph the solutions to a linear inequality in two variables as a half-plane	• Student made no mistakes	• Student can correctly graph the boundary line • Student shades the correct direction • Minor errors can be made, including a slight mistake with slope and the y-intercept	• Student makes a major error when graphing the boundary line	• Student does not graph the line correctly and does not shade

13. Graph the linear inequality $y \geq \frac{-2}{3}x - 1$.



Common Core Domain and Performance Outcome	Exceeds 4	Meets 3	Approaching 2	Does Not Meet 1
Creating Equations 4f: write equations and inequalities and use them to solve problems	• Student made no mistakes • Student showed multiple ways to solve problems	• Student can write equations and inequalities given a context • Student chooses a correct mathematical approach to solve a problem • Student can use the equation or inequality he/she wrote to solve the problem	• Student can write equations and inequalities given a context, but major mistakes are made or pieces are missing • Student uses the equation or inequality to solve the problem but the answer doesn't make sense	• Student is unable to write equations or inequalities given a context • Student is unable to use the equation or inequality to solve the problem

14. The length of a rectangle is three feet less than twice the width. The perimeter is 594 ft. Find the dimensions of the rectangle.



$6w - 6 = 594$

$6w = 600$

$w = 100$

width is 100ft
length is 197ft

15. Find two consecutive integers such that their sum is 89.

$x + x + 1 = 89$

$2x + 1 = 89$

$2x = 88$

$x = 44$

44 & 45

$\frac{89}{2} = 44.5$

44 & 45

16. Yellow Cab Taxi charges a $1.75 flat rate in addition to $0.65 per mile. Katie has no more than $10 to spend on a ride.

a. Write and solve an inequality to determine the maximum number of miles Katie can ride in a taxi without going over her $10 limit.

$1.75 + 0.65x \leq 10$

$0.65x \leq 8.25$

$x \leq 12.69$

She can go at most 12.69 miles

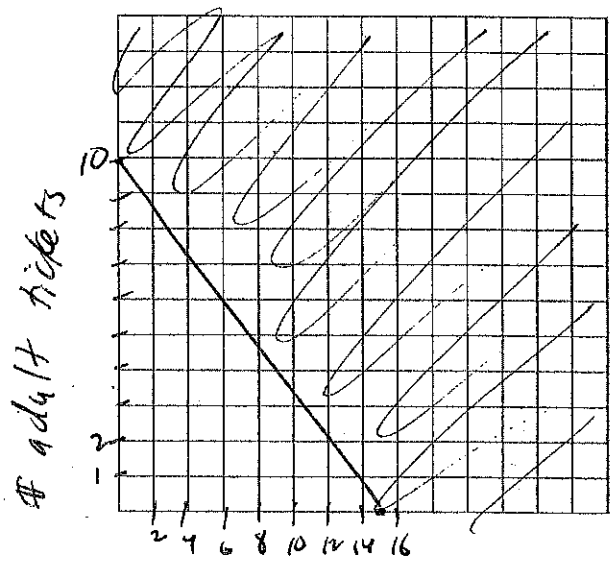
17. A theater wants to take in at least $150 for a certain movie. Children's tickets cost $10 each and adult tickets cost $15 each. Write and graph an inequality that models the different combinations of children's and adult tickets you can buy. Define variables and state the constraints. Give three possible combinations of children and adult tickets that will make their goal.

Variables: x = # of children's tickets
y = # of adult tickets

Inequality: $10x + 15y \geq 150$.

Constraints: $x \geq 0$
$y \geq 0$

Combinations:
20 children + 10 adults
10 children + 10 adults
30 children + 5 adults



$10x = 150$
$x = 15$

$15y = 150$
$y = 10$