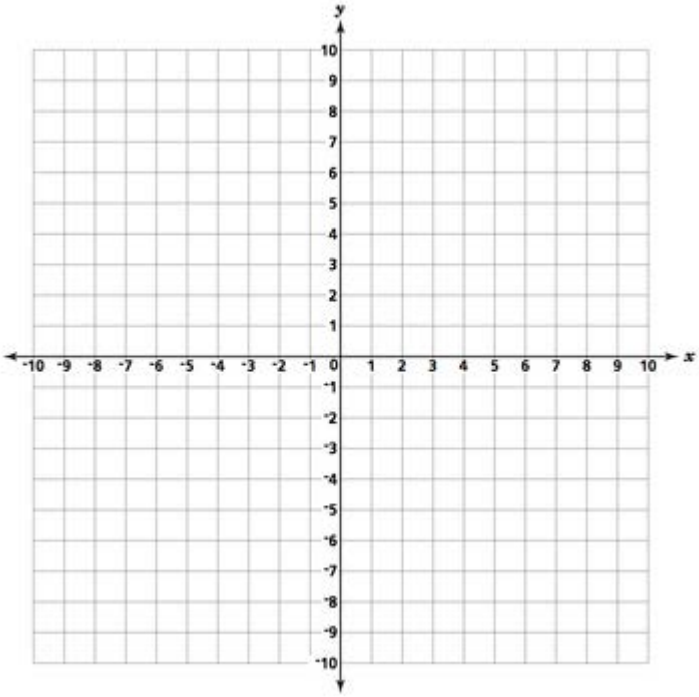
First name: _____ Last name: _____ Student ID: _____

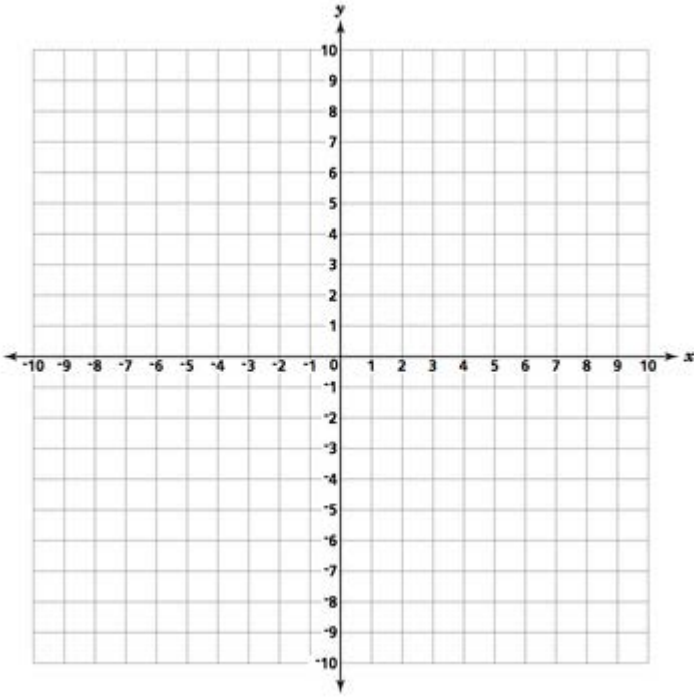
Linear System Homework

1. Solve by graphing.

a) $x + y = 4$
$2x + 2y = 10$



b) $3x + 5y = 10$
$y = x + 2$



2. Solve each system of equations using the substitution method.

1. $x + 3y = -86$ $3x + y = 38$	2. $16x + 9y = 195$ $x + 8y = -25$

3. $2x - y = 1$ $4x - 2y = 2$	4. $2x + 3y = -20$ $x + 3y = -55$

3. Solve each system of equations using the elimination method.

1. $17x + 14y = -1079$ $15x + 14y = -1013$	2. $5y = -112 + 3x$ $x = \frac{11}{3}y + \frac{142}{3}$

3. $8x - 5y = -22$ $2x - y = -10$	4. $y = -\frac{1}{2}x + \frac{93}{2}$ $2x + y = 72$

4. Solve each system of equations using any method.

1. $7x + 9y = -145$ $15x + 7y = 107$	2. $2x – y + 1 = 0$ $y = 2x – 3$
3. $y = \frac{4}{3}x + \frac{47}{3}$ $18x + 17y = -181$	4. $2xy + 3 = 4y$ $3xy + 2 = 5y$

Word Problems – Form linear system then solve.

1. Find the value of two numbers if their sum is 12 and their difference is 4.

2. Flying to Kampala with a tailwind a plane averaged 158 km/h. On the return trip the plane only averaged 112 km/h while flying back into the same wind. Find the speed of the wind and the speed of the plane in still air.

3. The school that Stefan goes to is selling tickets to a choral performance. On the first day of ticket sales the school sold 3 senior citizen tickets and 1 child ticket for a total of $38. The school took in $52 on the second day by selling 3 senior citizen tickets and 2 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

4. Hailey invested her savings of $4800. She invested part in a mutual fund, which paid her 9 % interest per year, and the rest went into a GIC which paid her 10 % per year. After 1 year, the interest she earned from the mutual fund was $43 less than the interest she earned from the GIC. How much did Hailey invest into each?

5. Tania has acid solution in two concentrations: 50% and 100%. She wants to produce 300 mL of 80% acid solution by volume. How many milliliters of each concentration should she use?

6. Michael has $1.95 totally in his collection, consisting of quarters and nickels. The number of nickels is in three more than the number of quarters. How many nickels and how many quarters does Michael have?

7. Create the second equation that satisfies the number of solutions given.

a) Equation 1: $2x + y = 7$

Equation 2: _____

Number of solutions: Infinite

b) Equation 1: $-10x + 2y - 8 = 0$

Equation 2: _____

No solution

8. Consider the following system:

$y = ax + b$

$y = cx + d$

If a and b are both positive and c and d are both negative, in which quadrant is the solution to the system? Is there more than one possible answer?