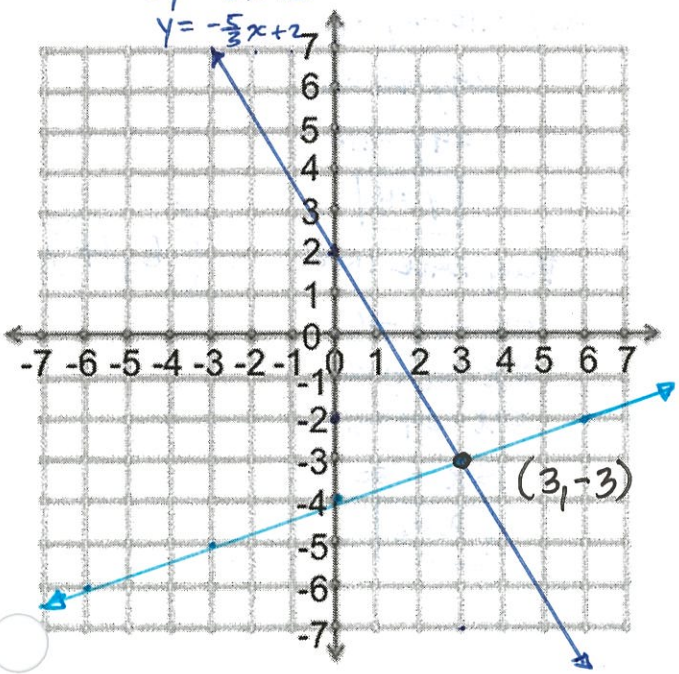
Advanced Algebra II
Systems of Linear Equations Review

Name Key
Date _____ Period _____

1. Solve the linear system of equation by graphing.

- $x - 3y = 12$ → $-3y = -x + 12$, $y = \frac{1}{3}x - 4$
- $5x + 3y = 6$ → $3y = -5x + 6$, $y = -\frac{5}{3}x + 2$



2. Solve the linear system of equation by substitution.

$6x - 2y = -4$
$y + 3 = 8x$
$y = 8x - 3$

$6x - 2(8x - 3) = -4$
$6x - 16x + 6 = -4$
$-10x + 6 = -4$
$-10x = -10$
$x = 1$

PLUG BACK INTO
$y = 8x - 3$
$y = 8(1) - 3$
$y = 8 - 3$
$y = 5$

$(1, 5)$

3. Solve the linear system of equation by elimination.

$3x - 2y = 2$ (5)
$5x - 5y = 10$ (-2)

$15x - 10y = 10$
$-10x + 10y = -20$

$5x = -10$
$x = -2$

PLUG BACK INTO
$3x - 2y = 2$
$3(-2) - 2y = 2$
$-6 - 2y = 2$
$-2y = 8$
$y = -4$

$(-2, -4)$

4. The sum of two numbers is 21.
The difference of the two numbers is 5.
Find the values of the two numbers.

x = 1ST NUMBER
y = 2ND NUMBER

$x + y = 21$
$x - y = 5$

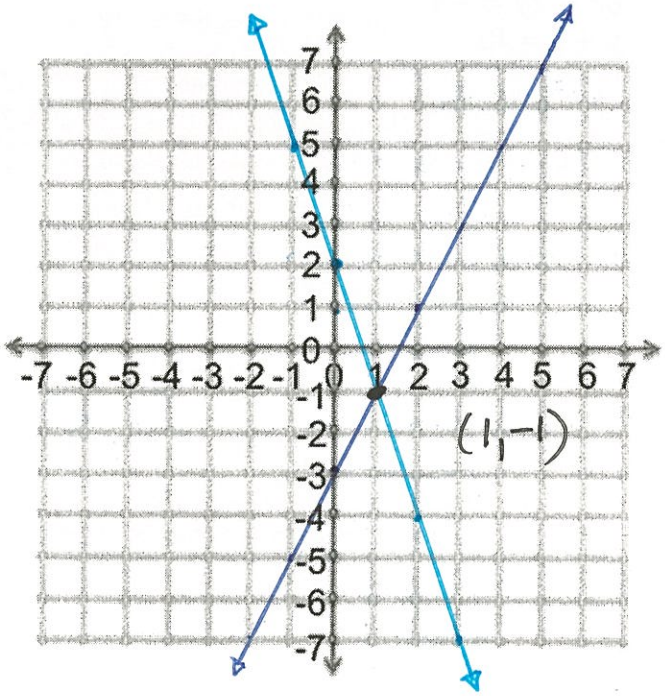
$2x = 26$
$x = 13$

PLUG BACK INTO
$x + y = 21$
$13 + y = 21$
$y = 8$

$(13, 8)$

5. Solve the linear system of equation by graphing.

- $y = -3x + 2$
- $y = 2x - 3$



6. Solve the linear system of equation by substitution.

$5x - 6y = 6$
$x - 7y = -22$

$x = 7y - 22$

$5(7y-22) - 6y = 6$
$35y - 110 - 6y = 6$
$29y - 110 = 6$
$29y = 116$
$y = 4$

PLUG BACK INTO

$5x - 6y = 6$
$5x - 6(4) = 6$
$5x - 24 = 6$
$5x = 30$
$x = 6$

$(6, 4)$

7. Solve the linear system of equation by elimination.

$8x + 7y = 15$
$-2x + 14y = 12$ (4)

$8x + 7y = 15$
$-8x + 56y = 48$

$63y = 63$
$y = 1$

PLUG BACK INTO

$8x + 7y = 15$
$8x + 7(1) = 15$
$8x + 7 = 15$
$8x = 8$
$x = 1$

$(1, 1)$

8. In one week, a music store sold 9 guitars for a total of \$3611. Electric guitars sold for \$479 each and acoustic guitars sold for \$339 each. How many of each type of guitar were sold?

x = # OF ELECTRIC GUITARS SOLD
y = # OF ACOUSTIC GUITARS SOLD

$x + y = 9$ (-479)
$479x + 339y = 3611$

$-479x - 479y = -4311$
$479x + 339y = 3611$

$140y = 700$
$y = 5$

PLUG BACK INTO

$x + y = 9$
$x + 5 = 9$
$x = 4$

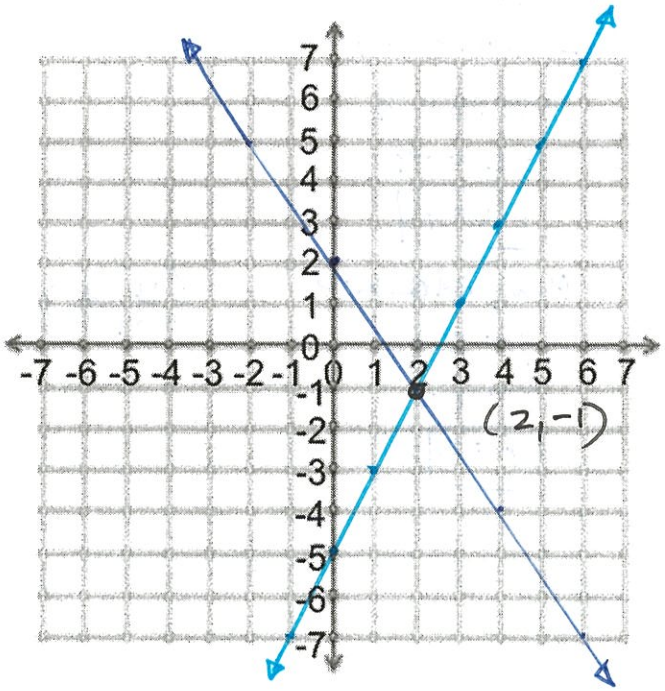
$(4, 5)$

9. Solve the linear system of equation by graphing.

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

$2y = -3x + 4$

$y = -\frac{3}{2}x + 2$



10. Solve the linear system of equation by substitution.

$x - 2y = 4 \rightarrow x = 2y + 4$

$3x - 6y = 8$

$3(2y+4) - 6y = 8$

$6y + 12 - 6y = 8$

$12 \neq 8$

NO SOLUTION

11. Solve the linear system of equation by elimination.

$3x - 6y = 9$ (4) $\rightarrow 12x - 24y = 36$

$-4x + 7y = -16$ (3) $\rightarrow -12x + 24y = -48$

$-3y = -12$

$y = 4$

PLUG BACK INTO

$3x - 6y = 9$

$3x - 6(4) = 9$

$3x - 24 = 9$

$3x = 33$

$x = 11$

$(11, 4)$

12. Brenda's school is selling tickets to a spring musical. On the first day of ticket sales, the school sold 3 adult tickets and 9 student tickets for a total of $75. The school took in $67 on the second day by selling 8 adult tickets and 5 student tickets. What is the price each of ticket?

x = $ ADULT TICKET

y = $ STUDENT TICKET

$3x + 9y = 75$ (8)

$8x + 5y = 67$ (-3)

$24x + 72y = 600$

$-24x - 15y = -201$

$57y = 399$

$y = 7$

$(4, 7)$

PLUG BACK INTO

$3x + 9y = 75$

$3x + 9(7) = 75$

$3x + 63 = 75$

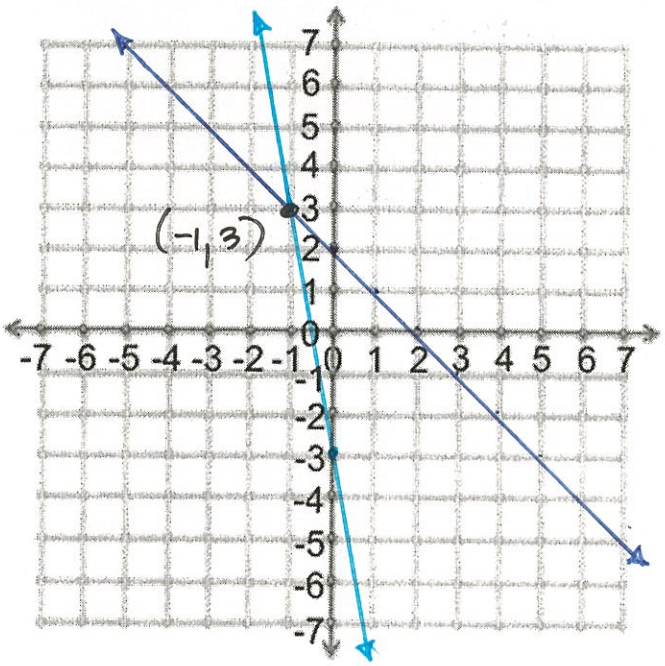
$3x = 12$

$x = 4$

13. Solve the linear system of equation by graphing.

- $y = -6x - 3$
- $3y = -3x + 6$

$y = -x + 2$



14. Solve the linear system of equation by substitution.

$2x - 3y = -1$
$y = x - 1$

$2x - 3(x-1) = -1$
$2x - 3x + 3 = -1$
$-x + 3 = -1$
$-x = -4$
$x = 4$

PLUG BACK INTO
$y = x - 1$
$y = 4 - 1$
$y = 3$

$(4, 3)$

15. Solve the linear system of equation by elimination.

$y = -3x + 5$
$5x - 4y = 14$

$3x + y = 5$ (4)
$5x - 4y = 14$

$12x + 4y = 20$
$5x - 4y = 14$
$17x = 34$
$x = 2$

PLUG BACK INTO
$y = -3x + 5$
$y = -3(2) + 5$
$y = -6 + 5$
$y = -1$

$(2, -1)$

16. Max and Brandon are selling fruit for a school fundraiser. Customers can buy small boxes of oranges and large boxes of oranges. Max sold 3 small boxes of oranges and 14 large boxes of oranges for a total of $203. Brandon sold 11 small boxes of oranges and 11 large boxes of oranges for a total of $220. Find the cost each of one small box of oranges and one large box of oranges.

x = $ SMALL BOX OF ORANGES
y = $ LARGE BOX OF ORANGES

$3x + 14y = 203$ (11)
$11x + 11y = 220$ (-3)

$33x + 154y = 2233$
$-33x - 33y = -660$
$121y = 1573$
$y = 13$

PLUG BACK INTO
$3x + 14y = 203$
$3x + 14(13) = 203$
$3x + 182 = 203$
$3x = 21$
$x = 7$

$(7, 13)$