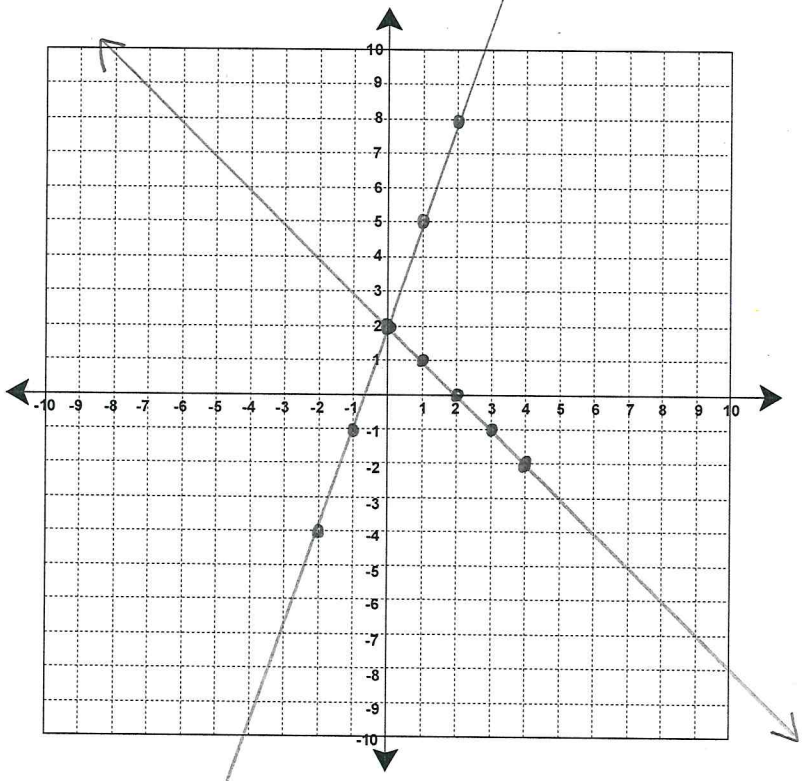
Score: _____ NAME: Key

Algebra 1 Semester 1

Assessment Training Practice #4A

1.) Solving the system by graphing.

$$\begin{cases} x + y = 2 \\ 3x - y = -2 \end{cases}$$



Solution: (0, 2)

$x + y = 2$

$-x \quad -x$

$y = -1x + 2$

$3x - y = -2$

$-3x \quad -3x$

$\frac{-1y}{-1} = \frac{-3x}{-1} - \frac{2}{-1}$

$y = 3x + 2$

2.) Solve the linear system using substitution. Check the solution by Boolean checking.

$$\begin{cases} 5x + 2y = 1 \\ x - 3y = 7 \end{cases}$$

Solution: (1, -2)

$x - 3y = 7$

$+3y \quad +3y$

$x = 3y + 7$

$5(3y+7) + 2y = 1$

$15y + 35 + 2y = 1$

$17y + 35 = 1$

$-35 \quad -35$

$\frac{17y}{17} = \frac{-34}{17}$

$y = -2$

$x - 3(-2) = 7$

$x + 6 = 7$

$-6 \quad -6$

$x = 1$

3.) Solve the linear system using the elimination method.

$$-5 \begin{cases} 7x - 2y = -16 \\ 2x - 10y = -14 \end{cases}$$

Solution: (-2, 1)

$-35x + 10y = 80$

$+ \quad 2x - 10y = -14$

$\frac{-33x}{-33} = \frac{66}{-33}$

$x = -2$

$7(-2) - 2y = -16$

$-14 - 2y = -16$

$+14 \quad +14$

$\frac{-2y}{-2} = \frac{-2}{-2}$

$y = 1$

Solve each system of equations.

(4, 3)

4.)

$$\begin{cases} y = 2x - 5 \\ y = -4x + 19 \end{cases}$$

$2x - 5 = -4x + 19$

$+4x \quad +4x$

$6x - 5 = 19$

$+5 \quad +5$

$\frac{6x}{6} = \frac{24}{6}$

$x = 4$

$y = 2 \cdot 4 - 5$

$y = 8 - 5$

$y = 3$

5.)

$$-1 \begin{cases} x + y = 6 \\ -3x + y = 2 \end{cases}$$

(1, 5)

$x + y = 6$

$+ 3x - y = -2$

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

$x = 1$

$x + y = 6$

$1 + y = 6$

$-1 \quad -1$

$y = 5$

6.)

$$\begin{matrix} -4 \\ 3 \end{matrix} \begin{cases} 2x + 3y = 6 \\ 3x + 4y = 5 \end{cases}$$

$(-9, 8)$

$$-8x - 12y = -24$$
$$+\ 9x + 12y = 15$$
$$x = -9$$

$$2x + 3y = 6$$
$$2 \cdot -9 + 3y = 6$$
$$-18 + 3y = 6$$
$$+18 \qquad +18$$
$$\frac{3y}{3} = \frac{24}{3}$$
$$y = 8$$

7.)

$$\begin{cases} y = 2x + 3 \\ y = 2x + 7 \end{cases}$$

$$2x + 3 = 2x + 7$$
$$-2x \qquad -2x$$
$$3 = 7 \quad \text{False}$$

No Solution
Parallel Lines

8.)

$$\begin{cases} y = -2(x + 3) \\ y = -2x - 6 \end{cases}$$

$-2(x+3) = -2x-6$

$-2x-6 = -2x-6$

All real numbers
Coinciding Lines

9.) 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.

x = senior citizen
y = child

$3x+y = 38$
$3x+2y = 52$

$-1(3x+y = 38)$

$-3x-y = -38$
$+\ 3x+2y = 52$
$y = 14$

$3x+14 = 38$
$-14\ \ -14$
$\frac{3x}{3} = \frac{24}{3}$
$x = 8$

(y)
Child ticket = $14

Senior Citizen = $8
(x)

10.) A TV station executive is planning the new lineup for next season's shows. On Monday nights, there will be 3 sitcoms and 6 dramas, for a total of 312 minutes of programming, not counting commercials. On Tuesday nights, he has scheduled 6 sitcoms and 1 drama, for a total of 162 minutes of non-commercial programming. All sitcoms have the same length and all dramas have the same length. How long is each type of show?

Sitcoms = x

Dramas = y

$$3x + 6y = 312$$
$$6x + y = 162$$

$$-6(6x + y = 162)$$

$$+ \quad 3x + 6y = 312$$
$$-36x + -6y = -972$$

$$\frac{-33x}{-33} = \frac{-660}{-33}$$

$$x = 20$$

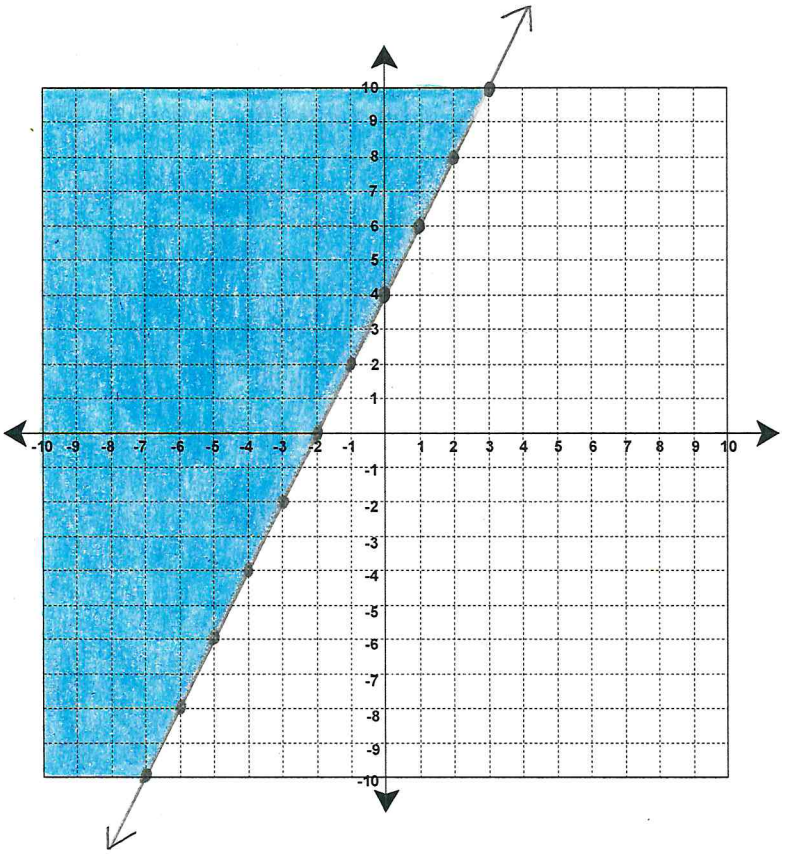
$$3 \cdot 20 + 6y = 312$$
$$60 + 6y = 312$$
$$-60 \quad -60$$
$$6y = 252$$

$$\frac{6y}{6} = \frac{252}{6}$$

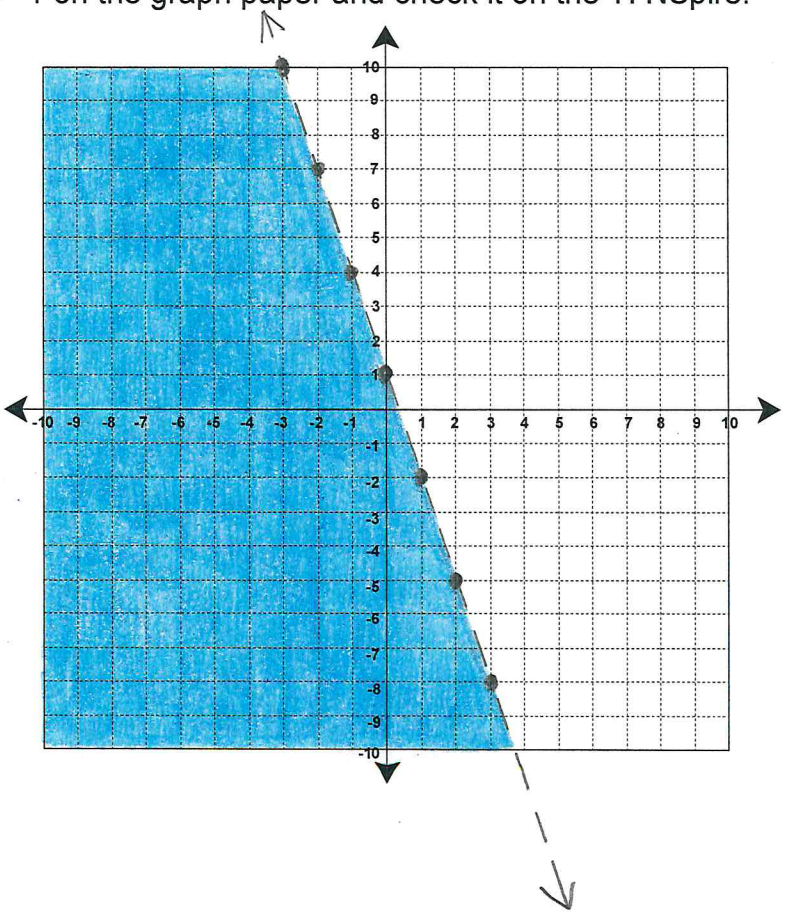
$$y = 42$$

(x)
Sitcoms = 20 min
Dramas = 42 min
(y)

11.) Graph $y \geq 2x + 4$ on the graph paper and check it on the TI NSpire.

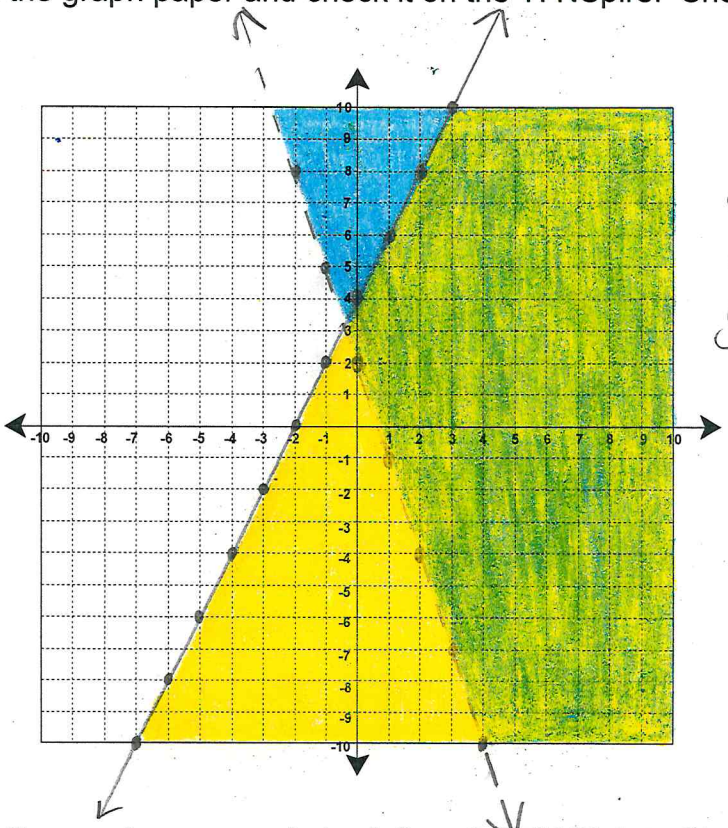


12.) Graph $y < -3x + 1$ on the graph paper and check it on the TI NSpire.



13.) Graph the system of inequalities on the graph paper and check it on the TI NSpire. Show the solution set on the graph.

$$\begin{cases} y \leq 2x + 4 \\ y > -3x + 2 \end{cases}$$



Green Section is the Solution

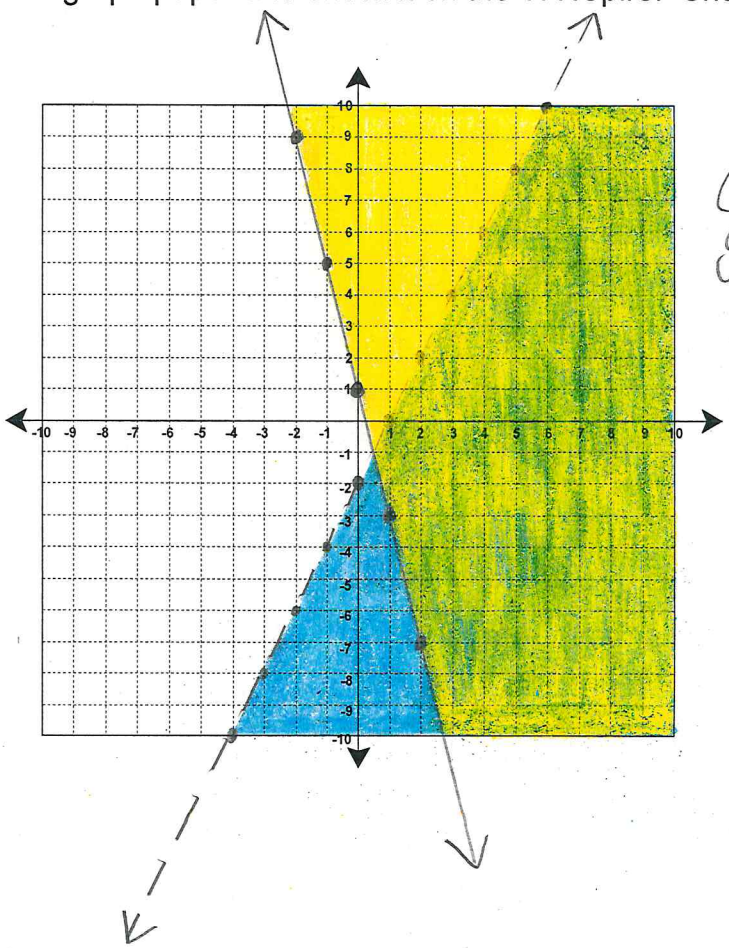
Check:
(5, 2)

$2 \leq 2 \cdot 5 + 4$
$2 \leq 14$ ✓

$2 > -3 \cdot 5 + 2$
$2 > -13$ ✓

14.) Graph the system of inequalities on the graph paper and check it on the TI NSpire. Show the solution set on the graph.

$$\begin{cases} y \geq -4x + 1 \\ y < 2x - 2 \end{cases}$$



Green Section is the Solution

Check:
(8, -2)

$-2 \geq -4 \cdot 8 + 1$
$-2 \geq -31$ ✓

$-2 < 2 \cdot 8 - 2$
$-2 < 14$ ✓