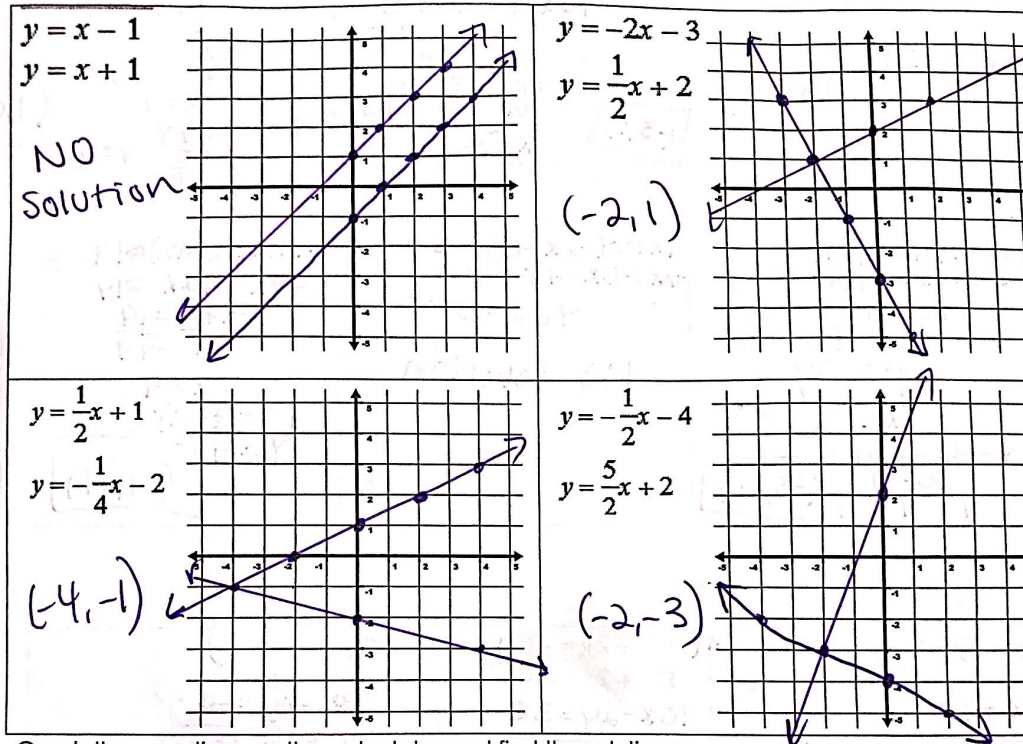


Name Key
Hour _____

Systems of Equations Review

can solve systems by graphing

Graph the equations by hand and find the solution.



Graph the equations on the calculator and find the solution

$y = 4x + 3$ $y = -2x + 9$ $(1, 7)$	$y = -\frac{3}{2}x + 4$ $y = \frac{5}{4}x - 7$ $(4, -2)$	$y = \frac{3}{2}x + 5$ $y = \frac{1}{2}x - 1$ $(-6, -4)$	$y = \frac{3}{7}x + 8$ $y = -\frac{13}{7}x - 8$ $(-7, 5)$	$y = \frac{13}{7}x - 8$ $y = \frac{13}{7}x - 1$ NO Solution
---	--	--	---	--

can solve systems by substitution

$y = 2x$ $-6x + 3y = 0$ $-6x + 3(2x) = 0$ $-6x + 6x = 0$ $0 = 0$ Infinite Solutions	$-2x - 6y = 0$ $y = -\frac{8(3) - 23}{24 - 23}$ $y = -8x - 23$ $y = 1$ $-2x - 6(-8x - 23) = 0$ $-2x + 48x + 138 = 0$ $46x + 138 = 0$ $-138 - 138$ $\frac{46x}{46} = \frac{-138}{46}$ $x = 3$ $(-3, 1)$	$y = -8x + 8$ $4x - 2y = 4$ $4x - 2(-8x + 8) = 4$ $4x + 16x - 16 = 4$ $20x - 16 = 4$ $+16 +16$ $\frac{20x}{20} = \frac{20}{20}$ $x = 1$ $y = -8(1) + 8$ $-8 + 8$ $y = 0$ $(1, 0)$
$-2x - 4y = 14$ $y = -4x - 21$ $-2x - 4(-4x - 21) = 14$ $-2x + 16x + 84 = 14$ $14x + 84 = 14$ $-84 - 84$ $\frac{14x}{14} = \frac{-70}{14}$ $x = -5$ $y = -4(-5) - 21$ $20 - 21$ $y = -1$ $(-5, -1)$	$y = -2x - 6$ $6x + 3y = -5$ $6x + 3(-2x - 6) = -5$ $6x - 6x - 18 = -5$ $-18 = -5$ No Solution	$-7x + 3y = 19$ $y = -4x$ $-7x + 3(-4x) = 19$ $-7x - 12x = 19$ $-19x = 19$ $\frac{-19x}{-19} = \frac{19}{-19}$ $x = -1$ $y = -4(-1)$ $y = 4$ $(-1, 4)$

can solve systems by elimination

$(6x - 7y = 1)$ $6x - 4y = -20$ $-6x + 7y = -1$ $\frac{3y = -21}{3}$ $y = -7$ $6x - 7(-7) = 1$ $6x + 49 = 1$ $-49 - 49$ $\frac{6x = -48}{6}$ $x = -8$ $(-8, -7)$	$(-10x + 2y = -30)$ $-10x + 2y = -30$ $10x - 2y = 30$ $0 = 0$ Infinite Solutions	$(2x - 8y = 2)$ $8x - 8y = 8$ $-2x + 8y = -2$ $\frac{6x = 6}{6}$ $x = 1$ $2(1) - 8y = 2$ $2 - 8y = 2$ $-2 - 2$ $\frac{-8y = 0}{-8}$ $y = 0$ $(1, 0)$
--	--	--

$\begin{array}{r} -x - 4y = -1 \quad -8 \\ -8x - y = -8 \\ \hline 8x + 32y = 8 \\ \hline 31y = 0 \\ 31 \quad 31 \\ \hline y = 0 \end{array}$ $\begin{array}{r} -x - 4(0) = -1 \\ -x = -1 \\ \hline x = 1 \end{array}$ $(1, 0)$	$\begin{array}{r} 9x + 2y = -10 \quad 4 \\ -36x - 8y = 12 \\ \hline 36x + 8y = -40 \\ \hline 0 = -28 \end{array}$ NO Solution	$\begin{array}{r} (7x - 4y = -5) \quad -2 \\ 14x - 6y = 10 \\ -14x + 8y = 10 \\ \hline 2y = 20 \\ \hline y = 10 \end{array}$ $\begin{array}{r} 7x - 4(10) = -5 \\ 7x - 40 = -5 \\ +40 \quad +40 \\ \hline 7x = 35 \\ \hline x = 5 \end{array}$ $(5, 10)$
--	--	--

I can solve using any method

$y = -\frac{1}{3}x + 6$ $y = -4x - 5$ $(-3, 7)$	$\begin{array}{r} 4x - 2y = -18 \\ y = 6x + 21 \\ \hline 4x - 2(6x + 21) = -18 \\ 4x - 12x - 42 = -18 \\ -8x - 42 = -18 \\ +42 \quad +42 \\ \hline -8x = 24 \\ \hline x = -3 \end{array}$ $y = 6(-3) + 21$ $-18 + 21$ $y = 3$ $(-3, 3)$
$\begin{array}{r} -3x + 3y = -21 \\ y = x - 7 \\ \hline -3x + 3(x - 7) = -21 \\ -3x + 3x - 21 = -21 \\ -21 = -21 \end{array}$ Infinite Solutions	$\begin{array}{r} 14x - 4y = 6 \\ (-7x + 5y = 24) \quad 2 \\ \hline -14x + 10y = 48 \\ 14x - 4y = 6 \\ \hline 6y = 54 \\ \hline y = 9 \end{array}$ $\begin{array}{r} -7x + 5(9) = 24 \\ -7x + 45 = 24 \\ -45 - 45 \\ \hline -7x = -21 \\ \hline x = 3 \end{array}$ $(3, 9)$

can system of equation word problems

Ali's school is selling tickets to the spring musical. On the first day of ticket sales the school sold 5 senior citizen tickets and 4 child tickets for a total of \$98. The school made \$278 on the second day by selling 11 senior citizen tickets and 14 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

$$\begin{array}{rcl} -11(5x + 4y = 98) & 11x + 14(12) = 278 & x = \text{senior} \\ 5(11x + 14y = 278) & 11x + 168 = 278 & y = \text{child} \\ -55x - 44y = -1078 & -168 & \\ \hline 55x + 70y = 1390 & 11x = 110 & \\ \hline 20y = 312 & 11 & \\ 20 & & \\ \hline y = 12 & x = 10 & \end{array}$$

10 senior tickets
 12 child tickets

Several students decide to start a T-shirt company. After initial expenses for \$280, they purchase each T-shirt wholesale for \$3.99. They sell each t-shirt for \$10.99. How many must they sell to break even?

$$\begin{array}{rcl} y = 3.99x + 280 & 10.99x = 3.99x + 280 & \\ y = 10.99x & -3.99x & \\ \hline 7x = 280 & & \\ 7 & & \\ \hline x = 40 & & \end{array}$$

They need to sell 40 T-shirts to break even

Olivia's family drove to Disney World for spring break. Her mom and dad shared the driving duties for a total of 14 hours. Her mom drove 65 miles per hour, and her dad drove 60 miles per hour. If they drove a total of 895 miles, how many hours did each person drive for?

$$\begin{array}{rcl} -65(x + y = 14) & x + 3 = 14 & x = \text{mom} \\ 65x + 60y = 895 & -3 & y = \text{dad} \\ -65x - 60y = -910 & \hline x = 11 & \\ \hline -5y = -15 & & \\ -5 & & \\ \hline y = 3 & & \end{array}$$

Mom drives 11 hours
 & dad drives 3 hours

Apple is selling used iPhones for \$150. Apple's expenses to repair the used phones cost \$1000 for parts and \$100 per phone for labor. How many iPhones must Apple sell to break even?

$$\begin{array}{rcl} y = 150x & 150x = 100x + 1000 & \\ y = 100x + 1000 & -100x & \\ \hline 50x = 1000 & & \\ 50 & & \\ \hline x = 20 & & \end{array}$$

They need to sell 20 phones to break even