Name: _____

Systems Quiz #1 Review

Find solutions @ http://twitter.com/mskmath

1. Is the point (6, 10) a solution to the system of equations: ① $5x-2y=10$ ② $2x+3y=42$?

X Y

Plug into both equations.

① $5(6)-2(10)=10$?
$30-20=10$
$10=10$ ✓

② $2(6)+3(10)=42$?
$12+30=42$
$42=42$ ✓

CIRCLE ONE: YES NO

2 ✓s → YES
1 X → NO

#2-3: How many solutions do the systems of equations have? HINT: Solve for y!

2. ① $2x+y=6$ ② $3y=24-6x$

CIRCLE ONE: ONE NONE INFINITE

① $2x+y=6$
$-2x \quad -2x$
$y=-2x+6$

② $\frac{3y}{3}=\frac{24}{3}-\frac{6x}{3}$
$y=8-2x$

Plot1 Plot2 Plot3
$Y_1=-2X+6$
$Y_2=8-2X$

PARALLEL → never touch

3. ① $4x+3y=-12$ ② $-8x-6y=24$

CIRCLE ONE: ONE NONE INFINITE

∴

① $4x+3y=-12$
$-4x \quad -4x$
$\frac{3y}{3}=\frac{-4x}{3}-\frac{12}{3}$
$y=-\frac{4}{3}x-4$

② $+8x \quad +8x$
$\frac{-6y}{-6}=\frac{8x}{-6}+\frac{24}{-6}$
$y=-\frac{8}{6}x-4$

Plot1 Plot2 Plot3
$Y_1=-\frac{4}{3}X-4$
$Y_2=-\frac{8}{6}X-4$

SAME LINE → always touch

#4-5: Solve the systems of equations using any method.

4. ① $-7x-2y=-13$ ② $x-2y=11$

(3, -4)

MATRIX
$\begin{bmatrix}-7 & -2\\ 1 & -2\end{bmatrix}^{-1}\begin{bmatrix}-13\\ 11\end{bmatrix}$

GRAPHING
$y=-\frac{7}{2}x+\frac{13}{2}$
$y=\frac{1}{2}x-\frac{11}{2}$

SUBSTITUTION
② ⇒ $x=11+2y$
$-7(11+2y)-2y=-13$
solve!

ELIMINATION
$-1(-7x-2y=-13)$
$x-2y=11$
$7x+2y=13$
$+\ x-2y=11$
$8x=24$
solve!

5. $-5x+y=-3$ $3x-8y=24$

(0, -3)

6. The equations of two lines are $2x - y = 4$ and $y = -2x + 8$. What is the value of x in the solution for this system?

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

$2x - (-2x + 8) = 4$
$2x + 2x - 8 = 4$
$4x - 8 = 4$
$+8 \quad +8$
$\frac{4x}{4} = \frac{12}{4}$
$x = 3$

To use calculator, you MUST rearrange

7. If the equations of two lines are $y = 6x - 11$ and $-2x - 3y = -7$, then $x + y = ?$

$y = 6x - 11$
$-2x - 3y = -7$

$\Rightarrow$ $-6x + y = -11$
$-2x - 3y = -7$

$\begin{bmatrix} -6 & 1 \\ -2 & -3 \end{bmatrix}^{-1} \begin{bmatrix} -11 \\ -7 \end{bmatrix}$

$(2, 1)$

$2 + 1 = 3$

8. Jada had brochures printed for a new business venture. Jada originally ordered 4 boxes of black-and-white brochures and 3 boxes of color brochures, which cost a total of $134. After those ran out, Jada spent $120 on 3 boxes of black-and-white brochures and 3 boxes of color brochures. Write a system of equations that represents this situation. 2 types

Let b be black & white.
Let c be color.

$4b + 3c = 134$
$3b + 3c = 120$

9. Two brothers went shopping at a back-to-school sale where all shirts and shorts were the same price. The younger brother spent $175 on 7 new shirts and 7 pairs of shorts. The older brother purchased 6 new shirts and 7 pairs of shorts and paid a total of $165. How much did one shirt cost? 2 types

Let x be shirts
Let y be shorts

$7x + 7y = 175$
$6x + 7y = 165$

10. Skyler went to Taco Bell for lunch. Skyler spent a total of $11.25 on soft tacos and burritos. Each soft taco cost $1.15 and each burrito cost $2.05. Skyler bought two more burritos than soft tacos. Write a system of equations that represents this situation. total $ rule

Let t be tacos.
Let b be burritos.

$1.15t + 2.05b = 11.25$
$b = 2 + t$

11. David is running a concession stand at a soccer game. He sells nachos and sodas. Nachos cost $1.50 each and sodas cost $0.50 each. At the end of the game, David made a total of $78.50 and sold a total of 87 nachos and sodas combined. Which system of equations represents this situation? Total $ money

a. $1.50n + 0.50s = 78.50$
$n + s = 87$

b. $0.50n + 1.50s = 78.50$
$n + s = 87$

c. $1.50n + 0.50s = 87$
$n + s = 78.50$

d. $n + s = 78.50$
$n + s = 2$