

# 6.1H Matrices & Systems Intro

NO WORK, NO CREDIT. NO WORK IN PEN.

Name: \_\_\_\_\_ Per: \_\_\_\_\_

Multiply the following matrix equations.

1.  $\begin{bmatrix} 2 & 0 \\ 9 & 2 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 4 \\ 3 \end{bmatrix}$

2.  $\begin{bmatrix} 3 & 5 \\ 2 & 3 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 21 \\ 13 \end{bmatrix}$

3.  $\begin{bmatrix} 5 & -1 & 7 \\ 2 & 4 & -6 \\ 12 & \frac{1}{2} & -2 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 42 \\ 51 \\ 27 \end{bmatrix}$

Write each of the following systems as an augmented matrix:

4.  $\begin{cases} 4x = 2x + 4 \\ 9x + 2y = 3 \end{cases} \left[ \begin{array}{cc|c} & & \\ & & \\ & & \\ & & \end{array} \right]$

5.  $\begin{cases} y = -\frac{3}{5}x + \frac{21}{5} \\ x - 2y + 13 = 3x + 5y \end{cases}$

7. The system #1 above is solved below. Fill in the blanks and write a description of what happens to solve it.

	<b>Solve by Elimination</b>	<b>Write as a Matrix</b>	<b>Verbal Description:</b>
	$\begin{cases} 2x + 0y = 4 \\ 9x + 2y = 3 \end{cases}$	$\left[ \begin{array}{cc c} \_ & 0 & \_ \\ \_ & \_ & \_ \end{array} \right]$	GIVEN. Took the system and wrote as an augmented matrix.
Step 1	$\begin{cases} x + 0y = 2 \\ 9x + 2y = 3 \end{cases}$	$\left[ \begin{array}{cc c} 1 & \_ & 2 \\ \_ & 2 & \_ \end{array} \right]$	
Step 2	$\begin{cases} -9x + 0y = -18 \\ 9x + 2y = 3 \end{cases}$	$\left[ \begin{array}{cc c} \_ & 0 & -18 \\ 9 & \_ & \_ \end{array} \right]$	
Step 3	$\begin{cases} x + 0y = 2 \\ 0x + 2y = -15 \end{cases}$	$\left[ \begin{array}{cc c} 1 & \_ & 2 \\ \_ & 2 & \_ \end{array} \right]$	
Step 4	$\begin{cases} 1x + 0y = 2 \\ 0x + 1y = -\frac{15}{2} \end{cases}$	$\left[ \begin{array}{cc c} \_ & \_ & 2 \\ \_ & \_ & \_ \end{array} \right]$	

- Write the solution as a coordinate point. \_\_\_\_\_
- Check your solution in both equations

6. Solve the following system by elimination and then using row echelon reduction.

a.  $3x + 5y = 21$   
 $2x + 3y = 13$

b. Write and solve the matrix

Solve by Elimination

8. Solve Tianna and Kya go to a candy store. Tianna buys 3 candy bars and 1 fruit roll-ups for \$1.79. Kya buys 3 candy bars, but buys 3 more fruit roll-ups than Tianna because of the nutritional value. She spends \$2.84. Set up the following system and solve using the **elimination** method. (This should look familiar). Show ALL your steps.
9. Set up the system from #8 (above) into one matrix and solve using row echelon reduction. Briefly **DESCRIBE** each step. You should already know your answer, so show the process using row echelon.

$$\left[ \begin{array}{ccc|c} \_ & \_ & \_ & \_ \\ \_ & \_ & \_ & \_ \\ \_ & \_ & \_ & \_ \end{array} \right]$$

$$\left[ \begin{array}{cc|c} 1 & 0 & \_ \\ 0 & 1 & \_ \end{array} \right]$$

10. Solve the system  $\begin{cases} 2x + 4y = 0 \\ 3x + 5y = -2 \end{cases}$  using the elimination method. Describe each step you take.

11. Solve the following matrix using row operations (row echelon reduction). Describe each step.

$$\left[ \begin{array}{ccc} 2 & 4 & 0 \\ 3 & 5 & -2 \end{array} \right]$$

$$\left[ \begin{array}{cc|c} 1 & 0 & \_ \\ 0 & 1 & \_ \end{array} \right]$$

12. Jed decides to try a cheaper brand of pet food. On Monday, he purchased 3 small bags of cat food and 5 small bags of dog food for \$22.75. Because he went through the small bags quite quickly, he had to return to the store on Thursday to buy 2 small bags of cat food and 3 more small bags of dog food that cost \$14.25. Set up the following system in an augmented matrix and solve using row echelon reduction. Show ALL your steps.