

ARRANGED HOUR FOR MATH 50

Math 50 – Section 12.2
Solving Systems of Equations by Elimination and
Matrices

Name _____
Instructor _____
Date _____

1. Solve the following systems of equations using **elimination**, **circle your final answer**:

a. $x - 3y = -3$
 $2x + 3y = 1$

b. $2x + 5y = 20$
 $7y = 3x - 59$

2. **Write** the system of **two equations** represented by the following augmented matrix

$$\left[\begin{array}{cc|c} 3 & 2 & -1 \\ 1 & 0 & -1 \end{array} \right]$$

3. Write the following system of equations as an **augmented matrix**

$$y = \frac{2}{3}x + 6$$

$$3x + 12 = 2y$$

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4. When we solve a matrix representing a system with two variables, why is it necessary for one of the variable coefficients in one of the rows to be zero (for example, $\left[\begin{array}{ccc|c} 2 & 0 & 3 & \\ \dots & \dots & \dots & \end{array} \right]$)?

5. One student represented a system of two, two-variable equations like this: $\left[\begin{array}{cc|cc} 2 & -1 & 0 & \\ 3 & 2 & 7 & \end{array} \right]$

Another student represented the **same system** of equations like this: $\left[\begin{array}{cc|cc} 3 & 2 & 7 & \\ 2 & -1 & 0 & \end{array} \right]$

The second student CORRECTLY claims that swapping the rows in the matrices is allowable. Why is this student CORRECT

6. A US penny minted before 1982 has an average mass of 3.1 grams. A penny minted after 1982 has an average mass of 2.5 grams. A banker finds the mass of a roll of **50 pennies** to be **143 grams**. How many of each type of penny are in this roll of pennies?
- Write two equations to represent this situation (one equation representing total **mass** of the pennies and one equation representing the total **number** of pennies).
 - Represent these equations as an augmented matrix.

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- c. Solve the augmented matrix for the number of pre-1982 pennies and the number of post-1982 pennies in the roll of pennies.