

Key

Linear Systems & STAT – Review Two – Augmented Matrices

Name:

Date:

Period:

Put the given equations in standard form. (Show your work)

1) $3x - 4 = 13y$ $3x - 13y = 4$
 2) $4a = 6b$ $4a - 6b = 0$

3) $5e + 6f = 21 - 3g$ $5e + 6f + 3g = 21$
 4) $8x - 3 = 4y - 23z$ $8x - 4y + 23z = 3$

Create an augmented matrix for the given equations

5) $\begin{cases} 3x + 4y + 2z = 11 \\ 2x + 3y - z = 4 \\ 5x + 5y - 3z = -1 \end{cases}$ $\left[\begin{array}{ccc|c} 3 & 4 & 2 & 11 \\ 2 & 3 & -1 & 4 \\ 5 & 5 & -3 & -1 \end{array} \right]$ 6) $2x - 1 = 3y$ and $2 + 3y = -x$ $\left[\begin{array}{cc|c} 2 & -3 & 1 \\ 1 & 3 & -2 \end{array} \right]$
 $2x - 3y = 1$
 $x + 3y = -2$

Solve the following system without technology be sure to show all of your work.

7) $7x - 3y = -1$
 $x + 2y = 12$ $\boxed{x=2 \quad y=5}$
 REF $\left(\left[\begin{array}{cc|c} 7 & -3 & -1 \\ 1 & 2 & 12 \end{array} \right] \right) = \left[\begin{array}{cc|c} 1 & 0 & 2 \\ 0 & 1 & 5 \end{array} \right]$

Solve the following two system of equations with or without technology. Explain your answer.

8) $-x - 5y - 5z = 2$
 $4x - 5y + 4z = 19$ REF $\left(\left[\begin{array}{ccc|c} -1 & -5 & -5 & 2 \\ 4 & -5 & 4 & 19 \\ 1 & 5 & -1 & -20 \end{array} \right] \right) = \left[\begin{array}{ccc|c} 1 & 0 & 0 & -2 \\ 0 & 1 & 0 & -3 \\ 0 & 0 & 1 & 3 \end{array} \right]$ $x = -2$
 $x + 5y - z = -20$ $y = -3$
 $z = 3$

9) Create a system of equations for the following problem. Don't forget to identify the variables first.

Chase and Sara went to the candy store. Chase bought 5 pieces of fudge and 3 pieces of bubble gum for a total of \$5.70. Sara bought 2 pieces of fudge and 10 pieces of bubble gum for a total of \$3.60. Which system of equations could be used to determine the cost of 1 piece of fudge, f , and 1 piece of bubble gum, g ? $f = \text{cost of fudge}$ $g = \text{unit cost of B Gum}$ $5f + 3g = 570$ $2f + 10g = 360$

10) Using your system of equations for the problem in #9 create an augmented matrix that could be used to solve for the variables

$$\left[\begin{array}{cc|c} 5 & 3 & 570 \\ 2 & 10 & 360 \end{array} \right]$$

11) Solve the above system and make some conclusions about the result.

REF $\left[\begin{array}{cc|c} 5 & 3 & 570 \\ 2 & 10 & 360 \end{array} \right] = \left[\begin{array}{cc|c} 1 & 0 & 105 \\ 0 & 1 & 15 \end{array} \right]$ fudge cost \$1.05 each
 B Gum cost \$15 each

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12) Given the following set of ordered pairs plot the figure on the graph below and create a matrix to define the figure. (0,-2),(-1,6),(1,4),(4,2),(1,1)

$$\begin{bmatrix} 0 & -1 & 1 & 4 & 1 \\ -2 & 6 & 4 & 2 & 1 \end{bmatrix}$$

13) Perform a dilation of the figure make sure you show your matrix multiplication.

PICK ANY 71 on below out

$$2 \cdot \begin{bmatrix} 0 & -1 & 1 & 4 & 1 \\ -2 & 6 & 4 & 2 & 1 \end{bmatrix} = \begin{bmatrix} 0 & -2 & 2 & 8 & 2 \\ -4 & 12 & 8 & 4 & 2 \end{bmatrix}$$

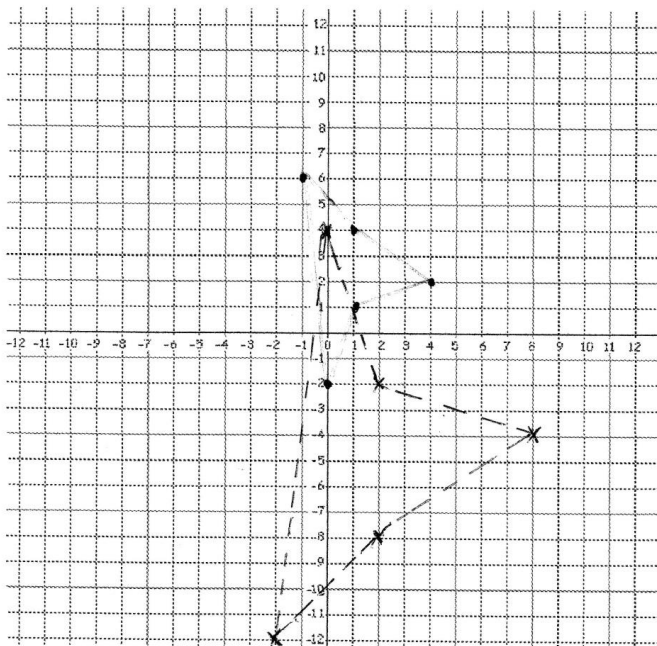
14) Perform a reflection of the matrix using one of the given reflection matrices. (Show your Work)

1) $y = \text{axis} \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$ 2) $x = \text{axis} \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$ 3) $y = x \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$ 4) $y = -x \begin{pmatrix} 0 & -1 \\ -1 & 0 \end{pmatrix}$

PICK ONE

$$\hookrightarrow \begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix} \begin{bmatrix} 0 & -2 & 2 & 8 & 2 \\ -4 & 12 & 8 & 4 & 2 \end{bmatrix} = \begin{bmatrix} 0 & -2 & 2 & 8 & 2 \\ 4 & -12 & -8 & -4 & -2 \end{bmatrix}$$

15) Plot the final transformed figure with the original figure. Use the given x - y chart to show your final transformed points.



X	Y
0	4
-2	-12
2	-8
8	-4
2	-2