

Name \_\_\_\_\_

Date \_\_\_\_\_

## Advanced Algebra

## Unit 6: Advanced Systems- Matrices Operations

## Unit 6 Assignment #9

Find the value of the missing variables:

1)  $\begin{bmatrix} x^2 & 4z \\ 25 & 8 \end{bmatrix} = \begin{bmatrix} 100 & 28 \\ 5a & 4s \end{bmatrix}$

$$\begin{array}{l} x^2 = 100 \\ \boxed{x = 10} \end{array}$$

$$\begin{array}{l} 4z = 28 \\ \boxed{z = 7} \end{array}$$

$$\begin{array}{l} 25 = 5a \\ \boxed{5 = a} \end{array}$$

$$\begin{array}{l} 8 = 4s \\ \boxed{s = 2} \end{array}$$

2)  $\begin{bmatrix} x^{\frac{1}{2}} & 8y \\ 612 & 5x \end{bmatrix} = \begin{bmatrix} 28 & 32 \\ z^5 & 500 \end{bmatrix}$

$$\begin{array}{l} x^{\frac{1}{2}} = 28 \\ \boxed{x = 784} \end{array}$$

$$\begin{array}{l} 8y = 32 \\ \boxed{y = 4} \end{array}$$

$$\begin{array}{l} 612 = z^5 \\ \boxed{z = 3.61} \end{array}$$

$$\begin{array}{l} 5x = 500 \\ \boxed{x = 100} \end{array}$$

Add/Subtract the following matrices:

$$\begin{bmatrix} 5 & -2 \\ 5 & 12 \end{bmatrix} - \begin{bmatrix} -2 & 8 \\ 3 & 12 \end{bmatrix} = \begin{bmatrix} 7 & -10 \\ 2 & 0 \end{bmatrix}$$

Multiply the following Matrix by a scalar, then add.

$$\begin{bmatrix} 12 & 5 \\ 2 & 4 \end{bmatrix} + 3 \begin{bmatrix} 4 & -3 \\ 2 & 1 \end{bmatrix} = \begin{bmatrix} 12 & 5 \\ 2 & 4 \end{bmatrix} + \begin{bmatrix} 12 & -9 \\ 6 & 3 \end{bmatrix} = \begin{bmatrix} 24 & -4 \\ 8 & 7 \end{bmatrix}$$

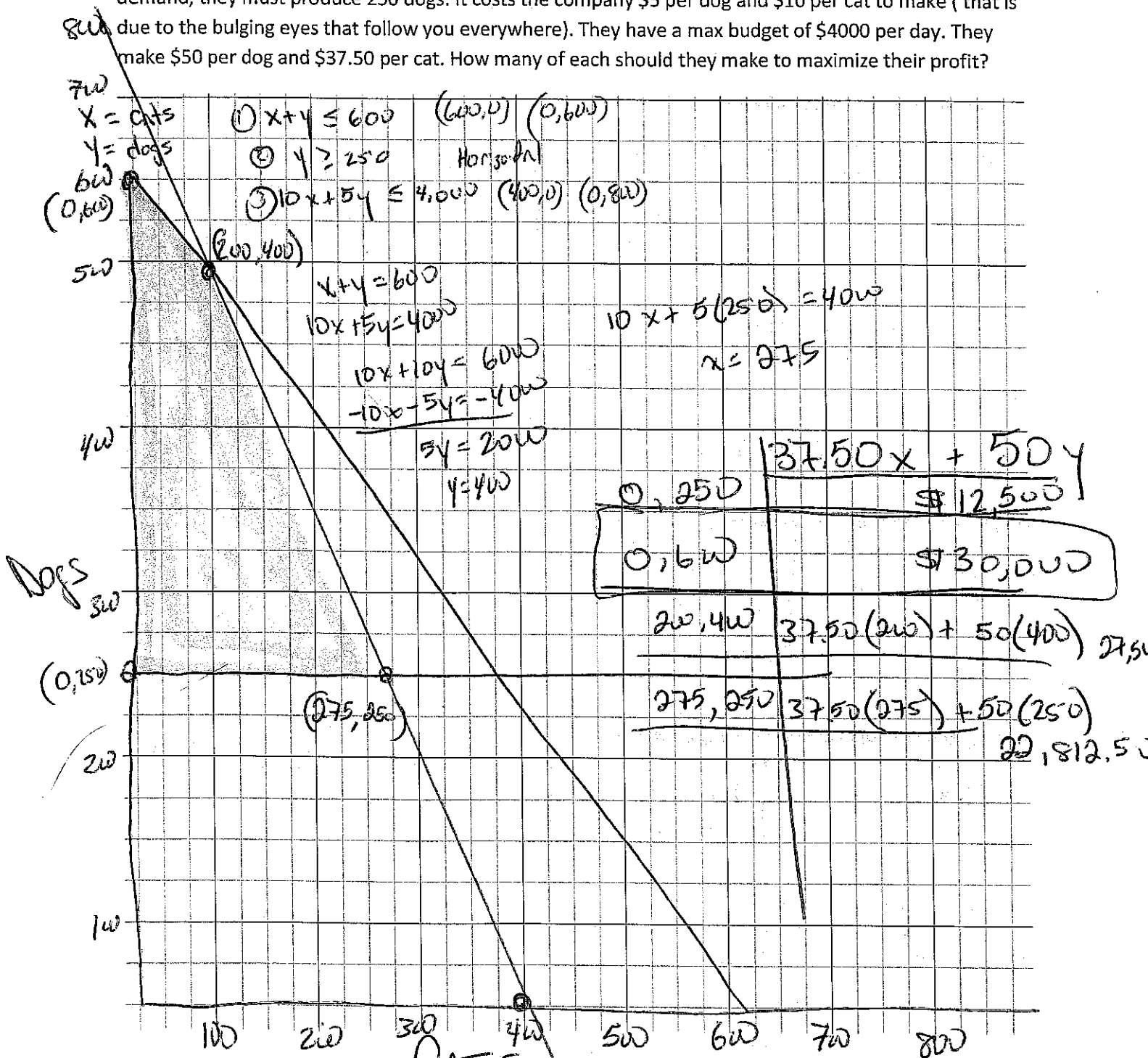
Multiply the following matrices:

$$\begin{bmatrix} 3 & 4 \\ 0 & 6 \end{bmatrix} * \begin{bmatrix} 9 & 2 \\ 1 & 5 \end{bmatrix} = \begin{bmatrix} \underline{31} & \underline{26} \\ \underline{6} & \underline{30} \end{bmatrix}$$

$$\begin{bmatrix} 1 & 2 & 5 & 3 \\ 2 & 1 & 0 & 1 \end{bmatrix} \begin{matrix} *2 \\ *3 \\ 4 \end{matrix}$$

Linear Programming Review:

A company produces plastic dogs and cats. They can produce at most 600 animals per day. Due to demand, they must produce 250 dogs. It costs the company \$5 per dog and \$10 per cat to make (that is due to the bulging eyes that follow you everywhere). They have a max budget of \$4000 per day. They make \$50 per dog and \$37.50 per cat. How many of each should they make to maximize their profit?



\* They should produce all DOGS