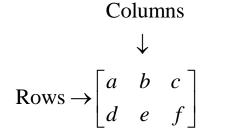
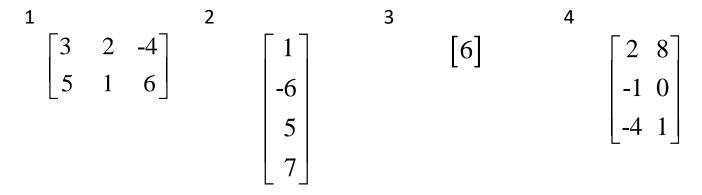
THE ORDER OF A MATRIX



<u>Order</u> Rows x Columns

Determine the order of the following matrices.



WRITING AN AUGMENTED MATRIX

Given the system

$$\begin{cases} 3x - 2y = 8\\ 4x + y = 6 \end{cases}$$

The coefficient matrix is

The Augmented Matrix is

SOLVING A SYSTEM USING AUGMENTED MATRICES

Before we solve systems using augmented matrices, lets practice a bit.

A. Write the augmented matrix that represents the system.

$$\begin{cases} 7x - 3y + 6z = 8\\ 2x + 4z = 1\\ -2y + z = 9 \end{cases}$$

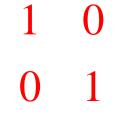
- B. Write the system of equations represented by the matrix below.
 - $\begin{bmatrix} 2 & 3 & -4 & \vdots & 1 \\ 0 & 8 & 6 & \vdots & 0 \\ 3 & 0 & 0 & \vdots & 4 \end{bmatrix}$
- C. Write the system of equations represented by the matrix below.
 - $\begin{bmatrix} 1 & 0 & 0 & \vdots -3 \\ 0 & 1 & 0 & \vdots & 2 \\ 0 & 0 & 1 & \vdots & 5 \end{bmatrix}$

When solving the system using an augmented matrix: $\begin{cases} 5x-5y = -5 \\ -2x-3y = 7 \end{cases}$

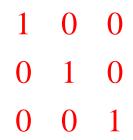
First Create an augmented matrix for the system

Our Goal is to make this look like





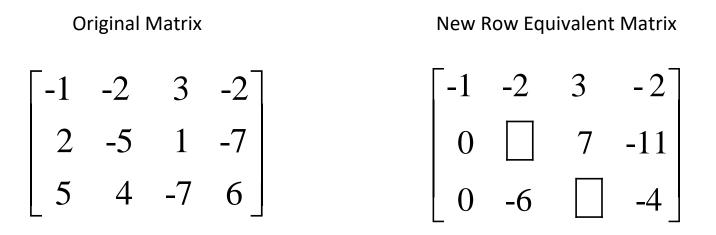
Or if given a 3 x 3 we want:



Why?

To accomplish this, we use elementary row operations.

Identify the elementary row operations being performed to obtain the new row equivalent matrix.



On the next page, we will solve the following

Solve the system using an augmented matrix:
$$\begin{cases} -x + y - z = -14\\ 2x - y + z = 21\\ 3x + 2y + z = 19 \end{cases}$$

$$\begin{bmatrix} -1 & 1 & -1 \\ 2 & -1 & 1 \\ 3 & 2 & 1 \\ 19 \end{bmatrix}$$

How do we make this 1 using only multiplication or division?