

	Delta	Beta	Sigma	TOTAL
Paint	10	16	8	240
Dry	1	2	1	28
Polish	2	3	1	41

	Delta	Beta	Sigma	TOTAL
Paint	10x + 16y	+ 8z = 240		
Dry	1x + 2y	+ 1z = 28		
Polish	2x + 3y	+ 1z = 41		

ELIMINATION
USING A
MATRIX

$$A := \langle \langle 10, 1, 2 \rangle | \langle 16, 2, 3 \rangle | \langle 8, 1, 1 \rangle | \langle 240, 28, 41 \rangle \rangle$$

$$\begin{bmatrix} 10 & 16 & 8 & 240 \\ 1 & 2 & 1 & 28 \\ 2 & 3 & 1 & 41 \end{bmatrix}$$

ReducedRowEchelonForm(A)

$$\begin{bmatrix} 1 & 0 & 0 & 8 \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 1 & 10 \end{bmatrix} \quad \begin{matrix} x = 8 \\ y = 5 \\ z = 10 \end{matrix}$$

$$B := \text{RowOperation}(A, [1, 2])$$

Make zeros (Eliminate x) $\left\{ \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} \right.$

$$\begin{bmatrix} 1 & 2 & 1 & 28 \\ 10 & 16 & 8 & 240 \\ 2 & 3 & 1 & 41 \end{bmatrix}$$

$$\begin{matrix} x + 2y + 1z = 28 \\ 10x + 16y + 8z = 240 \\ 2x + 3y + 1z = 41 \end{matrix}$$

$$B := \text{RowOperation}(B, [2, 1], -10)$$

$$-10R_1 + R_2 \quad \begin{bmatrix} 1 & 2 & 1 & 28 \\ 0 & -4 & -2 & -40 \\ 2 & 3 & 1 & 41 \end{bmatrix}$$

$$B := \text{RowOperation}(B, [3, 1], -2)$$

$$-2R_1 + R_3 \begin{bmatrix} 1 & 2 & 1 & 28 \\ 0 & -4 & -2 & -40 \\ 0 & -1 & -1 & -15 \end{bmatrix}$$

$$B := \text{RowOperation}(B, [2, 3])$$

$$\begin{array}{l} \text{Row Swap} \\ \text{(Like the "1")} \\ 2 \leftrightarrow 3 \end{array} \begin{bmatrix} 1 & 2 & 1 & 28 \\ 0 & -1 & -1 & -15 \\ 0 & -4 & -2 & -40 \end{bmatrix}$$

$$B := \text{RowOperation}(B, [3, 2], -4)$$

$$-4R_2 + R_3 \begin{bmatrix} 1 & 2 & 1 & 28 \\ 0 & -1 & -1 & -15 \\ 0 & 0 & 2 & 20 \end{bmatrix}$$

-1R₂ would've been appropriate

$$B := \text{RowOperation}(B, 2, -1)$$

$$\begin{bmatrix} 1 & 2 & 1 & 28 \\ 0 & 1 & 1 & 15 \\ 0 & 0 & 2 & 20 \end{bmatrix} \leftarrow \text{Finally } -R_2$$

$$B := \text{RowOperation}\left(B, 3, \frac{1}{2}\right)$$

$$\frac{1}{2} R_3 \begin{bmatrix} 1 & 2 & 1 & 28 \\ 0 & 1 & 1 & 15 \\ 0 & 0 & 1 & 10 \end{bmatrix}$$

$$1x + 2y + z = 28$$

$$y + z = 15$$

$$z = 10$$

$$y + 10 = 15$$

$$y = 5$$

$$x + 2(5) + 10 = 28$$

$$x + 10 + 10 = 28$$

$$x = 8$$

$$(a+b)^c = ac + bc \quad \text{Product Distributes over sum}$$

$$(ab)^c = a^c b^c \quad \text{Power Distributes over product.}$$

$$* (a^b)^c = a^{bc}$$

$$a^b a^c = a^{b+c}$$

Quiz Monday
Chapter 4

$$* (3^2)^5 = 3^{10}$$

$$\underbrace{(3^2)(3^2)(3^2)(3^2)(3^2)}_{5 \text{ of 'em}} = 3^{2+2+2+2+2}$$

5 of 'em

$$3^2 \cdot 3^5 = 3^{2+5} = 3^7$$

$$(3^2)(3^5) = 3^7$$