

The Identity Matrix

A square matrix with **diagonal** entries all **1**'s and all other entries are **0**.

$$\begin{array}{cccc}
 2 \times 2 & 3 \times 3 & 4 \times 4 & 5 \times 5 \\
 \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} & \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} & \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} & \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}
 \end{array}$$

The Identity Property

Let I be the **identity** matrix, and A be any matrix,
then $I \cdot A = A$ and $A \cdot I = A$

$$\begin{bmatrix} 2 & 5 \\ -2 & 4 \end{bmatrix} \cdot \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

The Identity Property

Let I be the identity matrix, and A be any matrix,
then $I \cdot A = A$ and $A \cdot I = A$

$$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} 2 & 5 \\ -2 & 4 \end{bmatrix}$$

$$\begin{bmatrix} 1 & -3 & -2 \\ -3 & 6 & 8 \\ 2 & 4 & -1 \end{bmatrix} \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

The Identity Property

Let I be the identity matrix, and A be any matrix,
then $I \cdot A = A$ and $A \cdot I = A$

$$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} 2 & 1 & -2 \\ 4 & -3 & 7 \end{bmatrix} =$$

The Identity Matrix

A square matrix with diagonal entries all 1's and all other entries are 0.

$$\begin{array}{cc} 2 \times 2 & 3 \times 3 \\ \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} & \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \end{array}$$

Let I be the identity matrix, and A be any matrix,
then $I \cdot A = A$ and $A \cdot I = A$