Some special matrices:

1. A matrix is called a zero matrix if all of its elements are zeros.

Examples are $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$, $\begin{bmatrix} 0 \\ 0 \end{bmatrix}$ and $\begin{bmatrix} 0 & 0 & 0 \end{bmatrix}$.

2. A matrix that has only one row is called a row matrix. Sometimes, it is called a row vector.

Examples are $\begin{bmatrix} 2 & 1 & 5 \end{bmatrix}$, $\begin{bmatrix} \frac{1}{6} & \frac{2}{3} \end{bmatrix}$ and $\begin{bmatrix} 4 & -18 & 0 \end{bmatrix}$.

3. A matrix that has only one column is called a column matrix. Sometimes, it is called a column vector.

Examples are $\begin{bmatrix} 5.2 \\ 8.7 \end{bmatrix}$, $\begin{bmatrix} 3 \\ -1 \\ 2 \end{bmatrix}$, and $\begin{bmatrix} -3 \\ 0 \\ 0 \\ 1 \end{bmatrix}$.

4. A matrix that has the same number of rows and columns is called a square matrix.

Examples are $\begin{bmatrix} 6 & 8 \\ 1 & 9 \end{bmatrix}$, and $\begin{bmatrix} 1 & 3 & 5 \\ -1 & 2 & 8 \\ 0 & 0 & 1 \end{bmatrix}$.

5. A square matrix that has elements on its main diagonal (from upper left to lower right) equal to **1** and all other elements equal to **0** is called an identity matrix.

Examples are $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, and $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$.

An identity matrix is usually denoted by the letter **"I".**

6. Two matrices are said to be equal if they are of the same order and their corresponding elements are equal.