**MATHEMATICS**

**GRADE 10: LECTURE 1**

**MATRICES**

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1. What is a Matrix?



The elements in a matrix may consist of numbers, letters, fractions or decimals.

Other examples of matrices:

* $\left[\begin{matrix}3&4\\-2&7\end{matrix}\right]$
* $\left[\begin{matrix}a&b&c\\d&e&f\end{matrix}\right]$
* $\left[\begin{matrix}6&c\\t&-4\end{matrix}\right]$
* $\left[\begin{matrix}\frac{1}{2}&4\\\frac{3}{2}&\frac{11}{5}\\3&-7\end{matrix}\right]$
* $\left[\begin{matrix}\frac{3}{2}&\frac{6}{11}\\\frac{4}{3}&\frac{1}{2}\\\frac{1}{4}&\frac{9}{11}\end{matrix}\right]$
* $\left[\begin{matrix}0.4&3&9\\10&16&5\\0.3&-8&0.5\end{matrix}\right]$

Important definitions

* Row is moving from left to right or horizontal movement.
* Column is moving up and down or vertical movement.



*For example*: -2 is in row 1 and column 1, 2 is in row 2 and column 2, 6 is in row 1 and column 3

1. What is the order of a matrix?

The order of a matrix is rows times columns or rows by columns.





1. What are the types of Matrices?

Some types of matrix include:

* Square Matrix: in this type of matrix the number of rows is equal to the number of columns.

$$\left[\begin{matrix}-9&3\\\frac{1}{2}&4\end{matrix}\right]$$



* Null matrix: all the elements in this type of matrix are 0 s.

 $\left[0\right]$

$$\left[\begin{matrix}0&0\\0&0\end{matrix}\right]$$

$$\left[\begin{matrix}0&0&0\\0&0&0\\0&0&0\end{matrix}\right]$$

* Row matrix: This type of matrix **ONLY** consists of one row.

$\left(\begin{matrix}-1&3\end{matrix}\right)$ or $\left(\begin{matrix}3&4&5\end{matrix}\right)$ or $\left(\begin{matrix}a&b\end{matrix}\right)$ or $\left(\begin{matrix}x&y&z\end{matrix}\right)$

* Column Matrix: This type of matrix consists of **ONLY** one column.

$\left(\begin{matrix}4\\9\end{matrix}\right)$ or $\left(\begin{matrix}-6\\2\\7\end{matrix}\right)$ or $\left(\begin{matrix}c\\d\end{matrix}\right)$ or $\left(\begin{matrix}e\\f\\g\end{matrix}\right)$