## 7.2 Matrix Algebra
Target 8E: Represent a system of linear equations as a single matrix equation in a vector variable

*Review of Prior Concepts*

Organize this information into a chart:
Team A scored 4 3-point baskets, 22 2-point baskets, and 7 1-point baskets in a game against team B.
Team B scored 8 3-point baskets, 18 2-point baskets, and 12 1-point baskets in the game.

**More Practice**

**Introduction to Matrices**
http://mathinsight.org/matrix_introduction
http://www.basic-mathematics.com/introduction-to-matrices.html
https://www.youtube.com/watch?v=F4bmfKqvT_4
https://www.youtube.com/watch?v=0oGJTQCy4cQ

Vocabulary

**Matrix** – a rectangular array of *m* rows and *n* columns

$$m \times n \text{ matrix} \rightarrow \begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a & \cdots & a \\ \vdots & \vdots & \ddots & \vdots \\ a_{m1} & a & \cdots & a \end{bmatrix}$$

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An **element** of the matrix is $a_{mn}$ where _____ is the row and _____ is the column

**Order** (size) of the matrix: $m \times n$

*Example:*
Given the matrix $\begin{bmatrix} 1 & -2 & 3 \\ 2 & 0 & 4 \end{bmatrix}$, identify the order, $a_{21}$, and $a_{12}$.

*(With your group members, do TI-Nspire Activity: Operating on Matrices Part I)*

**Adding/Subtracting Matrices**

- The matrices need to have the _____ order

- Add/Subtract the corresponding elements

*Example:*
Given $A = \begin{bmatrix} 1 & -2 & 3 \\ 2 & 0 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 2 \\ 5 & 0 \end{bmatrix}$, and $C = \begin{bmatrix} 3 & 0 & 5 \\ 1 & -2 & 7 \end{bmatrix}$, find $A + B$, $A - C$, and $4B$.

*(With your group members, do TI-Nspire Activity: Operating on Matrices Part II)*

## Multiplying Matrices

- Can only multiply an $m \times r$ matrix with an $r \times n$ matrix

*Example:*

Given $A = \begin{bmatrix} 1 & -2 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 2 \\ 5 & 0 \end{bmatrix}$, and $C = \begin{bmatrix} 3 & 0 & 5 \\ 1 & -2 & 7 \end{bmatrix}$, find AB and BC.

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### More Practice

**Operations with Matrices**
http://www.mathsisfun.com/algebra/matrix-introduction.html
https://www.khanacademy.org/math/precalculus/precalc-matrices#adding-and-subtracting-matrices
http://www.algebralab.org/lessons/lesson.aspx?file=algebra_matrix_operations.xml
https://www.youtube.com/watch?v=xr6qsiEznKU
https://www.youtube.com/watch?v=SPFWVUkxk8E
https://www.youtube.com/watch?v=kuixY2bCc_0
https://www.youtube.com/watch?v=sYlOjyPyX3g

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### Homework Assignment
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