Matrix Basics Worksheet **Name** _____

Show all work for full credit. **Period** _____ **Date** _____

State the dimensions of the following matrices.

1) $\begin{bmatrix} 3 & -2 & 7 & 9 \\ 1 & 0 & -3 & 5 \\ -8 & 2 & 10 & -6 \end{bmatrix}$

2) $\begin{bmatrix} 5 & -7 & -2 & 1 \end{bmatrix}$

3) $\begin{bmatrix} 9 \\ 6 \\ 5 \end{bmatrix}$

4) $\begin{bmatrix} 6 & 8 & -17 \\ -7 & -5 & 15 \\ 1 & 14 & 2 \\ 11 & 13 & -3 \end{bmatrix}$

Perform the indicated operations:

5) $3\begin{bmatrix} 5 & -6 & 3 \\ 0 & -4 & 8 \\ 10 & -11 & 12 \end{bmatrix} - 2\begin{bmatrix} 2 & -4 & 0 \\ 5 & 11 & -2 \\ 5 & 0 & -10 \end{bmatrix}$

6) $\begin{bmatrix} -2 & 8 \\ -11 & 5 \end{bmatrix} + 3\begin{bmatrix} 5 & 3 & -11 \\ 44 & 0 & 5 \\ -3 & 2 & 8 \end{bmatrix}$

Solve for x and/or y:

7) $\begin{bmatrix} -3 & 5 \\ 25 & -2 \end{bmatrix} - 3\begin{bmatrix} 0 & -2 \\ x & 4 \end{bmatrix} = \begin{bmatrix} -3 & 11 \\ 15 & -14 \end{bmatrix}$

8) $-5\begin{bmatrix} 5 & 6 \\ 10 & -7 \\ 8 & x \\ 1 & -6 \\ 7 & 8 \end{bmatrix} + 4\begin{bmatrix} 0 & 1 \\ 1 & -2 \\ 2 & 3 \\ 4 & 11 \\ -5 & 3 \end{bmatrix} = 2\begin{bmatrix} 12.5 & -13 \\ -23 & 13.5 \\ -16 & 100 \\ y & 37 \\ -27.5 & -14 \end{bmatrix}$

Matrix A represents the number of points scored in each quarter for the first 4 games of football played by Frederick High School. Matrix B represents the number of points scored in each quarter for the first 4 games of football played by Thomas Johnson High School.

Matrix A

	Q1	Q2	Q3	Q4
Game 1	6	0	13	3
Game 2	21	18	0	7
Game 3	14	28	6	0
Game 4	0	0	35	17

Matrix B

	Q1	Q2	Q3	Q4
Game 1	0	3	9	0
Game 2	7	14	7	6
Game 3	3	9	12	17
Game 4	23	0	9	7

9) Write a matrix that represents the combined points scored per quarter for the first 4 games.

10) A toymaker makes handcrafted toys for children. His output last year is represented by the matrix M below.

$$\begin{array}{r} \\ \text{dolls} \\ \text{stuffed animals} \end{array} \begin{array}{c} \begin{array}{ccc} \text{sm} & \text{med} & \text{lg} \end{array} \\ \begin{bmatrix} 5 & 10 & 18 \\ 12 & 22 & 9 \end{bmatrix} \end{array} = M$$

a) Suppose he wants to increase his output by 30%. Write a matrix that represents the needed output.

b) Find $2M$ and explain what the matrix represents.