5.1H Matrices Intro

Name:_____Per:_____

NO WORK IN PEN. SHOW ALL WORK FOR CREDIT.

State the **dimensions** for each matrix.

1. $A = \begin{bmatrix} 6 & -1 & 5 \\ -2 & 3 & -4 \end{bmatrix}$

2. $B = \begin{bmatrix} 7 \\ 8 \\ 9 \end{bmatrix}$

3. $D = \begin{bmatrix} 16 & 8 \\ 10 & 5 \\ 1 & 12 \end{bmatrix}$

Solve for **x and y** in the following matrices.

4. $[4x \quad 42] = [24 \quad 6y]$

5. $\begin{bmatrix} 6x \\ 2y + 3 \end{bmatrix} = \begin{bmatrix} -36 \\ 17 \end{bmatrix}$

6. $\begin{bmatrix} -4x - 3 \\ 6y \end{bmatrix} = \begin{bmatrix} -3x \\ -2y + 16 \end{bmatrix}$

7. $\begin{bmatrix} 7x - 8 \\ 8y - 3 \end{bmatrix} = \begin{bmatrix} 20 \\ 2y + 3 \end{bmatrix}$

8. $\begin{bmatrix} 6x - 12 \\ -3y + 6 \end{bmatrix} = \begin{bmatrix} -3x - 21 \\ 8y - 5 \end{bmatrix}$

9. $\begin{bmatrix} x + 3y \\ 3x + y \end{bmatrix} = \begin{bmatrix} -13 \\ 1 \end{bmatrix}$

The table right gives tickets prices for a concert. (Rows by columns)

	$/Child	$/Student	$/Adult
Advance Purchase $$	$6	$12	$18
$$ at the Door	$8	$15	$22

10. Write a $2x3$ matrix representing the cost of a ticket.

11. Write a $3x2$ matrix representing the cost of a ticket.

12. Airways airlines has posted the following matrix with flight cost information for the month of June.

a. Which is the cheapest destination? _____

b. How much is a business class seat to New York? _____

c. Which ticket costs $500? _____

	Destinations		
Seat Class	Hawaii	New York	Florida
First	$1500	$900	$750
Business	$1175	$750	$500
Economy	$870	$525	$375

Find the answers to the following systems using **ELIMINATION**. **CHECK YOUR ANSWERS.**

13. $\frac{1}{2}x - 3y = 2$

$\frac{1}{3}x - y = \frac{10}{3}$

14. $2(x - 3) = 6y$

$5y = 3x - 7$

Jay bought a catering business and organized the data from the previous years. **Label your matrices.**

15. Last year the business catered a **family** gathering. It provided 5 bags of pretzels, 6 dozen fruit cups, and 4 gallons of drink. At a **city** event, it provided 16 bags of pretzels, 20 gallons of drink and 24 dozen fruit cups. (Use a 2x3 matrix)

16. Two years ago, a **family** gathering needed 5 gallons of drink, 4 bags of pretzels, and 5 dozen fruit cups. The **city** event had 20 dozen fruit cups, 18 gallons of drink, and 12 bags of pretzels. (Use a 2x3 matrix in the same format as #15.)

17. Use the matrices to create a new matrix for Jay to determine the totals for each item for the two family events and two city events. SYW.

18. Three years ago, the city event had 14 bags of pretzels, 20 gallons of drink, and 19 dozen fruit cups. The family gathering used 6 bags of pretzels, 7 dozen fruit cups, and 9 gallons of drink. Organize the data in a matrix.

19. What is the <u>total</u> number of each item provided over the past 3 years separated by event. Show your work using matrices.
    a. **City Events**.   b. **Family Event**.

20. What is the average number of each item for family events and city events? SYW using matrices.
    a. **City Events**.   b. **Family Event**.

21. Show how Jay will use these matrices to find the number of items to cater 6 family and 4 city events this year. Show your work using matrices.

Extra Credit: If fruit cups cost $2.50 a dozen, drink is $1.75 per gallon, and pretzels are $2 a bag, use the matrix from #20 to figure the total cost of the next city event and family gathering.