

Name \_\_\_\_\_

Date \_\_\_\_\_ Pd. \_\_\_\_\_

**Notes: Matrices**

**Organize Data in Matrices** A \_\_\_\_\_ is a rectangular arrangement of numbers in rows and columns. It is described by its \_\_\_\_\_, the number of rows and columns in the matrix, with the number of rows as the first number. Each number in the matrix is called an \_\_\_\_\_.

**Example** State the dimensions of each matrix. Then identify the position of the circled element in each matrix.

a.  $[4 \quad -7 \quad \textcircled{14} \quad 2]$

b.  $\begin{bmatrix} -2 & 3 \\ 4 & -1 \\ 5 & \textcircled{1} \end{bmatrix}$

**Example** Given  $A = \begin{bmatrix} 3 & -3 \\ -2 & 4 \\ -5 & 2 \end{bmatrix}$ ,  $B = \begin{bmatrix} -3 & -4 \\ 0 & 5 \\ -5 & 1 \end{bmatrix}$ , and  $C = \begin{bmatrix} -2 & 3 \\ 1 & 4 \end{bmatrix}$ , find each of the following.

a.  $A + B$

b.  $3C$

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### Exit Card: Matrices

The matrices below compare the sales of sandwiches at a deli for the first two weekends in December:

Sales for first weekend in December

	Ham	Tuna
Saturday	20	17
Sunday	16	9

Sales for second weekend in December

	Ham	Tuna
Saturday	24	9
Sunday	19	11

Which of these matrices shows the change in sales from the first weekend to the second?

**A.**

	Ham	Tuna
Saturday	4	-8
Sunday	3	2

**C.**

	Ham	Tuna
Saturday	44	26
Sunday	35	20

**B.**

	Ham	Tuna
Saturday	4	8
Sunday	5	-2

**D.**

	Ham	Tuna
Saturday	36	26
Sunday	43	20

The matrix below shows the number of cars sold at two stores.

	Store 1	Store 2
November	100	150
December	80	130

If each store makes a profit of \$250 on each car sold, how much profit did Store 2 make for November *and* December?

	/	/	/	
•	•	•	•	•
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

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**Homework: Pages 719 – 720 (27 – 29, 32, 39 – 41, 45, 47, 48, 50)**

$$\text{Use } A = \begin{bmatrix} -1 & 5 & 9 \\ 0 & -4 & -2 \\ 3 & 7 & 6 \end{bmatrix}, B = \begin{bmatrix} -12 & 7 & -16 \\ 5 & 10 & 13 \\ 20 & 11 & 8 \end{bmatrix}, C = \begin{bmatrix} 34 & 91 & 63 \\ 81 & 79 & 60 \end{bmatrix}, \text{ and } D = \begin{bmatrix} -52 & 9 & 70 \\ -49 & -8 & 45 \end{bmatrix}$$

27.  $A + B$

28.  $C + D$

29.  $C - D$

32.  $2C$

Food	Calories	Protein (grams)	Fat (grams)	Saturated Fat (grams)
<b>Fish Stick</b>	70	6	3	0.8
<b>Vegetable Soup (1 cup)</b>	70	2	2	0.3
<b>Soft Drink (12 oz)</b>	160	0	0	0
<b>Chocolate-Chip Cookie</b>	185	2	11	3.9

39. If  $F = [70 \ 6 \ 3 \ 0.8]$  is a matrix representing the nutritional value of a fish stick, create matrices for  $V$ ,  $S$ , and  $C$  to represent vegetable soup, soft drink, and chocolate chip cookie, respectively.

40. Suppose Lakeisha has two fish sticks for lunch. Write a matrix representing the nutritional value of the fish sticks.
41. Suppose Lakeisha has two fish sticks, a cup of vegetable soup, a 12-ounce soft drink, and a chocolate chip cookie. Write a matrix representing the nutritional value of her lunch.

1999 Regular Season

Quarterback	Attempts	Completions	Passing Yards	Touchdowns	Interceptions
Peyton Manning	533	331	4135	26	15
Rich Gannon	515	304	3840	24	14
Kurt Warner	499	325	4353	41	13
Steve Beuerlein	571	343	4436	36	15

2000 Regular Season

Quarterback	Attempts	Completions	Passing Yards	Touchdowns	Interceptions
Peyton Manning	571	357	4413	33	15
Rich Gannon	473	284	3430	28	11
Kurt Warner	347	235	3429	21	18
Steve Beuerlein	533	324	3730	19	18

45. Create matrix  $A$  for the 1999 data and matrix  $B$  for the 2000 data.

47. Create  $T = A + B$

48. What does the matrix  $T$  represent?

50. How are matrices used to organize data? Include the following in your answer: a comparison of a table and a matrix, and description of some real-world data that could be organized in a matrix.