Accel Precalc Practice Worksheet: Intro to Matrices Name _____

Unit 3: Matrices

For Exercises 12–23,

$$\text{let } A=\begin{bmatrix} 5 & 7 & -3 & 0 \\ -2 & 1 & 8 & 11 \end{bmatrix},\ B=\begin{bmatrix} 8 & -5 & 2 \\ -1 & 4 & -2 \\ 0 & -5 & 3 \\ 5 & 7 & -6 \end{bmatrix},\ \text{and } C=\begin{bmatrix} 7 \\ 2 \\ 6 \end{bmatrix}.$$

Give the dimensions of each matrix.

12. A **13.** B **14.** C

Give the entry at the indicated address in matrix *A*, *B*, or *C*.

15. a_{23} **16.** b_{12} **17.** c_{31}

Find the indicated matrix.

18. $-A$ **19.** $-4C$ **20.** $-2B$

21. $-B$ **22.** $3A$ **23.** $\frac{1}{2}B$

Solve for *x* and *y*.

24. $\begin{bmatrix} 3 & 4y \\ 5 & 8 \end{bmatrix}=\begin{bmatrix} 3 & 2 \\ 2x-1 & 8 \end{bmatrix}$ **25.** $\begin{bmatrix} -6 & 5 \\ -1 & 0 \end{bmatrix}=\begin{bmatrix} y+12 & 5 \\ -1 & x+7 \end{bmatrix}$

26. $\begin{bmatrix} 18 & \frac{1}{24}x \\ -\frac{2}{9}y & 15 \end{bmatrix}=\begin{bmatrix} 2x+6 & \frac{1}{4} \\ \frac{2}{3} & -5y \end{bmatrix}$ **27.** $\begin{bmatrix} \frac{2}{3}x & 12 \\ -4 & \frac{1}{2}y+5 \end{bmatrix}=\begin{bmatrix} 6 & x+3 \\ -4 & y+1 \end{bmatrix}$

28. $\begin{bmatrix} 2.5x & 3y+5 \\ 4 & y \end{bmatrix}=\begin{bmatrix} -10 & 2 \\ -x & y \end{bmatrix}$ **29.** $\begin{bmatrix} 4.1x & x \\ -100 & -3.7y \end{bmatrix}=\begin{bmatrix} 16.4 & x \\ -25x & -11.1 \end{bmatrix}$

For Exercises 30–45, let $A=\begin{bmatrix} 7 & 3 & -1 & 5 \\ -2 & 8 & 0 & -4 \end{bmatrix}$ **and** $B=\begin{bmatrix} 6 & 0 & 11 & -3 \\ -5 & 2 & -8 & 9 \end{bmatrix}$.

Perform the indicated operations.

30. $A+B$ **31.** $A-B$ **32.** $2A$ **33.** $-3B$

34. $B-A$ **35.** $A+B-A$ **36.** $4(B-A)$ **37.** $(B+A)-(-A)$

38. $-(A-B)$ **39.** $2A-(-B-A)$ **40.** $-\left(\frac{1}{2}B-A\right)$ **41.** $-3(B+A)-A$

42. $-\frac{1}{2}A+(B-A)$ **43.** $3B+2A$ **44.** $\frac{1}{4}(B-2A)$ **45.** $4\left(\frac{1}{2}A+\frac{2}{3}A\right)$

46. Construct a 3×3 square matrix, A, where $a_{ij}=i^2+2j-3$.

GEOGRAPHY Tracy and Renaldo both collect maps. Together they have a variety of maps from the 1960s to the 1990s. Matrix M shows the number of each type of map they have.

	'60s	'70s	'80s	'90s
Europe	3	1	4	2
Asia	5	3	6	3
North America	2	7	9	5
Africa	8	5	4	6

$= M$

50. What are the dimensions of matrix M?

51. Describe the entry at m_{42}.

52. Describe the entry at m_{21}.

53. What is the total number of maps of Africa that Renaldo and Tracy have?

54. What is the total number of maps from the 1960s that Tracy and Renaldo have?

ACADEMICS The matrix below shows the number of events during the fall semester for three extracurricular activities.

	Aug.	Sept.	Oct.	Nov.	Dec.
Drama productions	0	1	2	1	2
Soccer games	1	4	3	3	0
Journalism publications	1	2	3	3	2

59. What are the dimensions of this matrix?

60. Find the total number of events that occurred in September.

61. Find the total number of drama productions during the fall semester.

62. During which month did the most events occur?

CONSUMER ECONOMICS At a local farmer's market, Jane sold 27 squash, 31 tomatoes, 24 peppers, and 18 melons. Jose sold 48 squash, 72 tomatoes, 61 peppers, and 25 melons.

55. Create a 2×4 matrix of this data. Name this matrix P.

56. What is the address of the number of peppers that Jane sold?

57. What is the address of the data stored in the second row and first column. What does this entry represent?

58. Could you have created a matrix with different dimensions from the one you created in Exercise 55?