Use the table at the right.

1. How many units were imported to the United States in 1996? In 2000?

2. How many more units were imported in 1998 than in 1996?

3. How many more units were imported than exported in 2000?

4. Compare the percent increase of imports from 1996 to 2000 with the percent increase of exports from 1996 to 2000.

U.S. Passenger Vehicles and Light Trucks Imports and Exports (millions)

	1996	1998	2000
Imports	4.678	5.185	6.964
Exports	1.295	1.331	1.402

SOURCE: U.S. Department of Commerce.
Go to **www.PHSchool.com** for a data update.
Web code: agg-9041

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1. How many units were imported to the United States in 1996? In 2000?

6.964 millions
6,964,000

4.678 millions or 4,678,000

U.S. Passenger Vehicles and Light Trucks Imports and Exports (millions)

	1996	1998	2000
Imports	4.678	5.185	6.964
Exports	1.295	1.331	1.402

SOURCE: U.S. Department of Commerce.
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2. How <u>many more</u> units were imported in 1998 than in 1996?

5.185 − 4.678
= .507 million
or 507,000

U.S. Passenger Vehicles and Light Trucks Imports and Exports (millions)

	1996	1998	2000
Imports	4.678	5.185	6.964
Exports	1.295	1.331	1.402

SOURCE: U.S. Department of Commerce.
Go to **www.PHSchool.com** for a data update.
Web code: agg-9041

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3. How many more units were imported than exported in 2000?

6.964 − 1.402 =
= 5.562 million
OR 5,562,000

U.S. Passenger Vehicles and Light Trucks Imports and Exports (millions)

	1996	1998	2000
Imports	4.678	5.185	6.964
Exports	1.295	1.331	1.402

SOURCE: U.S. Department of Commerce.
Go to **www.PHSchool.com** for a data update.
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$\text{\% change} = \dfrac{\text{Amount of Change}}{\text{Original Amount}} \times 100$

$= \dfrac{\text{Final amt - Orig amt}}{\text{Original Amount}} \times 100$

U.S. Passenger Vehicles and Light Trucks Imports and Exports (millions)

	1996	1998	2000
Imports	4.678	5.185	6.964
Exports	1.295	1.331	1.402

SOURCE: U.S. Department of Commerce.
Go to **www.PHSchool.com** for a data update.
Web code: agg-9041

4. Compare the percent increase of imports from 1996 to 2000 with the percent increase of exports from 1996 to 2000.

$$\text{imports} = \dfrac{6.964 - 4.678}{4.678} \times 100 \approx 48.9\%$$

$$\text{exports} = \dfrac{1.402 - 1.295}{1.295} \times 100 \approx 8.3\%$$

The percent increase in imports from 1996 to 2000 is about six times greater than the percent increase from 1996 to 2000

Organizing Data into Matrices

Matrix: Rectangular array of data organized in rows and columns.

Matrices(plural) are written with brackets and identified (named) with a capital letter.

$A [\quad]$

Matrices are classified by the number of rows and columns it has (dimensions).

$$A \begin{bmatrix} 22 & 7 & 9 \\ 13 & 0 & 2 \end{bmatrix}$$

Dimensions: # Rows x # Columns

Matrix A is a   2 x 3   matrix

we say this as " 2 by 3"

Each data value in a matrix is called a

matrix element

B $\begin{bmatrix} 18 & 13 & 45 \\ 6 & 10 & 2 \\ 26 & 8 & 7 \\ 52 & 33 & 11 \end{bmatrix}$ row 1, Row 2, Row 3

col 1 col 2

1. What are the dimensions of Matrix B? 4×3

2. What element is in row 3, column 2? 8

the book identifies this element with the following notation: b_{32} The book calls this subscript notation

3. How many elements are in Matrix B?
$4 \times 3 = 12$

$A \begin{bmatrix} 8 & 7 \\ 3 & -4 \\ 17 & 44 \end{bmatrix}$ $B \begin{bmatrix} 16 & 3 & 21 & 99 \\ 4 & 7 & 11 & 78 \\ 56 & 32 & 0 & 1 \\ 8 & 30 & 40 & 50 \end{bmatrix}$ $C \begin{bmatrix} -10 & 6 & 4 \\ 8 & 12 & 13 \\ 42 & 43 & 44 \end{bmatrix}$

1. State the dimensions of each matrix.

A 3×2 B 4×4 C 3×3

2. Find the value of each element.

$c_{13} = 4$ $a_{21} = 3$ $b_{42} = 30$

$C \begin{bmatrix} -10 & 6 & 4 \\ 8 & 12 & 13 \\ 42 & 43 & 44 \end{bmatrix}$ Use subscript notation to identify each given element.

Which element is the number 12? C_{22}

Which element is the number 42? C_{31}

When a matrix is used to model real data you should label each row and column so that somebody reading the matrix knows what the data represents.

Write a matrix to show the following data gathered when three people kept track of the number of games they had won at a competition

✓ = win   x = loss

Ed	✓	x	✓	✓	x	✓	✓
Alice	✓	✓	✓	✓	x	✓	✓
Len	x	✓	x	x	✓	✓	x

✓ = win   x = loss

Ed	✓	x	✓	✓	x	✓	✓
Alice	✓	✓	✓	✓	x	✓	✓
Len	x	✓	x	x	✓	✓	x

One possible matrix is
the 3x2 matrix below:

	# Wins	# Losses
Ed	5	2
Alice	6	1
Len	3	4