

Activity 2: Solving Matrices

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CALCULATOR: Casio: fx-115ES

Teaching Notes and Solutions

Objectives: Students will demonstrate the ability to input values into a matrix and determine its solution. Students will also demonstrate the ability to interpret the solution from a given matrix problem.

Getting Started:

Matrices are designed to organize information. Whether you are compiling statistical data or displaying data, matrices present a simple and detailed representation of large quantities of data. Some may choose to think of matrices like a spreadsheet where the cells are the locations of various pieces of data. It is important to realize when information can be operated within matrices. For example, students should clearly understand when two or more matrices could be added or subtracted. Furthermore, students should know when matrices can be multiplied together or how a scalar impacts the data within a spreadsheet.

Answers:

1.

	Burgers	Fries	Shakes
Small	525	600	364
Medium	711	767	479
Large	822	720	539

2. Orders of small fries were not as frequent in May as they were in April.

3. Projected Sales for June

	Burgers	Fries	Shakes
Small	630	685	434
Medium	846	899	575
Large	975	864	685

4. Projected Figures (June) - Actual Figures (June) = Answer Matrix

Burgers Fries Shakes

	Burgers	Fries	Shakes
Small	25	16	-14
Medium	70	-41	-25
Large	5	-20	-47

5. A positive value signifies that your projection was greater than your actual sales figure meaning that you would have had enough products to meet your consumer demand. A negative value signifies that your projection was less than your actual sales figure. In both cases, this data can be useful in planning future projections, determining sales figures for a particular month, and determining trends in consumer buying preferences.

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Student Worksheet Activity 2

You have just been promoted to manager of a local fast food restaurant. You are responsible for all of the ordering as well as tracking sales records for your products. Examine the following sales records for April and May and answer the following questions.

April Sales Totals

	Burgers	Fries	Shakes
Small	251	302	175
Medium	343	376	229
Large	398	352	241

May Sales Totals

	Burgers	Fries	Shakes
Small	274	298	189
Medium	368	391	250
Large	424	368	298

Calculator Notes:

To Enter Data Into a Matrix:

- Turn Calculator **ON** .
- Press **MODE** and Enter **6** for **MATRIX** .
- Press **1** for Matrix A.
- Select the matrix dimensions from the list.
- Enter the values for Matrix A into their appropriate locations.
- Once you have entered the last value, press **AC** .
- To enter values for another matrix, press **MODE 6** for **MATRIX** and repeat the process.

To Perform Matrix Calculations:

- Once you have entered all of the data for a given matrix and are ready to perform a particular operation, press **AC** to exit the Matrix editor and enter into the calculation mode.
- Make certain that **MAT** appears at the top of the screen as this indicates that you are in the Matrix Calculation Mode.
- Press **SHIFT 4** to perform a Matrix Operation.
- To add Matrix A with Matrix B, press **3** for Matrix A + **SHIFT 4** followed by **4** for Matrix B, then press **=** .

Activity 2: Solving MatricesCALCULATOR: Casio: *fx-115ES***Student Worksheet Activity 2 (continued)****Problems:**

1. Create a new matrix that shows the combined totals for April and May.

	Burgers	Fries	Shakes
Small			
Medium			
Large			

2. Which product was purchased less frequently in May than in April?

3. During the summer, sales typically more than double. Your supervisor suggests that you take the May figures and multiply them by 2.3 in order to project sales for June. Create a new matrix that shows your projected sales figures for June. Round all answers to the nearest whole number.

	Burgers	Fries	Shakes
Small			
Medium			
Large			

4. At the end of June, you compare the actual sales figures with your projections. Calculate the differences and describe how this information is useful in planning future projections.

	Burgers	Fries	Shakes
Small			
Medium			
Large			

5. Once you have compared the projected results with the actual results, what does a negative value represent? What does a positive value represent?
