

Multiplying Matrices

Name: _____ Date: _____

To multiply one matrix by another matrix we must do the “dot product” of the rows by the columns. In order to multiply one matrix by another the inner dimensions must match. The **dimension (order)** of the product of the matrices is given by the two outer dimensions.

Example: Imagine you own a meat pie shop. Beef pies cost \$3, chicken pies cost \$4 and vegetable pies cost \$2 each. On Monday you sold 13 beef, 8 chicken and 6 vegetable pies. On Tuesday you sold 9 beef, 7 chicken, and 4 vegetable. On Wednesday 7 beef, 4 chicken, and 0 vegetable. On Thursday 15 beef, 6 chicken and 3 vegetable are sold. Calculate the total sales for each day of the week.

Using matrices to solve this problem:

Set up the two matrices and do the multiplication.

$$C = [3 \quad 4 \quad 2] \quad \text{and} \quad S = \begin{bmatrix} 13 & 9 & 7 & 15 \\ 8 & 7 & 4 & 6 \\ 6 & 4 & 0 & 3 \end{bmatrix}$$

Practice

(Write out two of the examples and solutions from the online questions)

