ZMATH 2015d.00718
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Modeling with matrices.
Consortium 107, 16 p., pull-out section (2014).

From the text: This Pull-Out provides real-world settings that guide students through matrix addition and subtraction, and scalar and matrix multiplication. In Activity 1, students store prices of pizzas, salads, and soft drinks from three pizza houses into a matrix. Matrix addition is used to revise the prices to reflect the cost of additional toppings and choices of salad dressings. After organizing information on coupons into a matrix, matrix subtraction is used to apply the coupons and reduce the costs. At the end of Activity 1, students learn how to store matrices in TI-84 graphing calculators. Then they use their calculators to determine sums and differences of two matrices. In Activity 2, students use scalar multiplication to compare the prices of ordering k pizzas and k salads from each of the pizza houses. Matrix multiplication is introduced in three steps: (1) multiplying a row matrix and a column matrix, (2) multiplying a row matrix and a multicolumn matrix, and finally, (3) multiplying a multi-row matrix and a multi-column matrix. Then matrix multiplication is used to compare three possible options for the purchases of pizzas and salads at the three pizza houses. At the end of Activity 2, students use their calculators to investigate whether the associative and commutative laws for addition and multiplication, which students have learned in their algebra classes, also hold for matrices. Activity 3 focuses on use of matrices to investigate a population growth model called the Leslie model. Students use their calculators (or Excel) to approximate the age distribution of a population and the size of the total population into the future.

Classification: H64 D84 U64 M14
Keywords: linear algebra; matrices; student activities; matrix calculations; matrix addition; matrix subtraction; scalar multiplication; matrix multiplication; graphing calculators; spreadsheets; population growth; worksheets; mathematical applications; everyday mathematics