

OBJECTIVE: Use basic arithmetic operations with matrices and matrix equations to solve applied problems.

**Solve #1 -6 using matrices. TI84 is allowed, however, show all matrices used.**

1. Investors choose different stocks to comprise a balanced portfolio. The matrix below shows the prices of one share of each of several stocks on the last business day of March, June and September of 2011.

	Mar 31	Jun 30	Sep 30
Toyota	80.25	82.42	68.26
Nike	75.70	89.98	85.51
Cigna Health	44.28	51.43	41.94
Apple	348.51	335.67	381.32

- a. Mrs. Lee owns 42 shares of Toyota, 59 shares of Nike, 21 Shares of Cigna, and 18 shares of Apple. Write a row matrix to represent Mrs. Lee's portfolio.
- b. Use matrix multiplication to find the total value of Mrs. Lee's portfolio for each of the dates to the nearest cent.

2. A company produces ice cream in three different flavors: chocolate, vanilla, and tutti-fruitti, and two different forms: cone and cup. Below are two tables summarizing the total sales of the company between last month and this month.

cone

	chocolate	vanilla	tutti-fruitti
Last Month	214	211	160
This Month	198	223	200

cup

	chocolate	vanilla	tutti-fruitti
Last Month	224	240	208
This Month	236	228	226

- a. Write two matrices to represent the sales of last month and the sales of this month.
- b. Use the matrices from (2a) to find the average sales for each flavor and type of ice cream in the two month period.
- c. In the final answer to #b above, circle the average sales of vanilla cups.



4. Five diabetic patients in a hospital each require injections of three kinds of insulin each day. The  $5 \times 3$  matrix shown below gives the amounts of the three kinds of insulin each patient requires each day. If patient 1 plans to stay 10 days, patient 2 stays 5 days, patient 3 stays 20 days, patient 4 stays 10 days, and patient 5 stays 15 days, how much of each type of insulin must the medical staff have on hand?

	Patient number				
	1	2	3	4	5
Semi-lente	10	40	30	20	10
lente	20	20	10	10	10
Ultra-insulin	30	5	5	20	10

Solve the following:

5. A certain brand of razor blades comes in packages of 6, 12, and 24, costing \$2, \$3 and \$4 per package. A store sold 12 packages containing a total of 162 razor blades and took in \$35. How many packages of each type were sold?

Solve the following:

6. A mom buys three different types of t-shirts for her children: long sleeve, polo, and short sleeve. The long sleeve shirts cost \$18 each, the polo's \$15 each, and the short sleeve shirts costs \$12 each. The mother purchased three less polo's than she did short sleeve. If the mother purchased 18 shirts at an average of \$14 each, find the number of each type of shirt purchased.