

45. **MULTIPLE REPRESENTATIONS** A cooking class wants to use up 8 cups of buttermilk and 11 eggs by baking rolls and muffins to freeze. A batch of rolls uses 2 cups of buttermilk and 3 eggs. A batch of muffins uses 1 cup of buttermilk and 1 egg.
- Writing a System** Write a system of equations for this situation.
 - Writing a Matrix Equation** Write the system of equations from part (a) as a matrix equation $AX = B$.
 - Solving a System** Use an inverse matrix to solve the system of equations. How many batches of each recipe should the class make?
46. **TAKS REASONING** A company sells party platters with varying assortments of meats and cheeses. A basic platter with 2 cheeses and 3 meats costs \$18, a medium platter with 3 cheeses and 5 meats costs \$28, and a super platter with 7 cheeses and 10 meats costs \$60.
- Write and solve a system of equations using the information about the basic platter and the medium platter.
 - Write and solve a system of equations using the information about the medium platter and the super platter.
 - Compare* the results from parts (a) and (b) and make a conjecture about why there is a discrepancy.
47. **NUTRITION** The table shows the calories, fat, and carbohydrates per ounce for three brands of cereal. How many ounces of each brand should be combined to get 500 calories, 3 grams of fat, and 100 grams of carbohydrates? Round your answers to the nearest tenth of an ounce.

Cereal	Calories	Fat	Carbohydrates
Bran Crunchies	78	1 g	22 g
Toasted Oats	104	0 g	25.5 g
Whole Wheat Flakes	198	0.6 g	23.8 g

48. **MULTI-STEP PROBLEM** You need 9 square feet of glass mosaic tiles to decorate a wall of your kitchen. You want the area of the red tiles to equal the combined area of the yellow and blue tiles. The cost of a sheet of glass tiles having an area of 0.75 square foot is \$6.50 for red, \$4.50 for yellow, and \$8.50 for blue. You have \$80 to spend.
- Write a system of equations to represent this situation.
 - Rewrite the system as a matrix equation.
 - Use an inverse matrix to find how many sheets of each color tile you should buy.
49. **GEOMETRY** The columns of matrix T below give the coordinates of the vertices of a triangle. Matrix A is a transformation matrix.

$$A = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix} \quad T = \begin{bmatrix} 1 & 3 & 5 \\ 1 & 4 & 2 \end{bmatrix}$$

- Find AT and AAT . Then draw the original triangle and the two transformed triangles. What transformation does A represent?
- Describe* how to use matrices to obtain the original triangle represented by T from the transformed triangle represented by AAT .



Mosaic tiles