

### Problems for Section 2.3

**Problem 1.** You manage an ice cream factory that makes three flavors: Creamy Vanilla, Continental Mocha, and Succulent Strawberry. Into each batch of Creamy Vanilla go 2 eggs, 1 cup of milk, and 2 cups of cream. Into each batch of Continental Mocha go 1 egg, 1 cup of milk, and 2 cups of cream, while into each batch of Succulent Strawberry go 1 egg, 2 cups of milk, and 1 cup of cream. You have in stock 350 eggs, 350 cups of milk, and 400 cups of cream. How many batches of each flavor should you make in order to use up all of your ingredients?

**Problem 2.** Urban Community College is planning to offer courses in Finite Math, Applied Calculus, and Computer Methods. Each section of Finite Math has 40 students and earns the college \$40,000 in revenue. Each section of Applied Calculus has 40 students and earns the college \$60,000, while each section of Computer Methods has 10 students and earns the college \$20,000. Assuming the college wishes to offer a total of six sections, to accommodate 210 students, and to bring in \$260,000 in revenues, how many sections of each course should it offer?

**Problem 3.** An airline is considering the purchase of aircraft to meet an estimated demand for 5000 seats. The airline has decided to buy Boeing 747s, which seat 400 passengers and are priced at \$200 million each; Boeing 777s, which seat 300 passengers and are priced at \$160 million; and Airbus A330s, which seat 300 passengers and are priced at \$120 million. You are the purchasing manager of an airline company and have a spending goal of \$2400 million for the purchase of new aircraft to seat a total of 5000 passengers. Your company has a policy of supporting U.S. industries, and you have been instructed to buy twice as many U.S. manufactured aircraft (Boeing) as foreign aircraft (Airbus). Given the selection of three aircraft, how many of each should you order?

**Problem 4.** The Fancy French Perfume Company recently had its secret formula divulged. It turned out that it was using, as the three ingredients, rose oil, oil of fermented prunes, and alcohol. Moreover, each 22-ounce econosize bottle contained 4 more ounces of alcohol than oil of fermented prunes, while the amount of alcohol was equal to the combined volume of the other two ingredients. How much of each ingredient did it use in an econosize bottle?