

## **Programming Exercises Functions**

### **1. Kilometer Converter**

Write a program that asks the user to enter a distance in kilometers, and then converts that distance to miles. The conversion formula is as follows:

$$\text{Miles} = \text{Kilometers} * 0.6214$$

### **2. Sale Tax Program Refactoring**

Programming Exercise #6 in Chapter 2 was the Sales Tax program. For that exercise you

were asked to write a program that calculates and displays the county and state sales tax

on a purchase. If you have already written that program, redesign it so the subtasks are in

functions. If you have not already written that program, write it using functions.

### **3. How Much Insurance?**

Many financial experts advise that property owners should insure their homes or buildings

for at least 80 percent of the amount it would cost to replace the structure. Write a program that asks the user to enter the replacement cost of a building and then displays

the minimum amount of insurance he or she should buy for the property.

### **4. Automobile Costs**

Write a program that asks the user to enter the monthly costs for the following expenses

incurred from operating his or her automobile: loan payment, insurance, gas, oil, tires, and

maintenance. The program should then display the total monthly cost of these expenses,

and the total annual cost of these expenses.

### **5. Property Tax**

A county collects property taxes on the assessment value of property, which is 60 percent

of the property's actual value. For example, if an acre of land is valued at \$10,000, its assessment value is \$6,000. The property tax is then 64 ¢ for each \$100 of the assessment

value. The tax for the acre assessed at \$6,000 will be \$38.40. Write a program that asks for the actual value of a piece of property and displays the assessment value and property tax.

### **6. Body Mass Index**

Write a program that calculates and displays a person's body mass index (BMI). The BMI is often used to determine whether a person is overweight or underweight for his

or her height. A person's BMI is calculated with the following formula:

$$\text{BMI} = \frac{\text{weight}}{\text{height}^2}$$

where weight is measured in pounds and height is measured in inches.

### **7. Calories from Fat and Carbohydrates**

A nutritionist who works for a fitness club helps members by evaluating their diets. As part

of her evaluation, she asks members for the number of fat grams and carbohydrate grams

that they consumed in a day. Then, she calculates the number of calories that result from

the fat, using the following formula:

$$\text{calories from fat} = \text{fat grams} * 9$$

Next, she calculates the number of calories that result from the carbohydrates, using the following formula:

$$\text{calories from carbs} = \text{carb grams} * 4$$

The nutritionist asks you to write a program that will make these calculations.

**8. Stadium Seating**

There are three seating categories at a stadium. For a softball game, Class A seats cost \$15,

Class B seats cost \$12, and Class C seats cost \$9. Write a program that asks how many tickets

for each class of seats were sold, and then displays the amount of income generated from ticket sales.

**9. Paint Job Estimator**

A painting company has determined that for every 115 square feet of wall space, one gallon

of paint and eight hours of labor will be required. The company charges \$20.00 per hour for labor. Write a program that asks the user to enter the square feet of wall space to

be painted and the price of the paint per gallon. The program should display the following

data:

- The number of gallons of paint required
- The hours of labor required
- The cost of the paint
- The labor charges
- The total cost of the paint job

**10. Monthly Sales Tax**

A retail company must file a monthly sales tax report listing the total sales for the month,

and the amount of state and county sales tax collected. The state sales tax rate is 4 percent

and the county sales tax rate is 2 percent. Write a program that asks the user to enter the

total sales for the month. From this figure

following:

- The amount of county sales tax
- The amount of state sales tax
- The total sales tax (county plus state)