**1. Roman Numerals**

Write a program that prompts the user to enter a number within the range of 1 through 10.

The program should display the Roman numeral version of that number. If the number is

outside the range of 1 through 10, the program should display an error message.

**2. Magic Dates**

The date June 10, 1960, is special because when we write it in the following format, the

month times the day equals the year:

6/10/60

Write a program that asks the user to enter a month (in numeric form), a day, and a two-digit

year. The program should then determine whether the month times the day is equal

to the year. If so, it should display a message saying the date is magic. Otherwise, it should

display a message saying the date is not magic.

**3. 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 with a sedentary lifestyle is overweight or underweight

for his or her height. A person’s BMI is calculated with the following formula:

BMI 5 Weight 3 703 / Height2

where weight is measured in pounds and height is measured in inches. The program should

display a message indicating whether the person has optimal weight, is underweight, or is

overweight. A sedentary person’s weight is considered optimal if his or her BMI is between

18.5 and 25. If the BMI is less than 18.5, the person is considered underweight. If the BMI

value is greater than 25, the person is considered overweight.

**4. Test Scores and Grade**

Write a program that has variables to hold three test scores. The program should ask the

user to enter three test scores and then assign the values entered to the variables. The program

should display the average of the test scores and the letter grade that is assigned for

the test score average. Use the grading scheme in the following table:

Test Score Average Letter Grade

90–100 A

80–89 B

70–79 C

60–69 D

Below 60 F

**5. Mass and Weight**

Scientists measure an object’s mass in kilograms and its weight in Newtons. If you know the

amount of mass that an object has, you can calculate its weight, in Newtons, with the following

formula:

Weight 5 Mass 3 9.8

Write a program that asks the user to enter an object’s mass, and then calculate its weight.

If the object weighs more than 1,000 Newtons, display a message indicating that it is too

heavy. If the object weighs less than 10 Newtons, display a message indicating that the

object is too light.

**6. Time Calculator**

Write a program that asks the user to enter a number of seconds.

• There are 60 seconds in a minute. If the number of seconds entered by the user is

greater than or equal to 60, the program should display the number of minutes in that

many seconds.

• There are 3,600 seconds in an hour. If the number of seconds entered by the user is

greater than or equal to 3,600, the program should display the number of hours in

that many seconds.

• There are 86,400 seconds in a day. If the number of seconds entered by the user is

greater than or equal to 86,400, the program should display the number of days in

that many seconds