**CS1180**

**Project 1**

**Purpose:** This program will provide experience using input and output statements and performing calculations.

Write a program that calculates statistics from a user’s workout data. The user of this program will need to provide the following input values for three different physical activities:

* Name
* Weight in pounds
* Length of their walking stride in inches
* Number of walking strides
* Time spent walking in seconds
* Length of their running stride in inches
* Number of running strides
* Time spent running in seconds
* Radius of bicycle wheel in inches
* Revolutions of wheel while riding
* Time spent riding in seconds

The program needs to produce the following outputs for each of the three activities:

* Distance traveled in miles and in kilometers
* Speed of travel in miles/hour and kilometers/hour
* Calories burned

The formula to use to calculate calories is:

Calories = weight in kilograms \* activity time in hours \* metabolic equivalent value

The following are the metabolic equivalents for these three activities:

Bicycling 9.00

Running 7.50

Walking 3.80

Other conversion constants and formulas are readily available on the internet:

Pounds to kilograms - **USE 2.2046 lbs per kg**

Feet per mile or inches per mile

Seconds per hour

Kilometers per mile

All work should be done in the main method, and you should use comments to separate your code into these sections:

* Declare constants (for all conversion constants and metabolic equivalents)
* Declare variables
* Get input from user
* Calculate all needed values for walking activity
* Calculate all needed values for running activity
* Calculate all needed values for riding activity
* Display results. All floating point output should be displayed to two decimal places. Follow the use of blank lines and spacing on the sample program run on the next page.

Calculations are based on the following criteria:

Be sure to follow all relevant items on the Style Requirements document. Also be sure that your program file contains commenting as described on the Style Requirements document of Pilot.

Sample output and the grading rubric follow. Review both items before submitting your work to be sure that you have met all the requirements.

**Sample program run:**

This program calculates the distance traveled, rate of travel, and calories burned by

doing three different activities: walking, running, and biking. Distance and speed are

presented based on both miles and kilometers.

Enter your name and weight:

Rick 175

Enter your walking stride in inches, the number of strides walked, and the time walked in seconds:

30 15000 7200

Enter your running stride in inches, the number of strides ran, and the time running in seconds:

33 15000 3400

Enter your bicycle wheel radius in inches, the number of revolutions ridden, and the riding time in seconds:

27 10000 9000

Activity Distance Speed Calories

(miles) (km) (mph) (kph)

Walking 7.10 11.43 3.55 5.71 603.28

Running 7.81 12.57 8.27 13.31 562.27

Riding 26.77 43.09 10.71 17.24 1786.04

**Grading (100 pts total):**

(8) Declares appropriately-named constants for conversion values

(10) Declares appropriately-named variables for all input values and all calculated values. Uses appropriate data types

(15) Correctly prompts and reads in all input values

(10) Correctly calculates all values for walking

(10) Correctly calculates all values for running

(10) Correctly calculates all values for riding

(20) Outputs all values using the required format and spacing as shown in the sample program run.

(10) Uses proper Javadoc comments above and below the package name, as indicated in the Style Requirements document on Pilot Uses single-line comments above each major step

(7) Code is properly formatted (i.e. indenting), as indicated in the Style Requirements document