**Name: Session:**

**Programming I**

**Lab Exercise 10.10.2023**

Complete the following programs. Print out your documented source code, attach to this sheet and turn in.

1. The drag force on a car is given by



where ρ is the density of air (1.23 kg/m3), *v* is the velocity in units of m/s, *A* is the projected area of the car (2.5 m2), and CD is the drag coefficient (0.2). The amount of power in watts required to overcome such drag force is *P* = FD *v*, and the equivalent horsepower required is Hp = *P/* 746. Write a function that accepts a car’s velocity in MPH and computes and returns the power in watts and in horsepower needed to overcome the resulting drag force. *Note:* 1 mph = 0.447 m/s.

1. Write a program that initializes a list with ten random integers and then prints four lines of output, containing

* Every element at an even index.
* Every even element.
* All elements in reverse order.
* Only the first and last element.

1. Write a program that reads numbers and adds them to a list if they aren’t already contained in the list. When the list contains ten numbers, the program displays the contents and quits.
2. Write a program that adds all numbers from 2 to 10,000 to a list. Then remove the multiples of 2 (but not 2), multiples of 3 (but not 3), and so on, up to the multiples of 100. Print the remaining values.