# Exercise 2 : Learning probability using R

Grading system: Total obtainable points are 5.One point each for Task 1,2,3,4, and 5.

**Task 0 :**

Introduction to probability theory

**Task 1: scatter plot**

1. pairs(iris)
2. hist(iris$Sepal.Length)
3. hist(iris$Petal.Length)
4. plot(density(iris$Sepal.Length))
5. plot(density(iris$Petal.Length))

**Task 2: probability**

1. sum(iris$Sepal.Length == 5)
2. sum(iris$Sepal.Length == 5)/length(iris$Sepal.Length)

**Task 3: probability**

1. sum(iris$Sepal.Length <= 5)
2. sum(iris$Sepal.Length <= 5)/length(iris$Sepal.Length)

#Compare the probability to the one obtained in the histogram

**Task 4: Multiplication rule of probability**

1. sum(iris$Sepal.Length <= 6)/length(iris$Sepal.Length) \* sum(iris$Sepal.Length >= 5)/length(iris$Sepal.Length)
2. sum(iris$Petal.Length <= 6)/length(iris$Petal.Length) \* sum(iris$Petal.Length >= 5)/length(iris$Petal.Length)
3. sum(iris$Sepal.Length == 5)/length(iris$Sepal.Length) \* sum(iris$Petal.Length == 5)/length(iris$Petal.Length)
4. sum(iris$Sepal.Length <= 6)/length(iris$Sepal.Length) \* sum(iris$Petal.Length <= 6)/length(iris$Petal.Length)

#compare the probability to the one obtained in the histogram

**Task 5: Addition rule of probability**

1. sum(iris$Sepal.Length >= 6)/length(iris$Sepal.Length) + sum(iris$Sepal.Length <= 4)/length(iris$Sepal.Length)
2. sum(iris$Petal.Length >= 6)/length(iris$Petal.Length) + sum(iris$Petal.Length <= 4)/length(iris$Petal.Length)
3. sum(iris$Sepal.Length == 5)/length(iris$Sepal.Length) + sum(iris$Petal.Length == 5)/length(iris$Petal.Length)
4. sum(iris$Sepal.Length >= 6)/length(iris$Sepal.Length) + sum(iris$Petal.Length >= 6)/length(iris$Petal.Length)
5. sum(iris$Sepal.Length <= 4)/length(iris$Sepal.Length) + sum(iris$Petal.Length <= 4)/length(iris$Petal.Length)

#compare the probability to the one obtained in the histogram