

# IT2120- Probability and Statistics

## Lab Sheet 09

IT24100078

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### Exercise

Instructions: Create a folder in your desktop with your registration number (Eg: "IT....."). You need to save the R script file and take screenshots of the command prompt with answers and save it in a word document inside the folder. Save both R script file and word document with your registration number (Eg: "IT....."). After you finish the exercise, zip the folder and upload the zip file to the submission link.

1. Assume that the time taken to bake a batch of cookies is normally distributed with mean 45 minutes and standard deviation 2 minutes.

```
setwd("C:\\Users\\USER\\Desktop\\IT24100078 - PS lab 9")
```

```
"IT....."
```

- i. Generate a random sample of size 25 for the baking time.

```
>
> #i
> y <- rnorm(25, mean = 45, sd = 2)
> print(y)
 [1] 41.65803 47.54059 44.57616 46.54919 46.52767 48.46826 44.80577 44.69669
 [9] 42.00490 45.72818 45.75426 46.00747 43.54747 46.62324 45.31062 42.99906
[17] 45.23696 44.35825 45.10627 44.77924 42.37165 46.13373 46.27180 44.53027
[25] 44.32963
>
> #ii
```

Values	
y	num [1:25] 41.7 47.5 44.6 46.5 46.5 ...

ii. Test whether the average baking time is less than 46 minutes at a 5% level of significance.

```
> #ii
> t.test(y, mu = 46, alternative = "less")

      One Sample t-test

data:  y
t = -2.9135, df = 24, p-value = 0.003807
alternative hypothesis: true mean is less than 46
95 percent confidence interval:
 -Inf 45.60233
sample estimates:
mean of x
 45.03661

> |
```