Lab Sheet 09

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

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

```
> # Generate a random sample of size 25 for the baking time.
> baking_time <- rnorm(25, mean = 45, sd = 2)
> baking_time
 [1] 51.22070 42.35643 45.68992 46.99431 45.21153 47.72948 46.52950
 [8] 43.46198 46.32456 43.23342 43.90163 43.96860 46.16667 42.96483
[15] 48.82351 42.35051 48.65200 46.26105 46.47779 45.44282 46.59913
[22] 45.87383 46.17491 48.42504 44.52923
`
```

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

```
> # Test whether the average baking time is less than 46 minutes at a 5% l
vel of significance.
> t.test(baking_time, mu = 46, alternative = "less")

        One Sample t-test

data:  baking_time
t = -0.42548, df = 24, p-value = 0.3371
alternative hypothesis: true mean is less than 46
95 percent confidence interval:
     -Inf 46.56029
sample estimates:
mean of x
 45.81454

>
> res <- t.test(baking_time, mu = 46, alternative = "less")
> res$statistic
        t
-0.4254829
> res$p.value
[1] 0.3371379
> res$conf.int
[1]      -Inf 46.56029
attr(,"conf.level")
[1] 0.95
> attr(res$conf.int, "conf.level")
[1] 0.95
```