

Aim : Conducting Random Experiments with probability concepts.

Objective :-Conceptual understanding of the role of propability as the “Machinery behind the inference.

```
> sample(1:50, 5)
[1] 5 15 50 46 38
> x = 1:50
> sample(x, 10)
[1] 7 25 29 35 16 28 37 30 43 18

> sample(1:4,10, replace=TRUE)
[1] 4 2 3 1 2 1 1 2 3 2

> dice = as.vector(outer(1:6, 1:6,paste))
> dice
[1] "1 1" "2 1" "3 1" "4 1" "5 1" "6 1" "1 2" "2 2" "3 2" "4 2" "5 2" "6 2" "1 3"
[14] "2 3" "3 3" "4 3" "5 3" "6 3" "1 4" "2 4" "3 4" "4 4" "5 4" "6 4" "1 5" "2 5"
[27] "3 5" "4 5" "5 5" "6 5" "1 6" "2 6" "3 6" "4 6" "5 6" "6 6"

> sample(c('H', 'T'), 10, replace=TRUE)
[1] "H" "T" "H" "H" "H" "T" "T" "T" "T" "H"

> sample(c('Success', 'Failure'), 10, replace=TRUE, prob = c(0.9, 0.1))
[1] "Success" "Success" "Success" "Success" "Success" "Success" "Success" "Failure"
[9] "Success" "Success"

> choose(10, 7)
[1] 120

> p = factorial(10)/factorial(5)
> p
[1] 30240
```

To find the mean and the variance of random variables.

```
> x = c(0,1,2,3)
> p = c(1/8,3/8,3/8,1/8)
> mean = sum(x*p)
> variance = sum((x^2)*p)-(mean^2)
> mean
[1] 1.5
> variance
[1] 0.75
```