```
R version 4.2.2 (2022-10-31 ucrt) -- "Innocent and Trusting"
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Platform: x86_64-w64-mingw32/x64 (64-bit)

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  Natural language support but running in an English locale

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Type 'q()' to quit R.

[Previously saved workspace restored]

>
> x = c(0:10) #class limits
> f = c(6, 20, 28, 12, 8, 6, 0, 0, 0, 0, 0) #frequency
> n = max(x);
> #maximum value of the range
> N = sum(f) #total number of observations
> s.mean = sum(f * x) / N #sample mean
> p = s.mean / n #probability of success
> p
[1] 0.2175
> Ef = N * dbinom(x, n, p) #expected frequency
> Ef
 [1] 6.885468e+00 1.913852e+01 2.393844e+01 1.774351e+01 8.630827e+00
 [6] 2.878781e+00 6.668102e-01 1.059105e-01 1.103940e-02 6.818796e-04
[11] 1.895320e-05
> A = data.frame(x, f, Ef) #data frame
> A
    x  f           Ef
1   0  6 6.885468e+00
2   1 20 1.913852e+01
3   2 28 2.393844e+01
4   3 12 1.774351e+01
5   4  8 8.630827e+00
6   5  6 2.878781e+00
7   6  0 6.668102e-01
8   7  0 1.059105e-01
9   8  0 1.103940e-02
10  9  0 6.818796e-04
11 10  0 1.895320e-05
> plot(f, Ef, xlab = "observed", ylab = "expected", type = "p") #plot
> abline(0, 1) #plotting the line y = x
> x1 = x[1:5];
> #class limits of the first 5 classes
> x1
[1] 0 1 2 3 4
> f1 = c(f[1:4], sum(f[5:11]));
> #frequency of the first 5 classes
> f1
[1]  6 20 28 12 14
> ef1 = c(Ef[1:4], sum(Ef[5:11]));ef1 #expected frequency of the first 5 classes
[1]  6.885468 19.138521 23.938437 17.743506 12.294068
> oes = (f1 - ef1) ^ 2 ;oes #observed minus expected squared
[1]  0.7840532  0.7421467 16.4962930 32.9878625  2.9102027
> oee = oes / ef1 ;oee#observed minus expected squared divided by expected
[1] 0.11387072 0.03877764 0.68911320 1.85915130 0.23671600
> cch = sum(oee);cch #chi square value
[1] 2.937629
>
> tcn = qchisq(1 - 0.05, length(oee) - 1 - 1); tcn #critical chi square value
```

```
[1] 7.814728
>
> #comparing the chi square values
> if (tcn > cch) {
+   g = c("Hypothesis is correct")
+   print (g)
+ }
[1] "Hypothesis is correct"
> if (cch > tcn) {
+   g = c("Hypothesis is incorrect")
+   print (g)
+ }
>
```