1.Chi Square

In [24]:
```
import pandas as pd
import numpy as np
from scipy.stats import chi2_contingency,chisquare
```

In [46]:
```
data=pd.DataFrame({"non smoker":[14,0],"smoker":[4,10],"total":[18,10]},index=['athelte',"non athelete",])
data
```

Out[46]:

	non smoker	smoker	total
athelte	14	4	18
non athelete	0	10	10

In [50]:
```
#HO:they are releted
#H1:they are  not releted
```

In [51]:
```
orig=np.array([14,4,0,10])
exp=np.array([9,9,5,5])
```

In [52]:
```
chisquare(orig,exp,ddof=1)
#very low chances that null hypothesis is true.
```

Out[52]:
```
Power_divergenceResult(statistic=15.555555555555555, pvalue=0.00041894212344838406)
```

In [53]:
```
#defining table
a=[[14,4],[0,10]]
```

In [31]:
```
chi2_contingency(a)
#if you will give observe then it will give expected result
```

Out[31]:
```
(12.600000000000001,
 0.0003857467556820071,
 1,
 array([[9., 9.],
        [5., 5.]]))
```