The thesis deals with testing of hypotheses in multinomial distribution. It utilizes two approaches, Pearson's approach known as the of goodness of fit test and the approach stemming from theory of maximum likelihood. The thesis presents derivations of tests based on maximum likelihood. Both approaches are used on the multinomial distribution and for both cases with and without nuisance parameters. The links between both approaches are presented as well. Furthermore both approaches are illustrated on real data to facilitate better understanding of the discussed problems.