

# Exercise 2



## Discrete random variables

In the exercise you can use a built-in procedure for generating random numbers. Compare the results obtained in simulations with expected results. Use histograms (and tests).

1. Choose a value for the probability parameter  $p$  in the geometric distribution and simulate 10,000 outcomes. You can experiment with a small, moderate and large value if you like.
2. Simulate the 6 point distribution with

X	1	2	3	4	5	6
$p_i$	7/48	5/48	1/8	1/16	1/4	5/16

(a) by applying a direct (crude) method

(b) by using the the rejection method

(c) by using the Alias method

3. Compare the three different methods using adequate criteria, then discuss the results.
4. Give recommendations of how to choose the best suited method in different settings, i.e., discuss the advantages and drawbacks of each method. If time permits substantiate by running experiments.