Exercises 2

PROBLEM 1: *Bond Rating 1*

A triple-A rated firm has a default probability of 0.0002 in any given year. What are the chances a triple-A firm defaults in the next 25 years?

PROBLEM 2: *Bond Rating 2*

According to historical data, a firm with a BBB bond rating has a 10.29% chance of default at some point over 40 years. Assuming the probability of default is the same from year to year, what must that probability be for a typical BBB-rated firm?

PROBLEM 3: *Exercise on Mean and Variance*

Consider two random variables, X and Y, with the following distributions:

X	Pr(X=x)
3	20%
6	22%
10	58%

y	Pr(Y=y)
2	15%
4	30%
7	35%
12	20%

1. Compute E[X] and E[Y] .

2. Assuming that X and Y are independent, compute both the variance and standard deviation of X+Y.

PROBLEM 4: *Stock Return*

Shares in companies A, B, and C have expected rates of return over the next year of 10%, 11%, and 15%, respectively. The standard deviation of the rate of return of each of the stocks is 6%, 8%, and 10% respectively. The returns on the stocks vary independently.

What is the expected value and standard deviation of the rate of return (over the next year) on a portfolio consisting of equal dollar amounts invested in all three stocks?