

Data Scientist Challenge

Please work through the below task, which on completion will firstly be reviewed by the hiring manager.  Should your submission meet the required standard you will then be invited to the next interview stage; please prepare to walk a mixed audience through your results. You’ll have **20-25 minutes** to present.

Afterwards, there will be about 20 minutes of time for questions and discussion. Please be prepared to present your slides remotely using Google Meet (formerly Hangouts) and ensure that your browser is set up for screen sharing.

**Problem: Marketing Budget allocation**

Assume: You are working for a company in the education industry, which offers two language Courses: “Business English” and “Spanish for Holidays”.

For each Business English course you sell you make 30 EUR, and for each Spanish Course you sell you make 20 EUR.

The company has a budget of 1,000,000 EUR to spend on advertising, and you’re supposed to decide how best to split the budget between the two products.

You have past sales figures which show the number of “Business English” and “Spanish for Holidays” courses bought for various advertising costs, over the period of one year. The results are from 10,000 different language schools, and the data are available via CSV.

Using this data, determine how you should best split the advertising budget if your objective is to:

a) Maximise expected profit

b) Maximise expected profit / profit standard deviation

**Kindly send us the solution with both code and diagrams no later than 4 days after receiving the challenge.**