

STEP II, 2018, Q12 EC

This question was the most poorly attempted of all of the questions. While approximately one fifth of candidates attempted this question (more than questions 10 or 11), many of the solutions scored very low marks. The few candidates who were able to make progress on the question were however able to secure very good marks.

There were a number of candidates who clearly did not understand the payoffs described in this question, thinking for example that the process continued until a tail was reached and was then related to the number of heads achieved. Many of the students attempted differentiation to maximise the expected winnings, but often did not progress beyond the non-integer value found to check the two possible integer values.

In the second part many candidates struggled to find a useful method of counting successful outcomes, and therefore could not make much further progress on the question. In many cases the quality of explanation seen accompanying the method was not sufficiently detailed to demonstrate that a valid method was being attempted – candidates would be well advised to pay attention to the explanation of their method in questions such as this.

In the final part, many candidates failed to recognise the similarity between the function to be maximised and that from the first part of the question and therefore attempted to work through the process again. The manipulation of logarithms for the final part of the question was generally well done.



NextStepMaths.com

To view mark schemes, fully worked solutions and examiner's comments, and for more details about tutoring and other services offered, go to [NextStepMaths.com](https://www.NextStepMaths.com)