

Take Home Assignment 3

Discrete Probability Distributions

Brendan Doncaster – n9819363

Multiple Choice Test

Chris is sitting a multiple choice test in statistics. The test consists of 9 items and each item has 5 options. After the test, Chris told you he didn't study for the test at all and guessed all answers.

(a)

Number of correct guesses	Probability Distribution
0	0.134218
1	0.301990
2	0.301990
3	0.176161
4	0.066060
5	0.016515
6	0.002753
7	0.000295
8	0.000018
9	0.000001

- (b) Using formula 2, you would expect Chris to get 1.8 answers correct, or if you round it due to not being able to get 0.8 of a mark on multiple choice, you would expect 2 / 9 correct answers.
- (c) The expected value means the average value to be achieved with the probabilities given. In this context, it would mean that if a large number of students went into this exam in the same conditions as Chris and guessed every single answer, the average marks across the whole student body of guessers would have a mean value of 1.8 correct answers. (with the mean getting more accurate to 1.8 the larger the number of students to be involved)
- (d) The probability is 0.019581 or 1.95%
- (e) The probability that you are wrong that Chris is lying about guessing every answer is also 1.95% and therefore there is still a very slim chance that you could be wrong. There is also the chance that Chris had used educated guesses when answering based on clues within the questions and answers, or based on common sense, which could rule out some answers and therefore increase his chances of getting a passing grade.