

MITx: 6.041x Introduction to Probability - The Science of Uncertainty



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- Unit 1: Probability models and axioms
- Unit 2: Conditioning and independence
- Unit 3: Counting
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Unit overview

Lec. 5: Probability mass functions and expectations

Exercises 5 due Mar 02, 2016 at 23:59 UT 🗗

Lec. 6: Variance; Conditioning on an event; Multiple

r.v.'s

Exercises 6 due Mar 02, 2016 at 23:59 UT 🕙

Lec. 7: Conditioning on a random variable; Independence of r.v.'s Unit 4: Discrete random variables > Problem Set 4 > Problem 1 Vertical: Tosses of a biased coin

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Problem 1: Tosses of a biased coin

(9/9 points)

Consider 10 independent tosses of a biased coin with the probability of Heads at each toss equal to p, where 0 .

1. Let \boldsymbol{A} be the event that there are 6 Heads in the first 8 tosses. Let \boldsymbol{B} be the event that the 9th toss results in Heads.

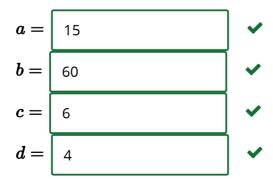
Find $\mathbf{P}(B \mid A)$ and express it in terms of p using standard notation .



2. Find the probability that there are 3 Heads in the first 4 tosses and 2 Heads in the last 3 tosses. Express your answer in terms of \boldsymbol{p} using standard notation . Remember not to use factorials or combinations in your answer.

3. Given that there were 4 Heads in the first 7 tosses, find the probability that the 2nd Heads occurred at the 4th toss. Give a numerical answer.

4. We are interested in calculating the probability that there are 5 Heads in the first 8 tosses and 3 Heads in the last 5 tosses. Give the numerical values of a, b, c, d, e, and f that would match the answer $ap^7(1-p)^3 + bp^c(1-p)^d + ep^f(1-p)^f$.



Problem 1: Tosses of a biased coin | Problem Set 4 | 6.041x Courseware | edX

Exercises 7 due Mar 02, 2016 at 23:59 UT

Solved problems

Additional theoretical material

Problem Set 4

Problem Set 4 due Mar 02, 2016 at 23:59 UT 🗹

Unit summary

Unit 5: Continuous random variables



You have used 2 of 3 submissions

Printable problem set available here.

DISCUSSION

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