On Tuesday, February 23rd at 6:00AM EST, UTC-5, we will be conducting a brief database maintenance. The event should last about 5 minutes.



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



- Unit 0: Overview
- EntranceSurvey
- Unit 1: Probability models and axioms
- Unit 2: Conditioning and independence
- Unit 3: Counting
- ▼ Unit 4: Discrete random variables

## 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 Unit 4: Discrete random variables > Problem Set 4 > Problem 2 Vertical: Three-sided dice

**■** Bookmark

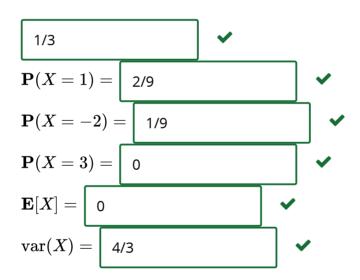
## Problem 2: Three-sided dice

(9/9 points)

We have two fair three-sided dice, indexed by i=1,2. Each die has sides labelled 1,2, and 3. We roll the two dice independently, one roll for each die. For i=1,2, let the random variable  $X_i$  represent the result of the ith die, so that  $X_i$  is uniformly distributed over the set  $\{1,2,3\}$ . Define  $X=X_2-X_1$ .

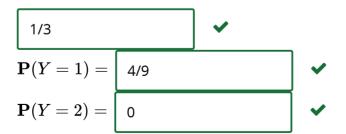
1. Calculate the numerical values of following probabilities, as well as the expected value and variance of X:

$${f P}(X = 0) =$$



2. Let  $Y=X^2$ . Calculate the following probabilities:

$$\mathbf{P}(Y=0)=$$



You have used 1 of 2 submissions

Lec. 7: Conditioning on a random variable; Independence of r.v.'s

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** 

## **DISCUSSION**

Click "Show Discussion" below to see discussions on this problem.

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