
CS 70 Discrete Mathematics and Probability Theory
Summer 2017 Lu, Moulos, and Tang HW 0

Due on Tuesday, June 20 at 11:59 PM

The main purpose of this homework is to make sure that you're familiar with course policies and can access and submit your homework via Gradescope.

This homework's score will be counted towards the sundry section of your final grade.

1. **Administrivia (1 pt).** Make sure you're signed up on the course Piazza (for Q&A), and Gradescope (for submitting homeworks, including this one). Write down the URL for the course website.
2. **Exam times. (1 pt).** The exam times for the class are:
 - (a) Midterm 1 is on July 7th, 12:00-2:00PM (Make-up exams are on the same day around evening)
 - (b) Midterm 2 is on July 28th, 12:00-2:00PM (Make-up exams are on the same day around evening)
 - (c) Final is on August 11, 12:00-3:00PM (Make-up exams are around evening on August 10)

If you have any conflicts with the scheduled exam time, please fill out the exam conflict form at this address: <https://goo.gl/forms/Gfj0w0umB81tFtVk2>

Please note that we offer make-up exams ONLY if you have a valid reason. You must submit this form if you want to be considered for the make-up exams. **We will NOT accept requests for make-up exams once this homework is due.**

Write down "I am okay with the exam time" or "I have submitted the time conflict form" for this question.

3. **Course policies (1 + 1 + 1 + 1 pt).** Go the course website and read the course syllabus carefully. Post questions on Piazza if you have any questions. Which of the following situations would constitute a violation of course policy and why? A short sentence is sufficient for each.
 - (a) Alice and Bob work on a problem in a study group. They write up a solution together and submit it, noting on their submissions that they wrote up their homework answers together.
 - (b) Carol goes to a homework party and listens to Dan describe his approach to a problem on the board. She writes up her homework submission from her notes, crediting Dan.
 - (c) Erin finds a solution to a homework problem on a website. She reads it and then, after she has understood it, writes her own solution using the same approach. She submits the homework with a citation to the website.
 - (d) Frank looks at Grace's homework answers, copies them onto his homework, and submits them.
4. **Use of Piazza (1 + 1 pt).** Piazza is incredible useful for Q&A in such a large-scale class. We will use Piazza for all important announcements. You should check it periodically. We also highly encourage you to use Piazza to ask questions and answer questions from your fellow students. Here are two very important things that you need to know:

- (a) Ask questions wisely on Piazza. It is necessary that you provide enough information about your questions. Read the Piazza Etiquette section on the course website carefully, and comment on the student's question below.

? question ★
101 views

Spring 2016 Question 4.2

Can someone explain to me how they got the stronger theorem? In general are we supposed to just plug in numbers and see if there's a better formula that we can prove?

exam

edit
· good question | 0
Updated 9 months ago by (anon. to classmates)

- (b) Search your questions before you ask. It is very possible that your questions have been asked and answered on Piazza. Spending 30 seconds searching your questions will save both your time and staff's time. Go to CS 70's Piazza site, find out if we will cover Chinese Remainder Theorem (CRT) this semester.

5. **\LaTeX your homework (1 + 1 pt).** We highly recommend you to use TeX to submit your homework. \LaTeX is a document preparation system that puts mathematic formula into a nice formatted document. \LaTeX your solutions can help you organize your thought process and make readers easier to read. We have provided some resources on the course website to help you get started with using \LaTeX . Feel free to ask questions on Piazza if you have any questions. For this question, try to typeset the following formulas. This will give you some practice writing mathematical formulas properly. Of course, if you choose to handwrite your solutions and scan them, then this is trivial.

(a) $\forall x \exists y ((P(x) \wedge Q(x, y)) \Rightarrow x \leq \sqrt{y})$

(b) $\sum_{i=0}^k i = \frac{k(k+1)}{2}$

6. **Read lecture notes in advance (1 + 1 + 1 + 1 pts).** We don't have textbooks for this course but a series of well-written lecture notes have been posted on the website. We will follow those notes throughout the semester. A good study strategy is to read those notes in advance, **before** their corresponding lectures. For now, read note 0 and try to answer the following questions.

(a) Are the sets $\{2\pi, \frac{8}{2}, 1\}$ and $\{1, 2\pi, \frac{8}{2}\}$ equal?

(b) Which of the following numbers are contained in the set $\{x \mid \frac{x}{2} \in \mathbb{N}\}$ (circle all that apply)?

i. 1

ii. 2

iii. 2π

iv. $\frac{6}{2}$

v. $\frac{8}{2}$

(c) What is the cardinality of the set $\{x \mid x < 100, \frac{x}{5} \in \mathbb{N}\}$?

(d) What is the maximum element of the set $\{x \mid x \cdot 100 \leq 50\}$?