

Mth 23, Homework 1 on Sections 1.1, 1.2, 1.3

Due by Mon, Sept 14.

Here are seven questions for you to try. Write all your working out and answers on your own notepaper. Please use lots of space and as many pages as you want, so I can include corrections or comments - otherwise I will ask you to redo it. You do not need to write the questions, but it is very important that you show clearly any work you had to do to get your answers. Each question is worth 3 points for a total of 21.

Section 1.1 What is Statistics?

- (1) A survey of 250 owners of fully electric cars in Arizona asked how many miles they drove per day.
 - (a) Identify the variable.
 - (b) Is the variable quantitative or qualitative?
 - (c) What is the implied population?
 - (2) The bacteria levels of all the lettuces in a field were tested.
 - (a) Identify the individuals.
 - (b) Identify the variable.
 - (c) Is the data collected here sample data or population data?
 - (3) Give the measurement level (nominal, ordinal, interval or ratio) of each of these variables associated with a company:
 - (a) Price of the company's stock.
 - (b) Names of its latest products.
 - (c) Number of years the company has been in operation.
 - (d) Temperature, in degrees Fahrenheit, of the main office.
 - (e) Executive performance: average, above average, exceptional.
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Section 1.2 Random samples

- (4) A lettuce field is tested for bacteria levels. The field consists of rows of lettuce and one row at the edge of the field is tested.
 - (a) Do you think this will be a representative sample of the population?
 - (b) How would you make it more representative?

- (5) The containers on a large ship are numbered 10 through 65. Use the random number table on the last page of this homework set to make a random sample of six containers to test for illegal smuggling. Explain your method.
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Section 1.3 Introduction to Experimental Design

- (6) Which technique for gathering data (survey, observation or experiment) do you think would be needed for each of these:
- (a) Finding the number of riders on the 4 train at rush hour.
 - (b) Testing a skin cream for reducing wrinkles.
 - (c) Finding people's opinion on the state of the economy.
- (7) In your own words, describe in detail how to set up a completely randomized experiment using 500 patients to test a new drug.
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Many of you are using AI to help with homework questions. You can paste them in and get step by step answers most of the time. If you are using AI, the smart way is:

- Study the relevant class notes and section in the textbook first.
- Try the homework questions yourself.
- Use AI help if you're having trouble.
- Make sure you understand the answers you're handing in - there will be similar questions on tests.

If you're still stuck on a question:

- Ask me about it after class.
 - Come to my office hours: Mon 12:00 - 1:00, Wed 12:00 - 1:00 in CP 317.
 - Go to the Math Tutorial Lab in-person in CP 303 or online.
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Note – If I don't have time to grade every question then I will just grade two random ones. Then your score will be awarded as follows

- First graded question: 25%
- Second graded question: 25%
- You provided answers to all questions: 25%
- Homework was done neatly and submitted on time: 25%

A random number table

28337	03680	96876	14255	96537	06827	60594	68225	88373	66362	45000
75720	29136	83667	09439	21565	80067	16861	91682	67164	92662	95653
17861	23136	48276	85424	48011	12046	83425	50125	22097	33184	49383
21443	40437	18913	33870	63078	17983	16838	48773	12168	60084	67025
61048	87552	23874	70622	42516	69419	70843	85798	08348	98185	44378
60664	71423	57209	49146	80547	91581	18334	75808	60445	95919	91493
06141	49638	99928	59643	27345	02845	76072	30307	92152	96813	29785
98175	90150	92223	66127	06788	92656	25638	16518	63566	03636	75488
80837	24037	25266	65060	19272	77800	10159	96296	99308	42809	42312
63701	01533	81620	06800	00166	20858	33811	01792	02722	75688	40221
45461	10917	95929	86829	04597	33651	87400	95461	33974	84463	93678
71639	28448	72037	01434	89006	59446	77534	21383	57334	80792	51941
65547	39405	23596	18366	87197	28915	47362	84998	71536	02885	38760
23178	94752	95306	79089	49979	09896	62755	17464	64748	12922	87293