











ernestonyeahialam@gmail.com (<u>Sign out</u>)

Home My Assignments
Grades Communication

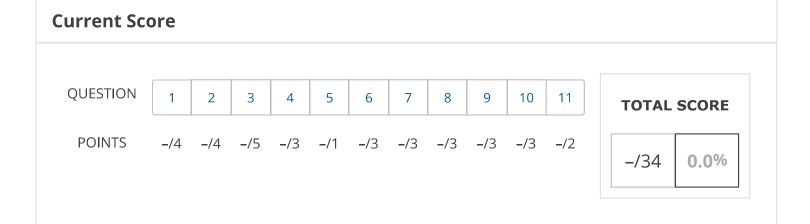
Calendar

My eBooks

← TMTH 3360, section 14343 11681, Spring 2023

## Chapter 05 Homework Section 5.3 (Homework)

Deanna Dick
University of
Houston, TX



## **Due Date**

**TUE, MAR 7, 2023** 

6:59 AM GMT+1



## **Assignment Submission & Scoring**

**Assignment Submission** 

For this assignment, you submit answers by questions. You are required to use a new randomization after every 3 question submissions.

## **Assignment Scoring**

Your best submission for each question part is used for your score.

Watch It

1. [-/4 Points]	DETAILS	MENDSTAT15 5.3.003.	0/6 Submissions Used
MY NOTES	ASK YOUR T	EACHER	

Let x be a Poisson random variable with  $\mu = 4.5$ . Find the probabilities for x using the Poisson formula. (Round your answers to six decimal places.)

(Round your answers
P(x=0)
P(x = 1)
P(x = 2)
$P(x \leq 2)$

Need Help? Read It



Let x be a Poisson random variable with  $\mu = 2$ . Find the probabilities for x using <u>Table 2</u>. (Round your answers to three decimal places.)

 $P(x \le 3)$  P(x > 3) P(x = 3)  $P(3 \le x \le 5)$ 

You may need to use the appropriate appendix table or technology to answer this question.



3. [-/5 Points]	DETAILS	MENDSTAT15 5.3.010.	0/6 Submissions Used	
MY NOTES	ASK YOUR TI	EACHER		

Let x be a binomial random variable with n = 25 and p = 0.05.

Calculate p(0) and p(1) using <u>Table 1</u> to obtain the exact binomial probability. (Round your answers to three decimal places.)

$$p(1) =$$

Calculate p(0) and p(1) using the Poisson approximation. (Round your answer to three decimal places.)

$$p(0) =$$

$$p(1) =$$

Compare your results. Is the approximation accurate?

- No the approximation is not accurate. At least one the differences between the probabilities from the Poisson approximation and the exact probabilities from the binomial distribution is much greater than 0.05.
- O Yes the approximation is reasonably accurate. In general, the probabilities from the Poisson approximation are all well within 0.05 of the exact probabilities from the binomial distribution.

You may need to use the appropriate appendix table or technology to answer this question.

Need Help? Read It

4. [-/3 Points]	DETAILS	MENDSTAT15 5.3.012.	0/6 Submissions Used
MY NOTES	ASK YOUR T	EACHER	
The number of b	oankruptcies filed	I in the district court has a Pois	sson distribution with an average of 6 per

(a)	What is the probability that there will be no bankruptcy filings during a given week? (Round your answer to three decimal places.)
(b)	What is the probability that there will be at least one bankruptcy filing during a given week? (Round your answer to three decimal places.)
(c)	Within what limits does Tchebysheff's Theorem suggest you would expect to see the number of bankruptcy filings per week at least 88.88% of the time? (Round your answer up to the nearest whole number.)
	0 to filings
You r	may need to use the appropriate <u>appendix table</u> or <u>technology</u> to answer this question.





The probability that a person will develop the flu after getting a flu shot is 0.03. In a random sample of 100 people in a community who got a flu shot, what is the probability that 2 or more of the 100 people will get the flu? Use the Poisson approximation to binomial probabilities to find your answer. (Round your answer to three decimal places.)

You may need to use the appropriate appendix table or technology to answer this question.

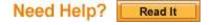
Need Help? Read It Watch It

6. [-/3 Points]	DETAILS	MENDSTAT15 5.3.018.	0/6 Submissions Used
MY NOTES	ASK YOUR TI	EACHER	

The increased number of small commuter planes in major airports has heightened concern over air safety. An eastern airport has recorded a monthly average of five near misses on landings and takeoffs in the past 5 years. (Round your answers to three decimal places.)

(a)	Find the probability that during a given month there are no near misses on landings and takeoffs at the airport.
(b)	Find the probability that during a given month there are six near misses.
(c)	Find the probability that there are at least six near misses during a particular month.

You may need to use the appropriate appendix table or technology to answer this question.



7. [-/3 Points]	DETAILS	MENDSTAT15 5.3.019.	0/6 Submissions Used
MY NOTES	ASK YOUR T	EACHER	

The number x of people entering the intensive care unit at a particular hospital on any one day has a Poisson probability distribution with mean equal to eight persons per day.

(a)	is four? (Round your answer to three decimal places.)
	What is the probability that the number of people entering the intensive care unit on a particular day is less than or equal to four? (Round your answer to three decimal places.)

- (b) Is it likely that x will exceed 14? Explain.
  - Yes, *x* is less than 2 standard deviations above the mean.
  - $\bigcirc$  No, x is more than 2 standard deviations above the mean.

You may need to use the appropriate appendix table or technology to answer this question.

Need Help? Read It

8. [-/3 Points]	DETAILS	MENDSTAT15 5.3.020.	0/6 Submissions Used
MY NOTES	ASK YOUR T	EACHER	

According to a study conducted by a university, children who are injured seven or more times tend to sustain these injuries during a relatively limited time, usually 1 year or less. If the average number of injuries per year for school-age children is seven, what are the probabilities of these events? (Round your answers to three decimal places.)

(a)	a school-age child will sustain seven injuries during the year
(b)	a school-age child will sustain seven or more injuries during the year
(c)	a school-age child will sustain at most one injury during the year

You may need to use the appropriate appendix table or technology to answer this question.



9. [-/3 Points]	DETAILS	MENDSTAT15 5.3.021.MI.	0/6 Submissions Used
MY NOTES	ASK YOUR T	EACHER	

According to a study conducted by a university, children who are injured five or more times tend to sustain these injuries during a relatively limited time, usually 1 year or less. Let the average number of injuries per year for school-age children be five.

(a) Calculate the mean and standard deviation for x, the number of injuries per year sustained by a school-age child. (Round your answers to three decimal places.)

 $\mu =$  injuries  $\sigma =$  injuries

(b) According to Tchebysheff's Theorem, within what limits would you expect the number of injuries per year to fall at least three-quarters of the time? (Round your answer up to the nearest whole number.)

0 injuries to injuries

Need Help? Read It Master It

10. [-/3 Points] DETAILS MENDSTAT15 5.3.022. 0/6 Submissions Used

MY NOTES ASK YOUR TEACHER

If a drop of water is examined under a microscope, the number x of a specific type of bacteria present has been found to have a Poisson probability distribution. Suppose the maximum permissible count per water specimen for this type of bacteria is seven. If the mean count for your water supply is three and you test a single specimen, is it likely that the count will exceed the maximum permissible count? Explain. (Round your bacteria value up to the nearest whole number, and round your probability to three decimal places.)

---Select---  $\checkmark$  , according to Tchebysheff's Theorem, at least three-quarters of the observations should fall between  $\overset{\circ}{0}$  bacteria and  $\overset{\circ}{0}$  bacteria present, inclusive, and the exact Poisson probability is  $P(x > 7) = \overset{\circ}{0}$ .

You may need to use the appropriate appendix table or technology to answer this question.

Need Help? Read It Watch It



An outbreak of *E. coli* infections in July of 2017 occurred in southwestern Utah, with a dozen people sick, and the confirmed deaths of two children. *E. coli* infections and outbreaks have been on the rise since 2009, reaching an incidence rate of 2.85 cases per 100,000 persons.† Children under the age of five have a higher incidence rate—7.86 cases per 100,000. Using the rate of 2.85 cases per 100,000, evaluate the following probabilities. (Round your answers to three decimal places.)

(a)	What is the probability that at most three outbreaks per 100,000 are reported across the United States this year?
(b)	What is the probability that more than four outbreaks per 100,000 are reported across the United States this year?

You may need to use the appropriate <u>appendix table</u> or <u>technology</u> to answer this question.



Submit Assignment Progress

Copyright © 1998 - 2023 Cengage Learning, Inc. All Rights Reserved TERMS OF USE PRIVACY