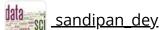edX   MITx: CTL.SC0x
      Supply Chain Analytics

You are taking "<u>Final Exam</u>" as a timed exam. The timer on the right shows the time remaining in the exam. To receive credit for problems, you must select "Submit" for each problem before you select "End My Exam".

End My Exam   **3:22:03** 👁̸
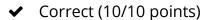
Problem 3/4
Question 1.

10/10 points (graded)

You work for ML872, a small company in rural China. The reasoning behind the name of the company is unknown, but the office gossip suggests that it has to do with a significant event that occured in the original owner's family history. Being the new guy in town, you decide to figure out the meaning of the company name later and focus on work for now.

ML872 manufactures specialty farm equipment to be sold to local farmers at reasonable prices. Because of the company's niche market, orders for different products arrive in various (discrete) distributions. In a given month the total number of orders for their rice harvesting machine are uniformly distributed between 14 and 30 (inclusive).

What is the probability that ML872 receives less than 18 orders for rice harvesters this month?
Enter the probability as a fraction or as a decimal with at least 3 decimal places.

| 0.2352941 | ✔

0.2352941

[Submit]   You have used 1 of 2 attempts

✔   Correct (10/10 points)

Question 2.

10/10 points (graded)

Another product that ML872 sells is a small aerator device. These are typically sold to commercial lawn care companies in the region. Aerators are tools that perforate the ground to allow air and water penetrate deeper into it. This allows for a heal their lawn.

In any given day, orders for aerators follow a poisson distribution with a $\lambda = 4.1$.

What is the probability that ML872 receives 9 or more orders for aerators today?
Enter the probability as a fraction or as a decimal with at least 3 decimal places.

0.02449175 ✔

0.02449175

Submit   You have used 1 of 2 attempts

✔ Correct (10/10 points)

Question 3.

10/10 points (graded)

You work for MCLeod's Trucking Inc., a large trucking firm located in Dublin, Ireland. The expected timing for one of MCLeod's short haul routes has recently come into question. To get an idea of how long the route should take, you decide to perform an experiment. To do this, you measure the time (in mintues) it takes to complete this route. After a month of measuring, you have a sample of **23** route times. You will find them below.

```
36
41
24
41
36
35
45
38
51
27
41
58
33
50
25
28
44
39
39
34
57
47
29
```

You want to know a range of time that you should expect any single truck on this route to fall between. Using the data you decide to create a 95% **prediction interval** for the time that it takes to run this route.

What is the upper bound of this 95% prediction interval?
Enter your answer below as a decimal. Round to 3 decimal places.

58.66302 ✔

58.66302

What is the lower bound of this 95% prediction interval?
Enter your answer below as a decimal. Round to 3 decimal places.

19.42393 ✔

19.42393

Submit   You have used 2 of 2 attempts

✔ Correct (10/10 points)

Question 4.

15/15 points (graded)
MCLeod's tells clients that the average time it takes to run this route is 32 minutes. Thinking about this, you decide to create a 95% **confidence interval** using your data to get an idea of where your average time should be.

What is the upper bound of this 95% confidence interval?
Enter your answer below as a decimal. Round to 3 decimal places.

43.13444 ✔

43.13444

What is the lower bound of this 95% confidence interval?
Enter your answer below as a decimal. Round to 3 decimal places.

34.95252 ✔

34.95252

Using your Confidence Interval as a reference, can you say that MCLeod's route times are different than stated to a 95% confidence level?
Select the best answer below.

⦿ You **can** say that the actual route times are different than stated with a 95% level of confidence. ✔

◯ You **can not** say that the actual route times are different than stated with a 95% level of confidence.

◯ You are unable to determine this.

| Submit | You have used 2 of 2 attempts |

✔ Correct (15/15 points)

This is the end of Problem 3. Only Problem 4 -- The Checkbox Questions -- is left to do. Don't forget to do it.