WEEK 4: HOMEWORK

Started: Jun 20 at 3:29pm

QUIZ INSTRUCTIONS

Click the button to start the homework set. You can re-do this assignment as often as you need. Be sure to have the Week 4 spreadsheet available to help with the calculations. It is available in the Week 4: Resources page.

Question 1 — 2 pts

The length of time a person takes to decide which shoes to purchase is normally distributed with a mean of 8.54 minutes and a standard deviation of 1.91. Find the probability that a randomly selected individual will take less than 6 minutes to select a shoe purchase. Is this outcome unusual?

Homework Help:

4VA. Calculating normal probabilities (2:18)

4DA. Description of normal distribution, area, and probabilities, definition of unusual events (DOCX)

- Probability is 0.09, which is unusual as it is less than 5%
- Probability is 0.91, which is usual as it is greater than 5%
- Probability is 0.09, which is usual as it is not less than 5%
- Probability is 0.91, which is unusual as it is greater than 5%

Question 2 — 2 pts

Monthly water bills for a city have a mean of $108.43 and a standard deviation of $32.09. Find the probability that a randomly selected bill will have an amount greater than $165, which the city believes might indicate that someone is wasting water. Would a bill that size be considered unusual?

Homework Help:

4VA. Calculating normal probabilities (2:18)

4DA. Description of normal distribution, area, and probabilities, definition of unusual events (DOCX)

- Probability is 0.96, which is usual as it is greater than 5%
- Probability is 0.04, which is unusual as it is less than 5%
- Probability is 0.04, which is usual as it is less than 5%
- Probability is 0.96, which is unusual as it is greater than 5%

Question 3 — 2 pts

In a health club, research shows that on average, patrons spend an average of 46.2 minutes on the treadmill, with a standard deviation of 4.8 minutes. It is assumed that this is a normally distributed variable. Find the probability that randomly selected individual would spent between 30 and 40 minutes on the treadmill.

Homework Help:

4VA. Calculating normal probabilities (2:18)

4DA. Description of normal distribution, area, and probabilities, definition of unusual events (DOCX)

- 0.80
- -0.10
- 0.10
- 0.90

Question 4 — 2 pts

A tire company measures the tread on newly-produced tires and finds that they are normally distributed with a mean depth of 0.98mm and a standard deviation of 0.35mm. Find the probability that a randomly selected tire will have a depth less than 0.50mm. Would this outcome warrant a refund (meaning that it would be unusual)?

Homework Help:

4VA. Calculating normal probabilities (2:18)

4DA. Description of normal distribution, area, and probabilities, definition of unusual events (DOCX)

- Probability of 0.09 and would warrant a refund
- Probability of 0.91 and would warrant a refund
- Probability of 0.09 and would not warrant a refund
- Probability of 0.91 and would not warrant a refund

Question 5 — 2 pts

A grocery stores studies how long it takes customers to get through the speed check lane. They assume that if it takes more than 10 minutes, the customer will be upset. Find the probability that a randomly selected customer takes more than 10 minutes if the average is 7.45 minutes with a standard deviation of 1.52 minutes.

Homework Help:

4VA. Calculating normal probabilities (2:18)

4DA. Description of normal distribution, area, and probabilities, definition of unusual events (DOCX)

- 0.906
- 0.953

QUESTIONS

Time Elapsed: Hide

Attempt due: Jun 3 at 12:59am

0 Minutes, 24 Seconds

- 0.047
- 0.467

Question 6 2 pts

In an agricultural study, the average amount of corn yield is normally distributed with a mean of 185.2 bushels of corn per acre, with a standard deviation of 23.5 bushels of corn. If a study included 1200 acres, about how many would be expected to yield more than 206 bushels of corn per acre?

Homework Help:

4VB. Calculating number from a sample that meet criteria based on normal probabilities (1:32)

- 188 acres
- 974 acres
- 226 acres
- 812 acres

Question 7 2 pts

On average, the parts from a supplier have a mean of 35.8 inches and a standard deviation of 2.4 inches. Find the probability that a randomly selected part from this supplier will have a value between 28.6 and 43.0 inches. Is this consistent with the Empirical Rule of 68%-95%-99.7%?

Homework Help:

4DB. Connection between normal probabilities and Empirical Rule (DOCX)

- Probability is 0.997, which is inconsistent with the Empirical Rule
- Probability is 0.95, which is inconsistent with the Empirical Rule
- Probability is 0.997, which is consistent with the Empirical Rule
- Probability is 0.05, which is inconsistent with the Empirical Rule

Question 8 2 pts

A process is normally distributed with a mean of 10.2 hits per minute and a standard deviation of 1.04 hits. If a randomly selected minute has 12.9 hits, would the process be considered in control or out of control?

Homework Help:

4VC. Calculating probabilities from manufacturing to determine if system is in control (4:12)

- In control as only one data point would be outside the allowable range
- Out of control as this one data point is more than two standard deviations from the mean
- Out of control as this one data point is more than three standard deviations from the mean
- In control as this one data point is not more than three standard deviations from the mean

Question 9 2 pts

The candy produced by a company has a sugar level that is normally distributed with a mean of 16.8 grams and a standard deviation of 0.9 grams. The company takes readings of every 10^{th} bar off the production line. The reading points are 17.3, 14.9, 18.8, 16.5, 16.1, 17.4, 19.4. Is the process in control or out of control and why?

Homework Help:

4VC. Calculating probabilities from manufacturing to determine if system is in control (4:12)

- It is in control as the data points more than 2 standard deviations from the mean are far apart
- It is out of control as the values jump above and below the mean
- It is in control as none of these data points is more than 3 standard deviations from the mean
- It is out of control as two of these data points are more than 2 standard deviations from the mean

Question 10 2 pts

The toasters produced by a company have a normally distributed life span with a mean of 5.8 years and a standard deviation of 0.9 years, what warranty should be provided so that the company is replacing at most 3% of their toasters sold?

Homework Help:

4VD. Calculating probabilities to compare to set probabilities such as warranties and production guidelines (2:23)

- 4.3 years
- 6.2 years
- 5.7 years
- 4.1 years

Question 11 2 pts

A running shoe company wants to sponsor the fastest 5% of runners. You know that in this race, the running times are normally distributed with a mean of 7.2 minutes and a standard deviation of 0.56 minutes. How fast would you need to run to be sponsored by the company?

Homework Help:

4VD. Calculating probabilities to compare to set probabilities such as warranties and production guidelines (2:23)

- 8.3 minutes

- 8.1 minutes
- 6.3 minutes
- 6.1 minutes

Question 12 2 pts

The weights of bags of peas are normally distributed with a mean of 13.50 ounces and a standard deviation of 1.06 ounces. Bags in the upper 4% are too heavy and must be repackaged. What is the most that bag and weigh and not need to be repackaged?

Homework Help:

4VD. Calculating probabilities to compare to set probabilities such as warranties and production guidelines (2:23)

- 11.64 ounces
- 15.36 ounces
- 15.24 ounces
- 11.76 ounces

Question 13 2 pts

A stock's price fluctuations are approximately normally distributed with a mean of $26.94 and a standard deviation of $3.54. You decide to sell whenever the price reaches its highest 20% of values. What is the highest value you would still hold the stock?

Homework Help:

4VE. Determining values from normal distributions based on probabilities (2:42)

4DC. Using normal distributions and probabilities to determine set values (DOCX

- $29.92
- $30.42
- $30.48
- $23.96

Question 14 2 pts

In a survey of first graders, their mean height was 49.5 inches with a standard deviation of 3.6 inches. Assuming the heights are normally distributed, what height represents the first quartile of these students?

Homework Help:

4VE. Determining values from normal distributions based on probabilities (2:42)

4DC. Using normal distributions and probabilities to determine set values DOCX

- 47.07 inches
- 48.35 inches
- 45.00 inches
- 51.93 inches

Question 15 2 pts

Hospital waiting room times are normally distributed with a mean of 38.12 minutes and a standard deviation of 8.63 minutes. What is the shortest wait time that would still be in the worst 15% of wait times?

Homework Help:

4VE. Determining values from normal distributions based on probabilities (2:42)

4DC. Using normal distributions and probabilities to determine set values DOCX

- 47.06 minutes
- 36.49 minutes
- 49.18 minutes
- 29.18 minutes

Question 16 2 pts

A machine set to fill soup cans with a mean of 20 ounces and a standard deviation of 0.11 ounces. A random sample of 22 cans has a mean of 20.04 ounces. Should the machine be reset?

Homework Help:

4VF. Calculating probabilities using the Central Limit Theorem (4:32)

4DD. Central Limit Theorem, definition of unusual events DOCX

- No, the probability of this outcome at 0.044, would be considered usual, so there is no problem
- Yes, the probability of this outcome at 0.956 would be considered unusual, so the machine should be reset
- Yes, the probability of this outcome at 0.044, would be considered unusual, so the machine should be reset
- No the probability of this outcome at 0.956 would be considered usual, so there is no problem

Question 17 2 pts

The length of timber cuts are normally distributed with a mean of 95 inches and a standard deviation of 0.52 inches. In a random sample of 45 boards, what is the probability that the mean of the sample will be between 94.8 inches and 95.8 inches?

Homework Help:

4VF. Calculating probabilities using the Central Limit Theorem (4:32)

4DD. Central Limit Theorem, definition of unusual events DOCX

- 0.588
- 0.005
- 0.650
- 0.995

Question 18 2 pts

The Dow Jones Industrial Average has had a mean gain of 432 pear year with a standard deviation of 722. A random sample of 40 years is selected. What is the probability that the mean gain for the sample was between 250 and 500?

Homework Help:

4VF. Calculating probabilities using the Central Limit Theorem (4:32)

4DD. Central Limit Theorem, definition of unusual events DOCX

- 0.863
- 0.669
- 0.137
- 0.331

Question 19 2 pts

Of all the companies on the New York Stock Exchange, profits are normally distributed with a mean of $6.54 million and a standard deviation of $10.45 million. In a random sample of 73 companies from the NYSE, what is the probability that the mean profit for the sample was between -2.9 million and 4.5 million?

Homework Help:

4VF. Calculating probabilities using the Central Limit Theorem (4:32)

4DD. Central Limit Theorem, definition of unusual events DOCX

- 0.052
- 0.477
- 0.048
- 0.239

Question 20 2 pts

Doing research for insurance rates, it is found that those aged 30 to 49 drive an average of 38.7 miles per day with a standard deviation of 6.7 miles. These distances are normally distributed. If a group of 60 drivers in that age group are randomly selected, what is the probability that the mean distance traveled each day is between 38.5 miles and 39.5 miles?

Homework Help:

4VF. Calculating probabilities using the Central Limit Theorem (4:32)

4DD. Central Limit Theorem, definition of unusual events DOCX

- 0.941
- 0.586
- 0.414
- 0.059

Top