AP Statistics

2019-02-19 6.2 Assignment

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Pg. 378-382 37,39-41,43,45,49,51,57-59,63,65,66

Question 37

Part A

Increasing from 0$ on the left at cars=0 to 25$ at the right for cars=5

Part B

μ[M] = 19.35

On average, 19.35$ will be collected on a ferry trip.

Part C

8.5391

On average, most ferry trips will make within 8.5391$ of μ[M].

Question 39

Part A

μ[G] = μ[X]•10 = 76

Part B

stddev[G] = stddev[X]•10 = 13.2

Part C

The variance of X is equal to stddev[X]^2 = 1.7424. The variance of G is equal to stddev[G]^2 = 174.24.

Question 40

Part A

M[G] = M[X]•10 = 85

Part B

IQR[G] = IQR[X]•10 = (9-8)•10 = 10

Part C

A skewed left distribution — the mean is lower than the median

Question 41

Part A

Y and M increase together linearly. μ[Y] shows the average amount of profit the company can expect to make.

Part B

They are the same, increasing together linearly.

Question 43

μ[X'] = 23.22

μ[Y'] = 3.22$

stddev[Y'] = stddev[X'] = 10.2469

Question 45

Part A

μ[Y] = 47.3ºF

stddev[Y] = 4.05ºF

Part B

z = (40 ºF-47.3 ºF)/(4.05 ºF) = -1.80

P = 0.0359

Question 49

Part A

X and Y are not independent, as the two cards removed from the deck will alter the remaining set and probability model within the remaining deck, changing the additionally drawn cards.

Part B

These are independent as each roll is random based purely on the dice and the outcomes are not altered from previous rolls.

Question 51

Part A

Yes. The mean of each is calculated as $\sum$X[i]/n[X] and $\sum$Y[i]/n[Y]. As both have the same number of items, ($\sum$X[i] + $\sum$Y[i])/n[X] can be used to find the total value. Using mathematical properties, this can take the form of $\sum$X[i]/n[X] + $\sum$Y[i]/n[Y], which is synonymous with μ[X] + μ[Y].

Part B

No; variance is calculated using the individual means of each set and the total would be calculated with a different (overall) mean.

Question 57

μ[W] = 0.5•μ[X[1]] + 0.5•μ[X[2]]

stddev[W] = sqrt(0.5•stddev[X[1]]^2 + 0.5•stddev[X[2]]^2)

Question 58

μ[V] = 0.25•μ[X[1]] + 0.25•μ[X[2]] + 0.25•μ[X[3]] + 0.25•μ[X[4]]

stddev[V] = sqrt(0.25•stddev[X[1]]^2 + 0.25•stddev[X[2]]^2 + 0.25•stddev[X[3]]^2 + 0.25•stddev[X[4]]^2)

Question 59

Part A

μ = 31 sec

stddev = sqrt(2^2 + 4^2) = 4.47

Part B

z = (30-31)/4.47 = -0.22

P = 0.413

Question 63

μ = 55.2+58+56.3+54.7 = 224.2

stddev = sqrt(2.8**2 + 3.0**2 + 2.6**2 + 2.7**2) = 5.56

z = (220-224.2)/5.56 = -0.76

P = 0.224

Question 65: **C**

Question 66: **D**