AP Statistics

2019-03-05 7.3 Assignment

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Pg. 481-484 5,7,9,11,13,17,19-24

Question 5

See "2019-03-06 Question 5 and 7.png"

Part A

The sampling distribution of $\bar{x}$ is normal due to the central limit theorem.

As such, the center is the mean of the population, 280.

stddev[$\bar{x}$] = stddev[p]/sqrt(n) = 60/sqrt(840) = 2.070

Part B

Standard normal curve with 68/95/99.7

Part C

m = two standard deviations from the mean = 4.14 This is from 275.86 to 284.14.

Part D

95%

Question 7

See "2019-03-06 Question 5 and 7.png"

If the sample mean lies within the shaded region then the real mean μ is within the confidence interval.

Question 9

80%. The distributions are larger than a single standard distribution (68%) but smaller than 95%. They seem to be aboue ±1.2 standard deviations, which would be closer to 80% than 90%.

Question 11

Part A

The margin of error describes how close the estimated value from the sample, ^p, is to the true value p.

This means that, in 95% of samples, the sample value will be within 3% of the true value.

Part B

$0.63 \leq P \leq 0.69$

Part C

On average, 95% of samples will contain the true value within the contain the true value in their confidence interval.

Question 13

Some may be excluded if they used a different area code or non-residential line.

Non-response bias.

Question 17

Part A

No - only that 95% of samples will have a mean within that range.

Part B

No - we do not know if the true mean is actually within this range.

Part C

Yes - we are 95% certain that the true value is somewhere within this range, so yes this is correct.

Part D

No - see B

Part E

No - see B and D

Question 19

Random

This (SRS) is necessary to generalize to the entire population.

Normal

This is needed so that the confidence interval (z-scores, probabilities, etc, are needed).

Independent

Required to calculate standard deviations.

Question 20

Random sample - this was collected from an online poll and can cause response bias, making the sampling distribution non-random.

Question 21: **B**

Question 22: **E**

Question 23: **C**

Question 24: **B**

Pg. 496 27,31,33

Question 27

The 10% condition is not met (50 > 10% • 175)

Question 31

z* = 2.33

Question 33

Part A

Population: 750 seniors

Parameter: number of seniors planning to go to the prom

Part B

50 < 10% of 750

^p = 36/50 = 0.72

np = 36, n-np = 14, both above 10

Part C

z[0.05] = 1.645

E = z•sqrt(.72*.28/50) = 0.1045

Confidence interval = 0.72 ± 0.1045

0.6155 < P < 0.8245

Part D

We are 90% confident that the parameter is 0.6155 < P < 0.8245