# Vitamin 08

This vitamin covers material from last week and this week's lectures and is due Monday, November 5th at 11:59 PM.

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* Required

## Central Limit Theorem

According to the Central Limit Theorem (CLT), the distribution of the means of independent random variables tends towards a normal distribution only if the independent variables themselves are normally distributed. * 1 point

- ○ True
- ◉ False

## Bootstrap

The bootstrap distribution of the sample mean is always centered at the population mean μ. * 1 point

- ○ True
- ◉ False

In which scenarios may we not want to use the bootstrap? * 1 point

In which scenarios may we not want to use the bootstrap? 1 point

- [x] Our data is a census.
- [ ] The statistic is an extreme quantile.
- [ ] The data are not normally distributed.

Suppose we are bootstrapping the sample proportion and we obtain the 95% confidence interval (0.30, 0.47). Select all that apply. * 1 point

- [ ] This is a confidence interval for the sample proportion.
- [x] This is a confidence interval for the population proportion.
- [ ] There is a 95% chance that the confidence interval contains the population proportion.
- [ ] There is a 95% chance that the confidence interval contains the sample proportion.
- [x] If the bootstrap is a good procedure, we expect the interval to contain the true population proportion 95% of the time.
- [ ] If we have 100 intervals, exactly 95 of the intervals will cover the true population proportion.

Choose the theory that explains why the sampling distribution of the average is approximately the normal curve. * 1 point

- [ ] Law of Large Numbers
- [ ] Square Root Law
- [x] Central Limit Theorem

## Hypothesis Testing

For a particular hypothesis test, the p-value is 1/1000. This 1 point

For a particular hypothesis test, the p-value is 1/1000. This means that the chance the Null Hypothesis is true is 1/1000. * 1 point

- ○ True
- ◉ False

A p-value below 0.01 guarantees that our null hypothesis is valid/correct. * 1 point

- ○ True
- ◉ False

A copy of your responses will be emailed to zianfu@berkeley.edu.

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