Congratulations! You passed!

Grade received 100% **To pass** 80% or higher

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1. Let X be a sample of size 10 of a population and Y a sample of size 100 of the same population. About the confidence interval for the mean of this samples with the same significance level, it is correct to say: **1 / 1 point**

- (●) The confidence interval for the mean for the sample X is bigger than the confidence interval for the mean for the sample Y.
- ( ) The confidence interval for the mean for the sample X is smaller than the confidence interfal for the mean for the sample Y.
- ( ) The confidence interval for the mean for the sample X is the same than the confidence interfal for the mean for the sample Y.
- ( ) There isn't enough information to answer the question.

Correct
Correct! By the Central Limit theorem, the mean of X approaches to a normal distribution with standard deviation $\frac{\sigma}{\sqrt{10}}$ whereas the mean of Y approaches to a normal distribution with standard deviation of $\frac{\sigma}{\sqrt{100}}$.

2. Suppose you have a sample of 100 heights of individuals from a specific population. For this question, let's assume the standard deviation of the **population** is 1 cm. You have found that the **sample mean** of these 100 individuals is 175cm. Suppose you want to build a confidence interval with 99% of confidence level. **1 / 1 point**

What expression describes the margin of error for this specific task?

- ( ) $z_{0.01} \cdot \frac{1}{10}$
- ( ) $z_{0.005} \cdot \frac{1}{100}$
- (●) $z_{0.005} \cdot \frac{1}{10}$
- ( ) $z_{0.1} \cdot \frac{1}{100}$

Correct
Correct! As you've seen in the lectures, the formula for the margin of error is $z_{\alpha/2} \cdot \frac{\sigma}{\sqrt{n}}$.

3. To calculate one confidence interval for the mean of a population with unknown distribution, what assumptions we must assure (check all that apply)? **1 / 1 point**

- [x] The sample is a random sample.

Correct
Correct! Under the hood, it is used the Central Limit Theorem to compute the confidence interval, and the CLT only holds for random samples!

- [ ] We can only have a confidence interval if the population is known as having a Normal distribution.
- [x] If the distribution is not Normal, the sample size must be big enough (usually over 30).

Correct
Correct! The CLT says that the average sample mean **converges to** a normal distribution. It means that the bigger the sample, the closer it is to a normal, so we must assure that there are enough points for this appropximation be good enough.

- [ ] The sample must have mean 0 and standard deviation 1.

4. You have a sample of size 20 from a population with unknown mean and standard deviation. You measured that the **sample mean** $\overline{X} = 50$ and the **sample standard deviation**is $s = 10$. A confidence interval of 95% of confidence level is given by: **1 / 1 point**

Hint: $t_{0.025} = 2.093$

- ○ $(48.95, 51.05)$
- ◉ $(45.32, 54.68)$
- ○ $(45.2, 54.8)$
- ○ $(48.9, 51.1)$

Correct

Correct. Applying the formula $\left(\overline{X} - t_{\alpha/2} \cdot \frac{s}{\sqrt{n}}, \overline{X} + t_{\alpha/2} \cdot \frac{s}{\sqrt{n}}\right)$, you get the result.