

10.2 Confidence Intervals for a Difference in Means

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The screenshot shows a statistics quiz interface. At the top, there's a navigation bar with a bell icon, a dropdown menu showing "10.2 Confidence", and a user profile icon labeled "Michael Brodskiy". Below this is a breadcrumb trail: "Statistics AP-Thompson-Year-12462 (66479) > Activities and Due Dates > 10.2 Confidence interval for a difference in means".

The main interface is divided into two columns. The left column, titled "18 of 18 Questions", lists questions 1 through 8, each with a progress bar and a "Correct" status. The right column, titled "Question 18 of 18", contains the question text and five multiple-choice options.

Question 18 text: "Researchers suspect that Variety A tomato plants have a different average yield than Variety B tomato plants. To find out, researchers randomly select 10 Variety A and 10 Variety B tomato plants. Then the researchers divide in half each of 10 small plots of land in different locations. For each plot, a coin toss determines which half of the plot gets a Variety A plant; a Variety B plant goes in the other half. After harvest, they compare the yield in pounds for the plants at each location. The 10 differences (Variety A – Variety B) in yield are recorded. A graph of the differences looks roughly symmetric and unimodal with no outliers. The mean difference is $\bar{x}_{A-B} = 0.34$ and the standard deviation of the differences is $s_{A-B} = 0.83$. Let μ_{A-B} = the true mean difference (Variety A – Variety B) in yield for tomato plants of these two varieties.

A 95% confidence interval for μ_{A-B} is given by

Options:

- ☐ $0.34 \pm 1.812 \left(\frac{0.83}{\sqrt{10}} \right)$
- ☐ $0.34 \pm 2.262 (0.83)$
- ☐ $0.34 \pm 2.262 \left(\frac{0.83}{\sqrt{10}} \right)$
- ☐ $0.34 \pm 1.96 (0.83)$
- ☐ $0.34 \pm 1.96 \left(\frac{0.83}{\sqrt{10}} \right)$