

AP Statistics - Inference for the Difference of Two Means - Test

Common Core AP STAT 7.6, AP STAT 7.7, AP STAT 7.8, AP STAT 7.9, HSS-IC.B.5 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

This 45-minute test covers two-sample t intervals and tests, conditions, and the choice between independent and paired designs. Follow State, Plan, Do, Conclude and write each conclusion in context.

About this test

- Grade: AP Statistics
- Chapter: Inference for the Difference of Two Means
- Standards: AP STAT 7.6, AP STAT 7.7, AP STAT 7.8, AP STAT 7.9, HSS-IC.B.5
- Time: 45 minutes
- Total: 20 points

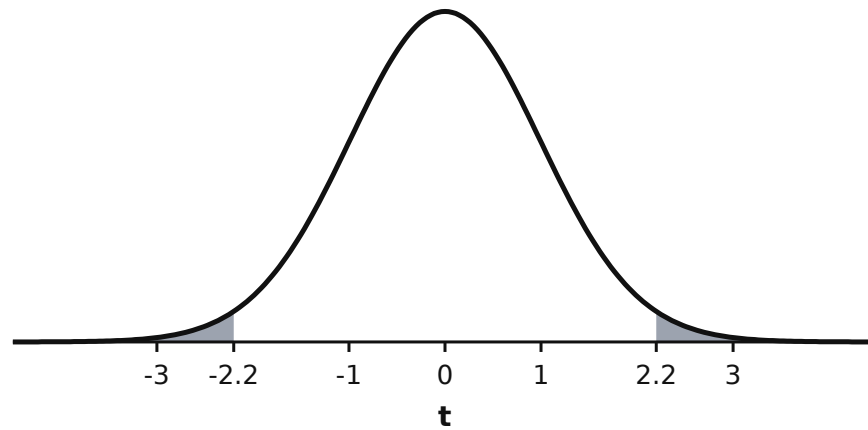
Question 1 - Two-sample interval [4 pts]

Group	n	Mean	Std dev
Online class	40	45.2	8.5
In-person class	45	41.0	9.1

Hours studied per week.

Independent random samples of students report their weekly study hours (see the table). (a) State and check the conditions. (1 point) (b) Construct a 95% confidence interval for $\mu_{\text{online}} - \mu_{\text{in-person}}$. (2 points) (c) Interpret the interval. (1 point)

Question 2 - Two-sample test [4 pts]



Two-sided p-value.

Using the same data, test whether the mean study times differ at $\alpha = 0.05$. (*Hypotheses 1, statistic 1, p-value 1, conclusion 1*)

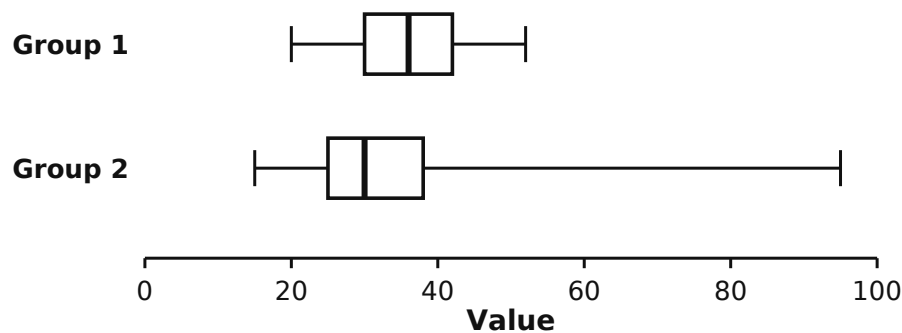
Question 3 - Paired or two-sample [3 pts]

For each study, name the correct procedure and the parameter: (a) the cholesterol of 15 patients before and after a diet; (b) the mean commute times of 30 randomly selected drivers and 30 randomly selected cyclists. (*Procedure 1 each, parameter 1 total*)

Question 4 - Standard error [2 pts]

Group 1: $n = 25$, $s = 6$. Group 2: $n = 36$, $s = 9$. Find the standard error of $\bar{x}_1 - \bar{x}_2$.

Question 5 - Normal condition [2 pts]



Two small samples.

The boxplots are from two small independent random samples ($n = 12$ each). Is a two-sample t procedure appropriate? Explain.

Question 6 - Interpret p-value [2 pts]

A two-sample t test of $H_0: \mu_1 = \mu_2$ gives $p = 0.003$. Interpret the p -value and state the conclusion at $\alpha = 0.01$.

Question 7 - Name the parameter [1 pt]

In the study of online and in-person students, define $\mu_1 - \mu_2$ in context.

Question 8 - Effect of changes [2 pts]

How does each change affect the width of a two-sample interval: (a) larger samples, (b) 99% instead of 95% confidence?