

AP Statistics - Inference for the Slope of a Regression Line - Test

Common Core AP STAT 9.1, AP STAT 9.2, AP STAT 9.3, AP STAT 9.4, AP STAT 9.5, AP STAT 9.6, HSS-ID.B.6 · maths-pdf.fr/en/

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

This 45-minute test covers LINER conditions, reading regression output, intervals and tests for a slope, and selecting an inference procedure. Follow State, Plan, Do, Conclude and answer in context.

About this test

- Grade: AP Statistics
- Chapter: Inference for the Slope of a Regression Line
- Standards: AP STAT 9.1, AP STAT 9.2, AP STAT 9.3, AP STAT 9.4, AP STAT 9.5, AP STAT 9.6, HSS-ID.B.6
- Time: 45 minutes
- Total: 20 points

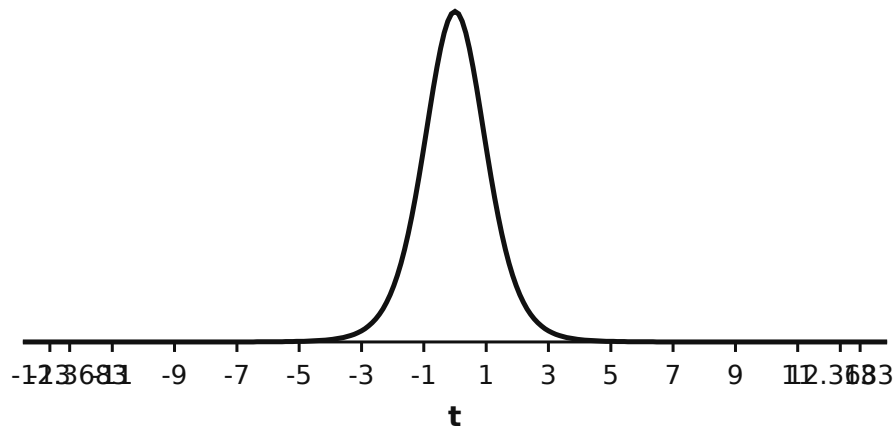
Question 1 - Interval for the slope [4 pts]

Predictor	Coef	SE Coef	T	P
Constant	9.800	1.022	9.59	0.000
Weeks	2.036	0.165	12.37	0.0000
S = 1.495	R-Sq = 95.0%			

Output for weight lifted.

A random sample of 10 athletes' weight lifted (pounds, y) was regressed on weeks of training (x). Use the output to (a) state the equation and interpret the slope (1 point) and (b) construct a 95% confidence interval for the true slope (2 points), and (c) interpret it (1 point).

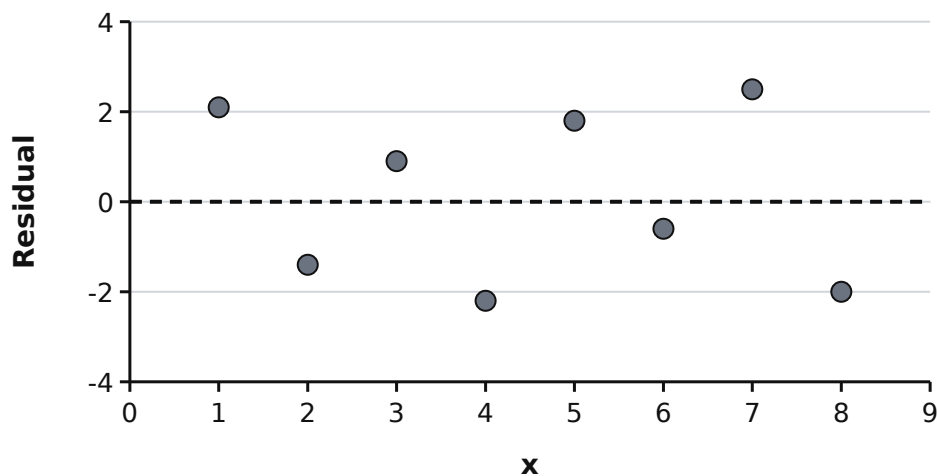
Question 2 - Test for the slope [4 pts]



Two-sided p-value.

With the same output, test $H_0: \beta = 0$ versus $H_a: \beta \text{ not equal to } 0$ at $\alpha = 0.05$.
(Hypotheses 1, conditions 1, t and p-value 1, conclusion 1)

Question 3 - Conditions [3 pts]



A residual plot.

(a) Which conditions can be checked with this residual plot? (2 points) (b) Does it suggest a problem? (1 point)

Question 4 - Interpret r squared [2 pts]

A regression of weight lifted on weeks of training has $R\text{-Sq} = 95.0\%$. Interpret it in context.

Question 5 - Reading output [2 pts]

An output line reads: Hours 0.84 0.31 2.71 0.014. Identify the slope, its standard error, the t statistic, and the p-value, and state the conclusion at $\alpha = 0.05$.

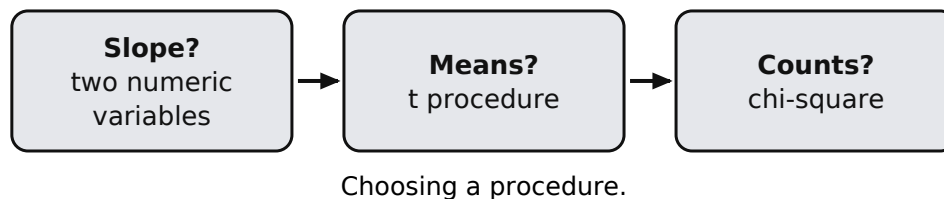
Question 6 - Interval and test [2 pts]

A 99% interval for the slope is (0.12, 0.88). Without further calculation, what is the conclusion of a two-sided test of $H_0: \beta = 0$ at $\alpha = 0.01$?

Question 7 - Degrees of freedom [1 pt]

A regression uses 25 data points. Find the degrees of freedom for inference about the slope.

Question 8 - Select a procedure [2 pts]



Name the procedure: (a) test if the proportion of voters favoring a measure is more than 0.5; (b) estimate the effect of one more hour of study on the mean score.