

AP Statistics · Regression Analysis · Test

Common Core AP Statistics Unit 5 (2026-27) · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This ap statistics two variable test checks regression analysis in 45 minutes, with 8 questions for a total of 20 points.

This test has 8 free-response questions worth 20 points in all, in the style of the AP Statistics exam. Show every calculation, write interpretations in context, and use complete sentences. A calculator is allowed. Plan on about 45 minutes.

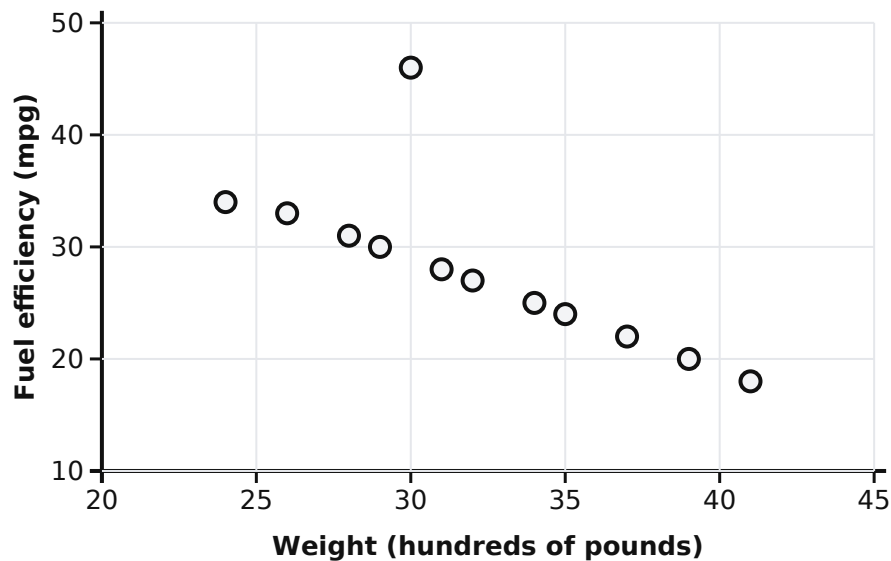
Test information

- **Grade:** AP Statistics
- **Chapter:** Regression Analysis
- **Common Core:** AP Statistics Unit 5 (2026-27)
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 3 pts; Question 2: 2 pts; Question 3: 3 pts; Question 4: 3 pts; Question 5: 3 pts; Question 6: 2 pts; Question 7: 2 pts; Question 8: 2 pts)

AP Statistics Two Variable Test: questions 1-5

Question 1: Describe a scatterplot (3 points)

The scatterplot shows the weight and fuel efficiency of 12 cars.



Weight and fuel efficiency of 12 cars.

Describe the association between weight and fuel efficiency in context. Address direction and form (1 point), strength (1 point), and any unusual point (1 point).

Question 2: Correlation (2 points)

The correlation between the weekly hours Mei spends on social media and her sleep time is $r = -0.85$ for a sample of 40 students.

- Describe the strength and direction of the association. (1 point)
- A teacher converts the sleep times from hours to minutes. What happens to r ? Explain. (1 point)

Question 3: Least-squares line from statistics (3 points)

Students recorded daily practice time x (minutes) and quiz score y . The summary statistics are $\bar{x} = 35$, $s_x = 10$, $\bar{y} = 72$, $s_y = 9$ and $r = 0.8$.

- Calculate the slope of the least-squares line. (1 point)
- Calculate the intercept. (1 point)
- Predict the quiz score for 50 minutes of practice. (1 point)

Question 4: Interpret the model (3 points)

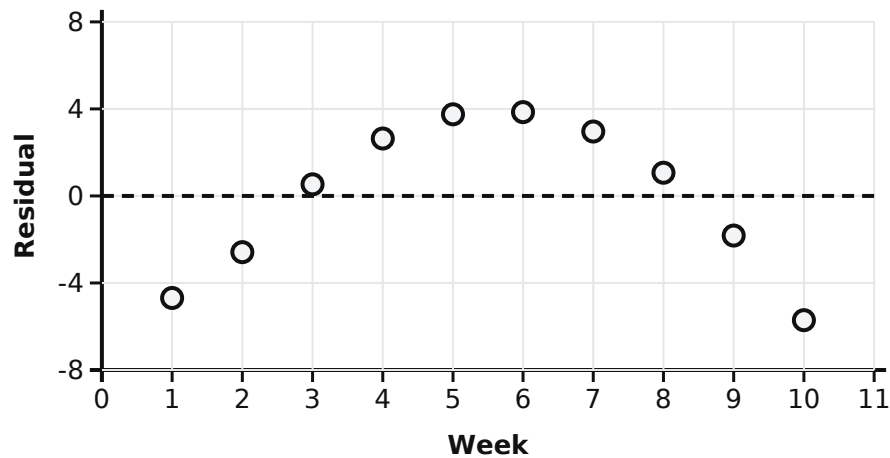
A regression of weight y (pounds) on height x (inches) for teenagers gives $\hat{y} = -140 + 4.0x$ with $r^2 = 0.64$. The heights in the data range from 55 to 72 inches.

- Interpret the slope in context. (1 point)
- Interpret the intercept, and say whether it is meaningful. (1 point)
- Interpret r^2 in context. (1 point)

Question 5: Residuals and residual plots (3 points)

A park recorded the number of visitors y (in tens) in each of 10 weeks x . The least-squares line is $\hat{y} = 5.8 + 0.891x$.

- In week 2 there were 50 visitors, so $y = 5$. Calculate the residual. (1 point)
- The residual plot is shown. Is a linear model appropriate? Explain. (2 points)



Residual plot for the least-squares line.

AP Statistics Two Variable Test: questions 6-8

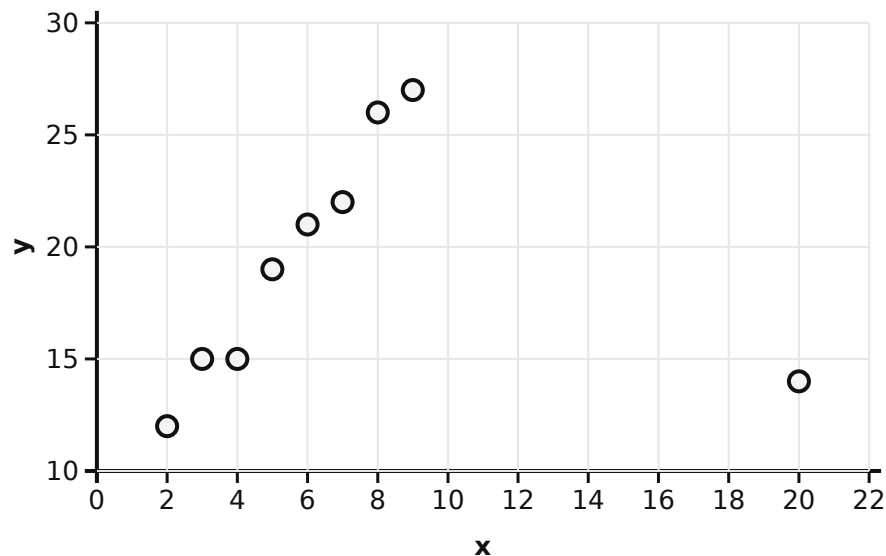
Question 6: Extrapolation (2 points)

A veterinarian models a puppy's weight y (pounds) by age x (weeks) with $\hat{y} = 4.2 + 1.9x$ using data from weeks 8 to 20. The vet uses the model to predict the weight at week 100.

- Calculate the prediction. (1 point)
- Explain why this prediction should not be trusted. (1 point)

Question 7: Influential point (2 points)

The scatterplot shows nine points.



Eight points follow an upward trend; the ninth is at (20, 14).

- Identify the point most likely to be influential and explain why. (1 point)
- If that point is removed, what will happen to the slope and to r ? (1 point)

Question 8: Computer output (2 points)

A regression of salary y (in thousands of dollars) on years of experience x for 25 employees gives the output shown.

Predictor	Coef
Constant	31.2
Years	2.45

$S = 3.1$ $R\text{-Sq} = 81\%$

- Write the regression equation and predict the salary for 10 years of experience. (1 point)
- Find the correlation r and interpret S in context. (1 point)

How to use this ap statistics two variable test

Take this ap statistics two variable test without notes, then grade it with the test answer key out of 20 points.

