

AP Statistics · Regression Analysis · Quiz

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

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

This ap statistics two variable quiz asks 10 multiple-choice questions on regression analysis, and each answer comes with a short explanation.

Ten multiple-choice questions on regression: explanatory and response variables, describing scatterplots, correlation, slope, r squared, residuals, residual plots, extrapolation and influential points. Each has exactly one correct answer, and the explanation names the common mistake.

AP StatisticsCommon Core: AP Statistics Unit 5 (2026-27)

Questions

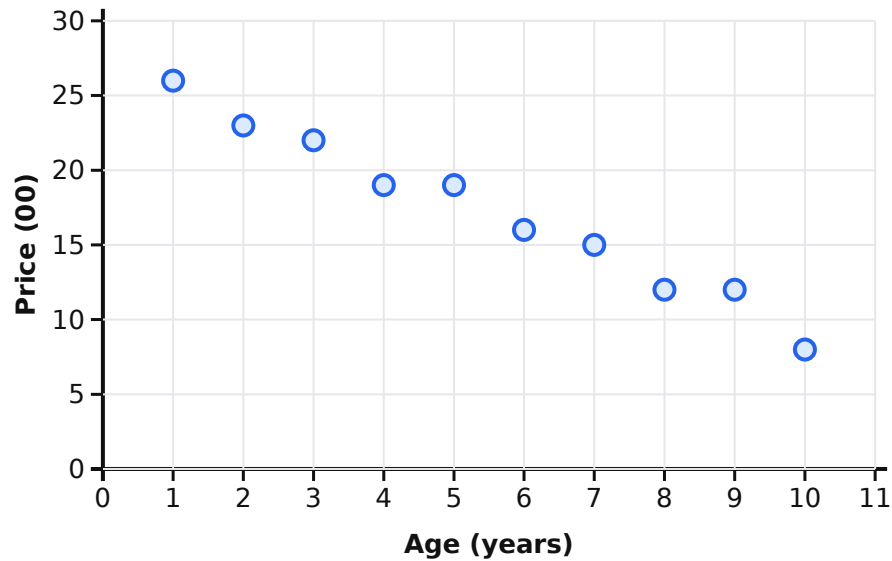
Question 1

A researcher predicts a student's final exam score from the number of hours the student studied. Which variable is the response variable?

- A. The final exam score
- B. The number of hours studied
- C. The student's name
- D. The correlation r

Question 2

Which description of the scatterplot is best?



Price and age of 10 used cars.

- A. Positive, linear and strong
- B. Negative, curved and weak
- C. Negative, linear and strong
- D. Positive, linear and weak

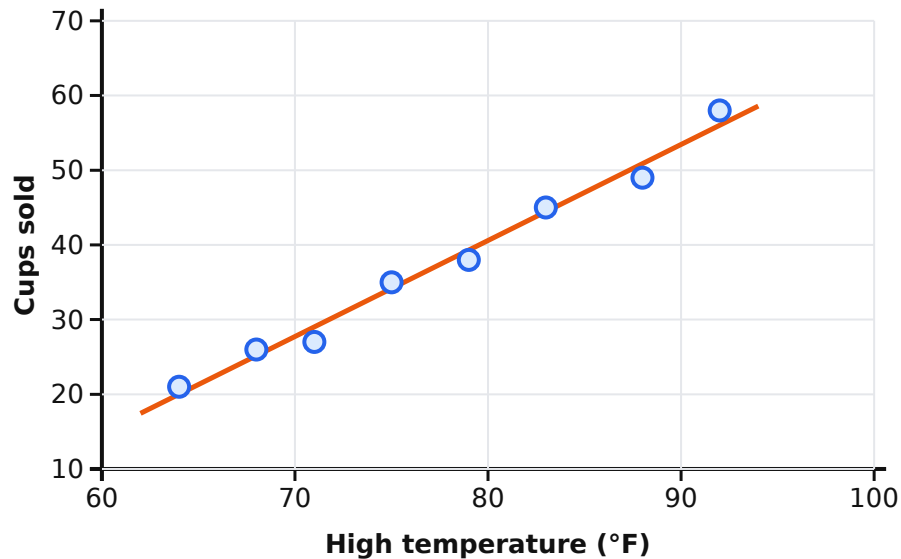
Question 3

Which correlation indicates the strongest linear relationship?

- A. $r = -0.92$
- B. $r = 0.80$
- C. $r = 0.15$
- D. $r = -0.50$

Question 4

The line is $\hat{y} = -62.26 + 1.286x$, where x is the high temperature in °F and y is cups sold. What does the slope mean?



Least-squares line for lemonade sales: $\hat{y} = -62.26 + 1.286x$.

- A. Each additional degree is associated with about 1.286 more cups predicted
- B. When the temperature is 0 °F, 1.286 cups are sold
- C. 1.286% of the variation in cups is explained by temperature
- D. The temperature rises by 1.286 degrees for each cup sold

Question 5

A regression has $r^2 = 0.49$. Which statement is correct?

- A. 49% of the data points lie on the line
- B. 49% of the variation in y is explained by the linear relationship with x
- C. The correlation is 0.49
- D. y is predicted correctly 49% of the time

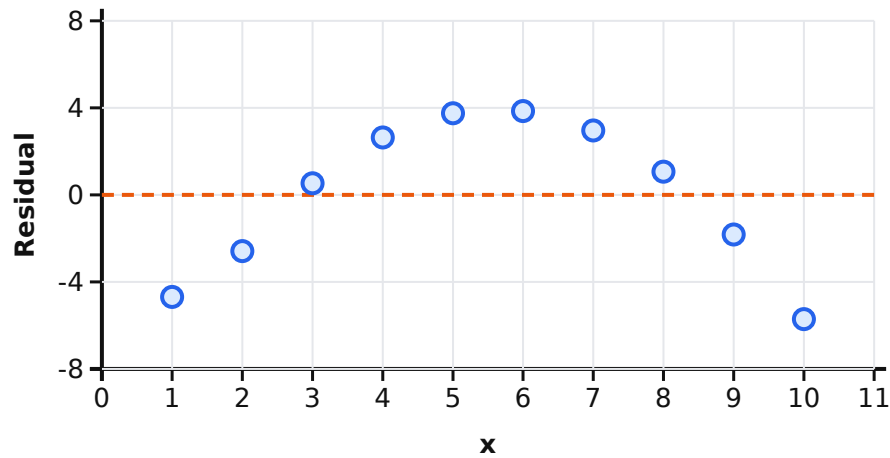
Question 6

The line predicts $\hat{y} = 47$ for a point whose actual value is $y = 52$. What is the residual?

- A. -5
- B. 5
- C. 99
- D. 1.1

Question 7

What does this residual plot indicate?



Residual plot for a least-squares line.

- A. A linear model is appropriate because the residuals sum to zero
- B. A linear model is appropriate because the residuals vary randomly
- C. The correlation must be exactly 0
- D. A linear model is not appropriate because there is a curved pattern

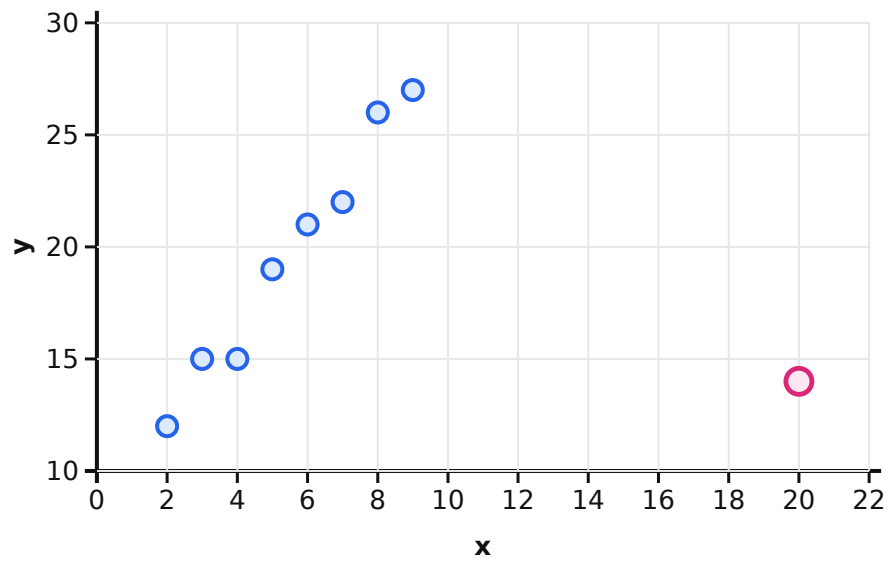
Question 8

A line fit to ages 5 to 12 predicts a child's height. A student uses it to predict the height at age 40. This is an example of

- A. Interpolation, which is reliable
- B. A residual calculation
- C. Computing the correlation
- D. Extrapolation, which is unreliable

Question 9

What would most likely happen to the slope of the least-squares line if the circled point at (20, 14) were removed?



One point lies far to the right of the others.

- A. The slope would decrease
- B. The slope would increase
- C. The slope would stay the same
- D. The slope would change sign

Question 10

For a data set, $r = 0.6$, $s_x = 5$ and $s_y = 10$. What is the slope of the least-squares line?

- A. 0.3
- B. 3.0
- C. 1.2
- D. 0.6

Answer key

1. **A** – The response variable is the one being predicted, the exam score. The hours studied is the explanatory variable.
2. **C** – The points fall from left to right along a nearly straight line, so the association is negative, linear and strong. A rising pattern would be positive.
3. **A** – Strength depends on how far r is from 0, not on the sign. -0.92 is the closest to -1 or 1 . A negative sign shows direction, not weakness.
4. **A** – The slope is the predicted change in y for a 1-unit increase in x . The other options describe the intercept, r squared or reverse the variables.
5. **B** – r squared is the proportion of variation in y accounted for by the line. Taking the square root gives $r = 0.7$ (with the sign of the slope), not 0.49 .
6. **B** – Residual = actual - predicted = $52 - 47 = 5$. Reversing the subtraction gives the wrong sign, -5 .
7. **D** – A clear curve in the residual plot means the form is not linear. Residuals from a least-squares line always sum to 0, so that fact says nothing about fit.
8. **D** – Age 40 is far outside the data (5 to 12), so using the line there is extrapolation and the pattern may not continue.
9. **B** – The point at (20, 14) is far to the right and low, so it flattens the line. Without it the line follows the rising points and is steeper, but still positive.
10. **C** – $b = r(s_y/s_x) = 0.6(10/5) = 1.2$. Inverting the ratio gives 0.3 .

How does this quiz work?

Read each question, choose one answer among A, B, C and D, then check it: a short explanation appears after every answer. Your score out of 10 is shown at the end, and you can restart the quiz as often as you like.

What should you review before the quiz?

Reread the key facts of the lesson and the worked example. If a question is hard, go back to the matching part of the lesson, then try the quiz again. Write your work on scrap paper: most mistakes come from skipping a step, not from the idea itself.

Remember:

- Describe a scatterplot by direction, form, strength and unusual points, in context.
- The correlation r is between -1 and 1 , has no units, and measures only linear association.
- The least-squares line has slope $b = r(s_y / s_x)$ and passes through $(\bar{x}, \bar{y})$.
- A residual is $y - \hat{y}$; a residual plot with no pattern supports a linear model.
- r squared is the percent of the variation in y explained by the linear relationship with

x.

How to use this ap statistics two variable quiz

Retake this ap statistics two variable quiz until every answer is right, then move on to the worksheet and the test.

