

Algebra 1 - Scatter Plots, Lines of Fit and Two-Way Tables - Quiz

Common Core S-ID.B.5, S-ID.B.6, S-ID.C.7, S-ID.C.8, S-ID.C.9 · maths-pdf.fr/en/

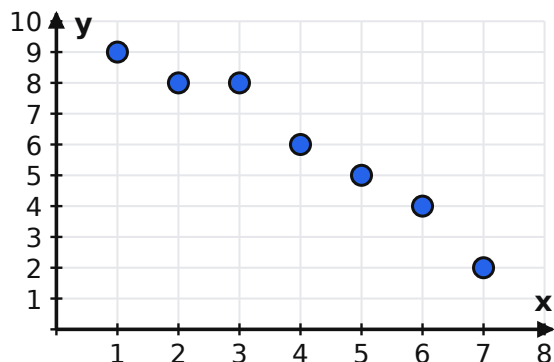
Name: _____ Class: _____ Date: ____/____/____

Try these 10 multiple-choice questions on scatter plots, lines of fit, and two-way tables (S-ID.B.5, S-ID.B.6, S-ID.C.7, S-ID.C.8, and S-ID.C.9). Pick one answer for each question, then read the explanation to see why it is right and which mistake the other choices come from. Retake the quiz until every answer feels easy.

Algebra 1 · Common Core State Standards: **S-ID.B.5, S-ID.B.6, S-ID.C.7, S-ID.C.8, S-ID.C.9**

Questions

Question 1



What kind of association does the scatter plot show?

- A. Negative association
- B. Positive association
- C. No association
- D. Perfect correlation

Question 2

The line of fit for height of a plant (cm) against days is $y = 1.5x + 4$. What does 1.5 mean?

- A. The plant starts at 1.5 cm
- B. The plant grows about 1.5 cm per day

- C. The plant grows 4 cm per day
- D. The plant is 1.5 cm after 4 days

Question 3

What does the y-intercept 4 mean in $y = 1.5x + 4$ for the plant data?

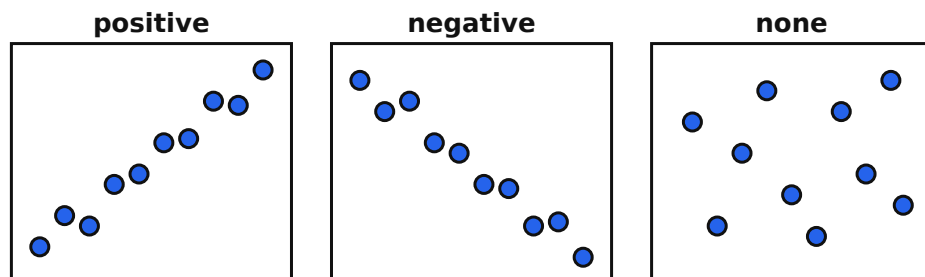
- A. The plant grows 4 cm per day
- B. The plant stops growing at 4 cm
- C. The plant is 4 days old
- D. The predicted height at day 0 is 4 cm

Question 4

A data point is at $(5, 20)$ and the line of fit predicts 17 for $x = 5$. What is the residual?

- A. 3
- B. -3
- C. 17
- D. 37

Question 5



Which panel has a correlation coefficient closest to 0?

- A. The left panel (positive)
- B. The middle panel (negative)
- C. All three panels
- D. The right panel (none)

Question 6

What does a correlation coefficient of $r = -0.9$ indicate?

- A. A weak negative linear relationship
- B. A strong negative linear relationship
- C. A strong positive linear relationship
- D. No linear relationship

Question 7

Sales of sunscreen and sales of sunglasses are strongly correlated. What is the best conclusion?

- A. Buying sunscreen causes people to buy sunglasses
- B. Buying sunglasses causes people to buy sunscreen
- C. A lurking variable such as sunny weather may explain both
- D. The correlation must be a mistake

Question 8

	Cat	Dog	Total
Boys	12	18	30
Girls	20	10	30
Total	32	28	60

What is the conditional relative frequency of dog owners among the boys?

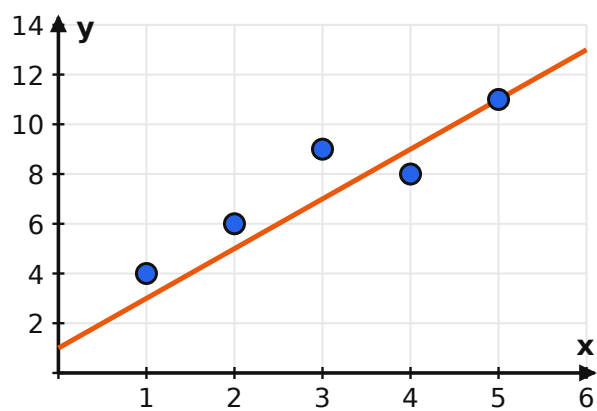
- A. 30%
- B. 60%
- C. 28%
- D. 45%

Question 9

A line of fit built from data with x between 5 and 20 is used to predict at $x = 80$. What is this called?

- A. Extrapolation, which can be unreliable
- B. Interpolation, which is reliable
- C. A residual
- D. A correlation

Question 10



The line of fit is $y = 2x + 1$. The point $(3, 9)$ lies above the line. What is its residual?

- A. -2
- B. 7
- C. 2
- D. 9

Answers

1. **A** - The points go down as x increases.
2. **B** - The slope is the rate of change: the predicted height rises 1.5 cm for each day.
3. **D** - The y-intercept is the predicted value when $x = 0$.
4. **A** - Residual = actual - predicted = $20 - 17 = 3$.
5. **D** - The right panel's points are scattered with no linear trend, so r is near 0.
6. **B** - The sign is negative, so y tends to decrease as x increases, and 0.9 is close to 1, so the relationship is strong.
7. **C** - Correlation does not prove causation. Sunny weather increases both.
8. **B** - Among the 30 boys, 18 prefer dogs: $18/30 = 60\%$. Dividing by the grand total gives the joint frequency 30%.
9. **A** - Predicting far outside the range of the data is extrapolation.
10. **C** - The predicted value at $x = 3$ is 7, so the residual is $9 - 7 = 2$. Points above the line have positive residuals.

Remember

- A scatter plot can show positive, negative, or no association.
- In a line of best fit, the slope is the rate of change and the intercept is the predicted value at $x = 0$.
- Residual = actual value - predicted value.
- The correlation coefficient r is between -1 and 1; correlation does not imply causation.
- Two-way tables give joint, marginal, and conditional relative frequencies.