

AP Statistics - Scatterplots and Correlation - Quiz

Common Core AP STAT 2.4, AP STAT 2.5, HSS-ID.B.6, HSS-ID.C.8, HSS-ID.C.9 · maths-pdf.fr/en/

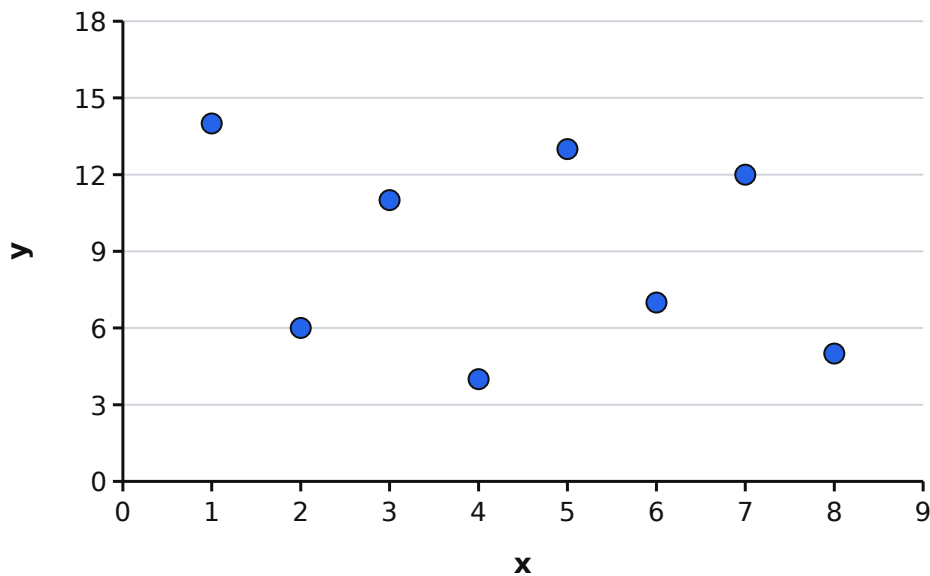
Name: _____ Class: _____ Date: ____/____/____

Ten multiple-choice questions test the meaning of r and the cautions in interpreting scatterplots. Read each explanation to see why the wrong choices are tempting.

AP Statistics · Common Core State Standards: **AP STAT 2.4, AP STAT 2.5, HSS-ID.B.6, HSS-ID.C.8, HSS-ID.C.9**

Questions

Question 1

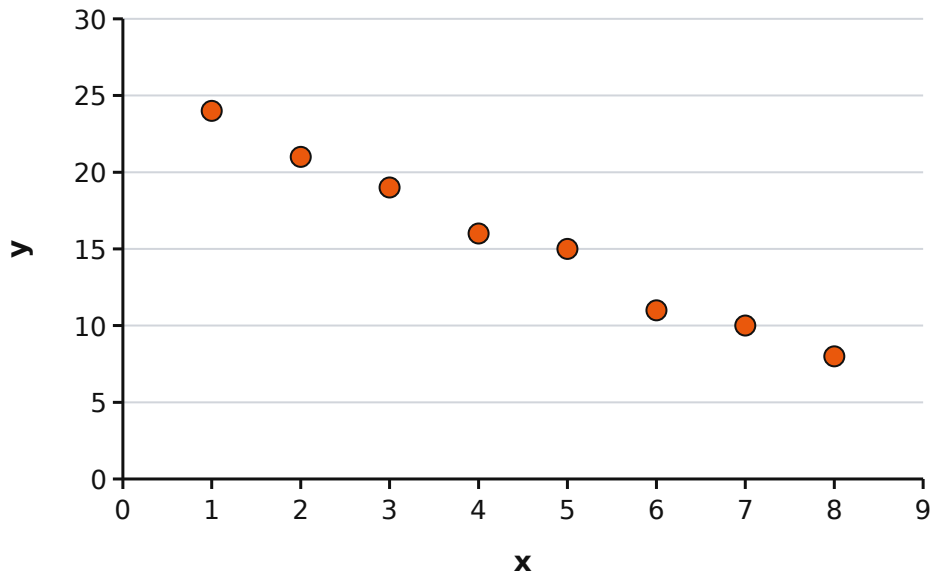


No pattern.

The best estimate of r for this scatterplot is:

- A. About 0.9
- B. About 0
- C. About -0.9
- D. About 1.5

Question 2



Falling pattern.

This plot suggests:

- A. a strong negative linear association
- B. a strong positive linear association
- C. a curved association
- D. no association

Question 3

Which value is impossible for a correlation?

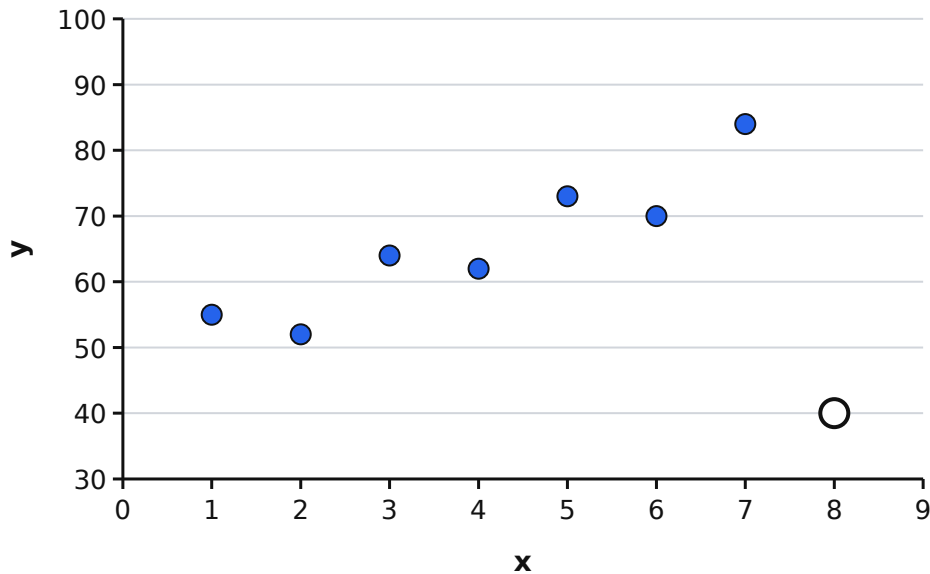
- A. -0.4
- B. 0
- C. -1
- D. 1.3

Question 4

The correlation between x and y is 0.6. What is the correlation if all x values are multiplied by 10?

- A. 0.6
- B. 6
- C. 0.06
- D. 60

Question 5



One unusual point.

How does the unusual point affect r ?

- A. It raises r
- B. It does not affect r
- C. It makes r negative
- D. It lowers r compared with the other points

Question 6

A strong positive correlation between two variables shows:

- A. that x causes y
- B. that y causes x
- C. an association, not necessarily causation
- D. that the relation is curved

Question 7

Which pair most likely has a negative association?

- A. Height and arm length
- B. Hours of TV per week and test scores
- C. Age of child and shoe size
- D. Temperature and ice cream sales

Question 8

A correlation of -0.8 compared with 0.6 is:

- A. stronger
- B. weaker
- C. the same strength

D. impossible

Question 9

A scatterplot shows a perfect U shape. The correlation will be about:

- A. 1
- B. -1
- C. 0
- D. 0.5

Question 10

In a scatterplot, the response variable belongs on the:

- A. horizontal axis
- B. vertical axis
- C. either axis
- D. a third axis

Answers

1. **B** – There is no linear pattern, so r is near 0. r can never be 1.5 because $|r| \leq 1$.
2. **A** – The points fall in a nearly straight pattern, so the direction is negative and the strength is high.
3. **D** – r must lie between -1 and 1 inclusive.
4. **A** – A linear change of units does not change r .
5. **D** – The point lies far from the otherwise linear pattern and increases the scatter, so r decreases.
6. **C** – Correlation does not prove causation; lurking variables could be responsible.
7. **B** – More hours of TV go with lower scores in many studies. The other pairs usually rise together.
8. **A** – Strength depends on $|r|$, and 0.8 is greater than 0.6.
9. **C** – Positive and negative parts cancel, so the linear correlation is near 0 although the relationship is strong.
10. **B** – The explanatory variable is on the x-axis, and the response variable goes on the y-axis.

Remember

- Explanatory variable on the x-axis, response variable on the y-axis.
- Describe direction, form, strength, and unusual features in context.
- $-1 \leq r \leq 1$; r near 0 means little linear association, not no association.
- r is unitless, unchanged by swapping x and y or by linear changes of units, and not resistant.
- Correlation does not imply causation; look for lurking variables.