Bivariate data and scatter plots

6 questions | 18 marks

Equivalent correct methods earn the corresponding marks.

1. For the supplied practice-hours table, write all five ordered pairs. [3 marks]

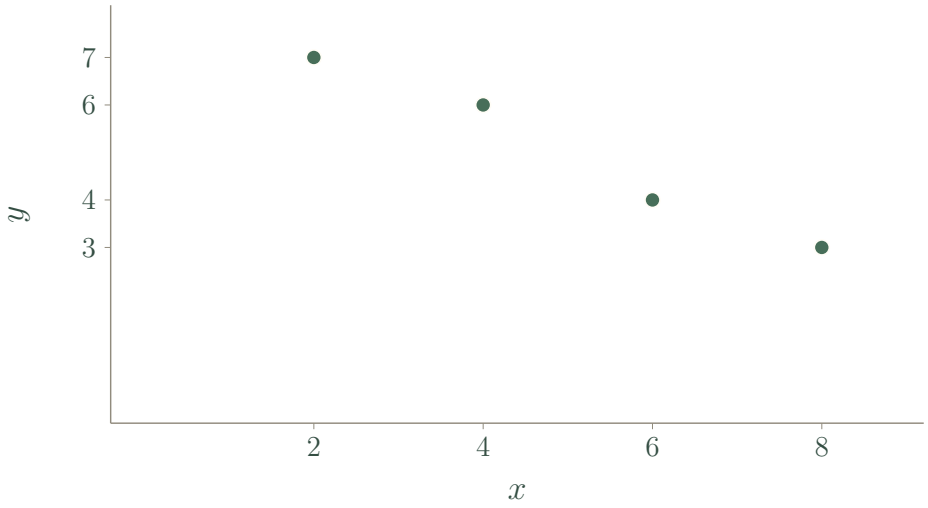
Paired measurements

Practice hours	Quiz score
1	3
2	4
3	4
4	6
5	8

Read each row across without reordering either column.

Answer: $(1, 3), (2, 4), (3, 4), (4, 6), (5, 8)$.

2. The supplied scatter plot represents $(2,7),(4,6),(6,4),(8,3)$. Check the point for $x=6$ and state the overall direction. [3 marks]



Read the response at $x=6$.

The points fall overall as x increases.

Answer: The point is $(6,4)$; negative association.

3. Five measurements are $(1,4),(1,4),(2,5),(3,7),(4,8)$. Why may only four dots be visible? [3 marks]

Count observations separately from distinct locations.

Two individuals have identical coordinates.

Answer: The repeated pair $(1,4)$ overlaps.

4. You want to study whether bicycle mass is related to stopping distance. Name two numerical measurements to collect for each bicycle and state units. [3 marks]

Keep the same bicycle’s two values in the same row.

Use a controlled braking procedure so distances are comparable.

Answer: For each bicycle: mass in kg and stopping distance in m.

5. For a survey of favourite colour and height, is an ordinary numerical scatter plot suitable? Explain. [3 marks]

A scatter plot requires two numerical variables.

Height can instead be compared across colour groups using a suitable grouped display.

Answer: No. Favourite colour is categorical, not a numerical coordinate.

6. A graph has axes called x and y but no units. Give two improvements before presenting it to readers. [3 marks]

Readers must know what each position measures.

Numerical scales must be evenly spaced and cover the observations.

Answer: Use descriptive variable names and units; use clear numerical tick scales.