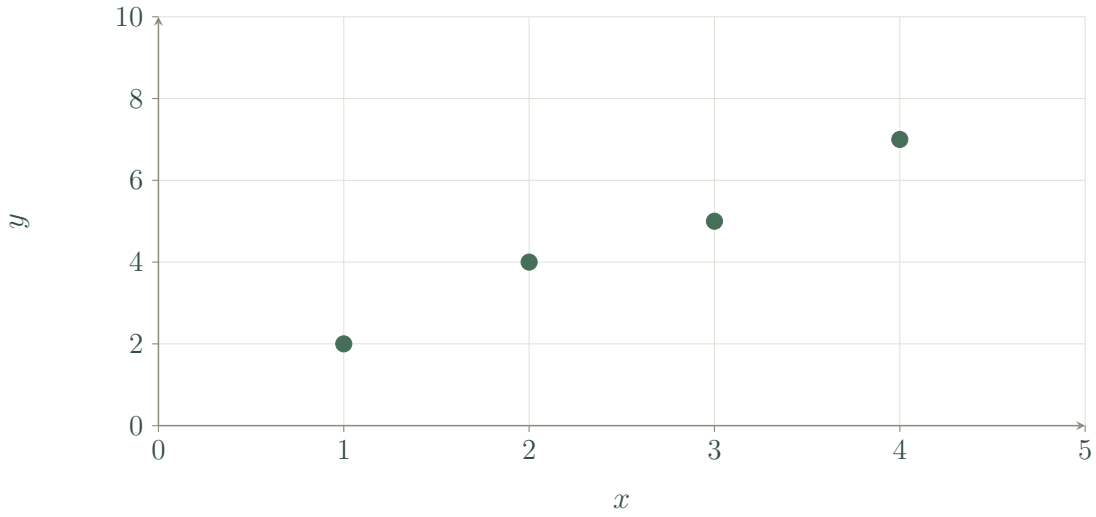
Scatterplots

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. Plot the pairs $(1, 2)$, $(2, 4)$, $(3, 5)$, $(4, 7)$ on labelled axes. [3 marks]



Choose scales covering all values.

Keep each x-value with its original y-value.

Answer: Four separate points at the stated coordinates.

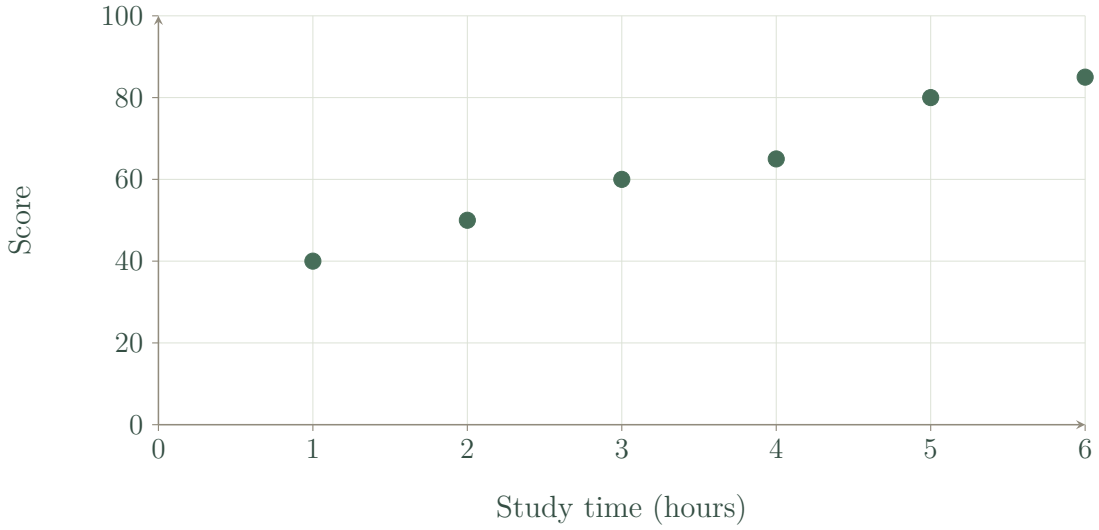
2. An experiment records water temperature after different heating times. Choose the horizontal variable. [2 marks]

Time is the explanatory/input variable in this experiment.

Temperature is the response.

Answer: Heating time.

3. Read the score at study time 4 hours from the supplied plot. [2 marks]



Locate $x = 4$.

Read the corresponding observation's y-coordinate.

Answer: 65

4. Why can height and shoe size be shown in a scatterplot but favourite colour and shoe size cannot be plotted the same way without extra conventions? [2 marks]

Height and shoe size have numerical coordinates.

Colour labels do not have a natural numerical scale.

Answer: A standard scatterplot needs two numerical variables; favourite colour is categorical.

5. A student sorts both columns independently before plotting. Explain the statistical error. [2 marks]

Each row belongs to one individual.

Independent sorting reassigns responses.

Answer: The pairings are changed, so the plot no longer represents the observations.

6. A study covers ages 12-16. Why is a prediction for age 40 unsafe? [2 marks]

The relationship may change beyond the sample's ages.

A scatterplot does not justify unlimited extrapolation.

Answer: It is far outside the observed range.