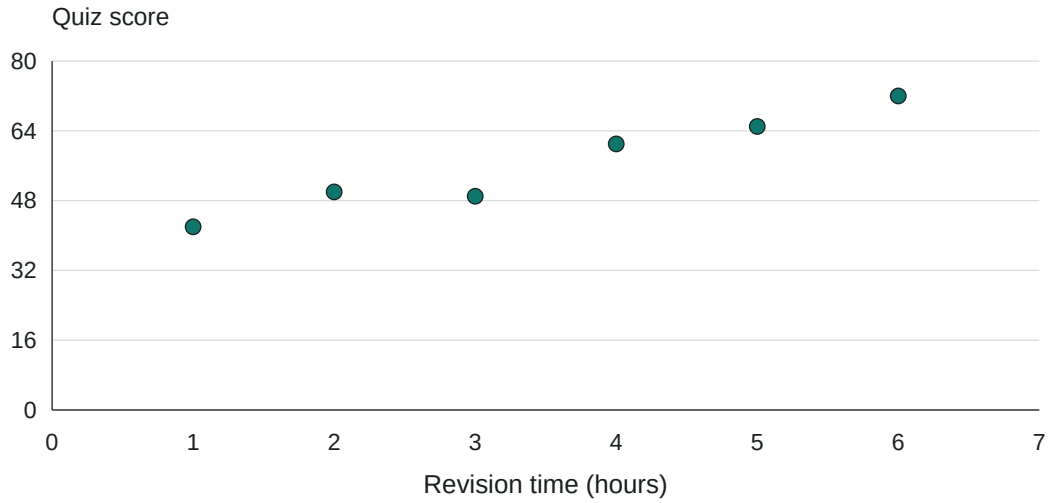
Scatter plots: worked examples

Name: _____ Class: _____ Date: _____

A scatter plot places one point for each pair of numerical measurements. An upward pattern suggests positive correlation; a downward pattern suggests negative correlation. Correlation describes an association and does not, by itself, establish cause and effect.

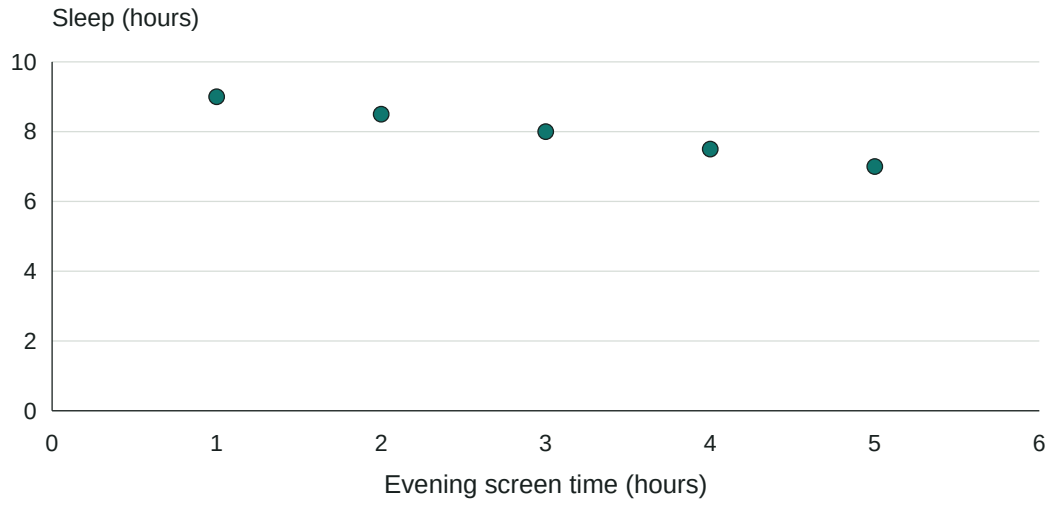
Study time and quiz score



Six fictional pupils report revision time before the same quiz. Each row is one pupil; the scores are out of 100.

Paired values (x, y): (1, 42), (2, 50), (3, 49), (4, 61), (5, 65), (6, 72)

A downward pattern can be strong



This deliberately simple fictional example pairs evening screen time with hours of sleep. It illustrates direction; it is not a health study.

Paired values (x, y): (1, 9), (2, 8.5), (3, 8), (4, 7.5), (5, 7)

Original fictional data. Full explanations and copyable datasets: chartmaker.tools/lessons/scatter-plots-and-correlation

Five practice questions

Student page 2 of 2 | Use the examples on page 1. Suggested time: 25 minutes.

Name: _____ Class: _____

1. What does the point (4, 61) mean in the revision example?

2. Describe the overall direction of the revision-score relationship.

3. Is the screen-time example positive or negative? Is its visual pattern weak or strong?

4. Must every point rise as x increases for a positive correlation to exist? Use example 1.

5. Does the first scatter plot prove that an extra hour of revision causes a higher score? Explain.

Teacher answers and working

Scatter Plots and Correlation: Worked Examples and Practice Questions

Keep this page separate when handing out student pages 1-2.

Question 1

One fictional pupil revised for 4 hours and scored 61 on the quiz.

Question 2

Positive: quiz score tends to increase as revision time increases.

Question 3

It is negative and visually strong. The points lie exactly along a downward straight line.

Question 4

No. The score falls from 50 at 2 hours to 49 at 3 hours, while the overall pattern still rises.

Question 5

No. It shows an association in six fictional observations. Other factors and the study design would need investigation before making a causal claim.

Teaching notes

Separating measurements that belong to the same observation.

Interpreting negative correlation as a weak relationship.

Claiming causation, or extrapolating far beyond the observed values.

All data is fictional. Accept equivalent notation and explanations. Encourage students to show calculations, units and the conventions used.