

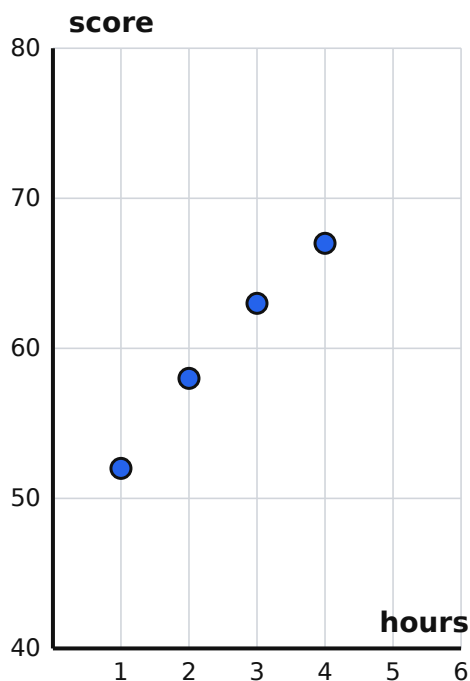
Grade 8 - Scatter Plots and Association - Answer Key

Common Core 8.SP.A.1, 8.SP.A.2 · maths-pdf.fr/en/

This answer key gives a full worked solution for each of the 21 problems on the scatter plots and association worksheet (Common Core 8.SP.A.1 and 8.SP.A.2). Compare each step with your own work, not only the final answer, and note any step where your method differed.

Grade 8 · Common Core State Standards: **8.SP.A.1, 8.SP.A.2**

Exercise 1 - Plot the data



Hours on the horizontal axis.

The explanatory variable (hours) goes on the x-axis and the score goes on the y-axis.

Points (1, 52), (2, 58), (3, 63), (4, 67)

Exercise 2 - Describe the association

As the hours increase, the scores tend to increase, and the points are near a line.

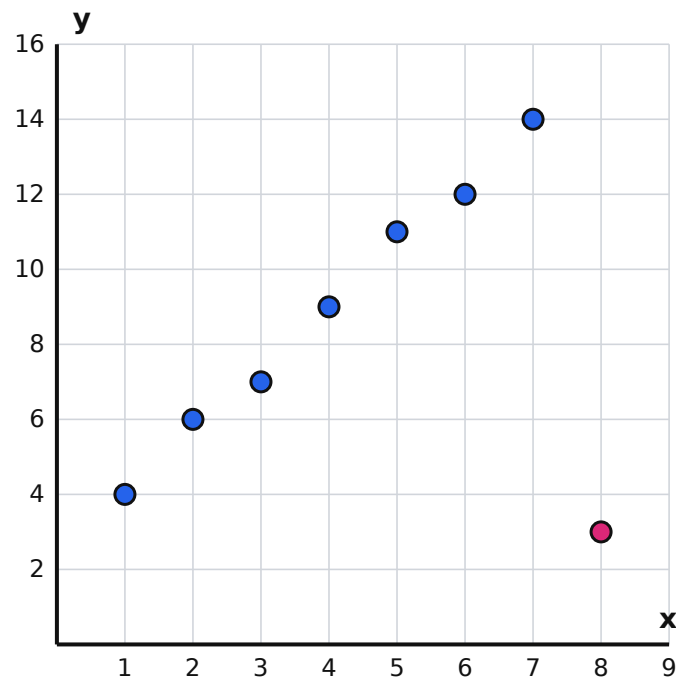
Positive, linear, strong

Exercise 3 - Three plots

Left: rising points. Middle: falling points. Right: no pattern.

Positive, negative, no association

Exercise 4 - Find the outlier



The outlier is (8, 3).

The first seven points rise steadily, but (8, 3) is far below the pattern.

(8, 3)

Exercise 5 - Linear or nonlinear

The points rise and then fall, forming a curve. They do not follow a straight line.

Nonlinear

Exercise 6 - Shoe size and height

Taller people usually have bigger feet, so both tend to increase together.

Positive association

Exercise 7 - Cocoa sales

On colder days more cocoa is sold, so as the temperature rises, sales fall.

Negative association

Exercise 8 - No association

There is no reason for the month to influence the score, so the points would show no pattern.

No association

Exercise 9 - Clusters

One group is near (2, 3) and the other near (8, 8). There is no cluster in the middle.

Two clusters

Exercise 10 - Trend line slope

$$\frac{90-52}{8-1} = \frac{38}{7} \approx 5.4.$$

About 5.4: each extra hour of study adds about 5.4 points

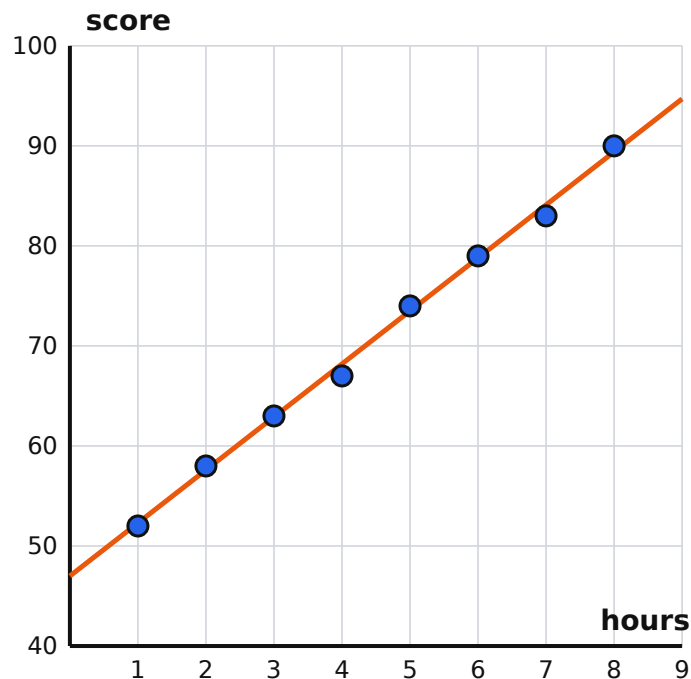
Exercise 11 - Equation of a trend line

At $x=2$: $5.3 \cdot 2 + 47 = 57.6$, close to 58.

At $x=6$: $5.3 \cdot 6 + 47 = 78.8$, close to 79.

Yes, the line is close to both points

Exercise 12 - Predict



The line at 7 hours is about 84.

$$y = 5.3 \cdot 7 + 47 = 37.1 + 47 = 84.1.$$

about 84

Exercise 13 - Car value

As the age increases, the value decreases. The points follow a line.

Negative, linear

Exercise 14 - Compare two lines

At $x = 8$: A gives 89.4, near the data point 90. B gives 64, far below 90.

Line A fits better

Exercise 15 - Ice cream sales

As the temperature rises, the number of cones sold rises in a nearly straight pattern.

Positive linear association

Exercise 16 - Ice cream trend line

$$y = 1.2 \cdot 100 - 53 = 67.$$

about 67 cones

Exercise 17 - Basketball practice

Both increase together, positive association.

$$\text{Slope} = \frac{18-8}{50-10} = 0.25 \text{ more free throws per minute.}$$

Positive; slope about 0.25

Exercise 18 - Effect of an outlier

The outlier pulls the line down, so the line does not follow the steady rise of the other points.

The outlier distorts the trend line

Exercise 19 - Cause and effect

No. Both increase with age, so age explains the association. Association does not prove causation.

No; age is a hidden factor

Exercise 20 - Choose the best description

Falling points mean negative, and points close to the line mean strong.

(b) strong negative

Exercise 21 - Explain a good fit

Most points are close to the line, and the points are spread above and below the line in about

equal numbers.

Points near the line, balanced above and below