

Algebra 1 - Scatter Plots, Lines of Fit and Two-Way Tables - Test Answer Key

Common Core S-ID.B.5, S-ID.B.6, S-ID.C.7, S-ID.C.8, S-ID.C.9 · maths-pdf.fr/en/

Use this key to grade the scatter plots test. Each solution shows the full work, and the scoring note explains how the points are awarded. The test totals 20 points. Give partial credit for correct steps, even when the final answer is wrong.

Algebra 1 · Common Core State Standards: **S-ID.B.5, S-ID.B.6, S-ID.C.7, S-ID.C.8, S-ID.C.9**

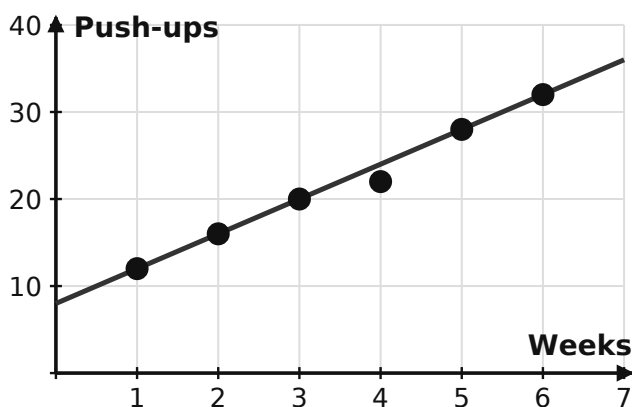
Question 1 - Describe the association [2 pts]

The points rise from left to right and lie close to a line.

Strong positive association

Scoring: 1 point for the direction; 1 point for the strength.

Question 2 - Write the line of fit [2 pts]



The line $y = 4x + 8$ fits the trend.

Slope: $\frac{32-12}{6-1} = 4$. Then $12 = 4(1) + b$, so $b = 8$.

$$y = 4x + 8$$

Scoring: 1 point for the slope; 1 point for the equation.

Question 3 - Interpret the model [2 pts]

Slope 4: the model predicts 4 more push-ups for each additional week.

Intercept 8: the predicted number of push-ups before training begins (0 weeks).

4 push-ups per week; 8 at the start

Scoring: 1 point for each interpretation in context.

Question 4 - Predict and find a residual [2 pts]

Predicted: $4(3)+8=20$. Residual: $23-20=3$.

Predicted 20; residual 3

Scoring: 1 point for the prediction; 1 point for the residual.

Question 5 - Correlation coefficient [2 pts]

(a) Close to -1: a strong negative linear relationship.

(b) Close to 0: a weak positive linear relationship.

strong negative; weak positive

Scoring: 1 point for each description.

Question 6 - Causation [2 pts]

No. Larger fires lead to more fire trucks being sent, and larger fires cause more damage. The size of the fire is a lurking variable, so the correlation does not show causation.

Scoring: 1 point for answering no; 1 point for a lurking variable explanation.

Question 7 - Two-way table [3 pts]

a) $\frac{40}{100}=40\%$.

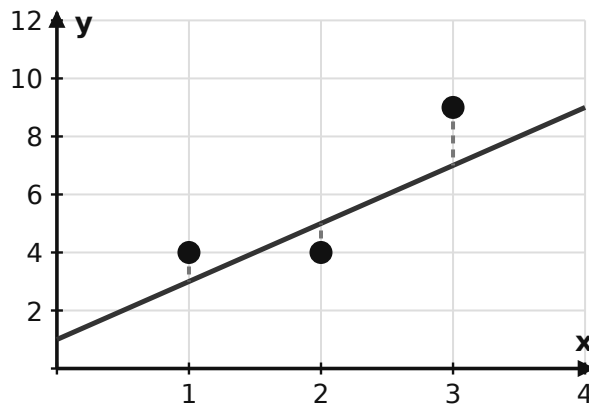
b) $\frac{50}{100}=50\%$.

c) $\frac{30}{40} = 75\%$.

40%; 50%; 75%

Scoring: 1 point per part.

Question 8 - Residuals [3 pts]



Dashed segments show the residuals.

a) Predicted: 3, 5, 7.

b) Residuals: $4 - 3 = 1$, $4 - 5 = -1$, $9 - 7 = 2$.

c) The largest absolute residual is 2, at (3, 9).

3, 5, 7; 1, -1, 2; (3, 9)

Scoring: 1 point per part.

Question 9 - Extrapolation [2 pts]

At $x = 40$: $0.5(40) + 10 = 30$, which is within the data range, so it is reasonable (interpolation).

At $x = 200$: this is far outside the data (extrapolation), so the prediction may not be reliable.

x = 40 reasonable (30); x = 200 unreliable

Scoring: 1 point for each correct judgment with a reason.

Total

20 points