

Algebra 1
Correlation and Linear Association

Correlation and Linear Association | A1-U10-P08
96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
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Topic focus
Across 96 tasks this topic asks for evidence-based linear association statement.
8 PDFs and a README; 140 buyer pages.

Algebra 1

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Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. Give the whole requested response, including any reasoning the question asks for.

Technology reports $r = 1.0$ for two nonconstant measurements. All points lie on a rising line. Interpret sign and magnitude as linear association, using context-calibrated language rather than a universal cutoff. State the exact implication. _____ Bank label: _____	Technology reports $r = -1.0$ for two nonconstant measurements. All points lie on a falling line. Interpret sign and magnitude as linear association, using context-calibrated language rather than a universal cutoff. State the exact implication. _____ Bank label: _____
Technology reports $r = 0.96$ for height and arm span in one sample. The scatter plot is a tight rising band. Interpret sign and magnitude as linear association, using context-calibrated language rather than a universal cutoff. Use ordinary descriptive language. _____ Bank label: _____	Technology reports $r = -0.94$ for speed and travel time for a fixed route. The plot is a tight falling band. Interpret sign and magnitude as linear association, using context-calibrated language rather than a universal cutoff. Interpret the sign. _____ Bank label: _____
Technology reports $r = 0.03$ for shoe size and quiz score. No curved pattern is visible. Interpret sign and magnitude as linear association, using context-calibrated language rather than a universal cutoff. Limit the conclusion to linear association. _____ Bank label: _____	Technology reports $r = 0.58$ for practice hours and performance score. Points generally rise with noticeable scatter. Interpret sign and magnitude as linear association, using context-calibrated language rather than a universal cutoff. Avoid an absolute cutoff claim. _____ Bank label: _____
Technology reports $r = -0.62$ for outside temperature and heating use. Points generally fall with scatter. Interpret sign and magnitude as linear association, using context-calibrated language rather than a universal cutoff. Use units only in context, not for r. _____ Bank label: _____	Technology reports $r = 0.21$ for screen time and sleep duration. The upward tendency is faint. Interpret sign and magnitude as linear association, using context-calibrated language rather than a universal cutoff. State uncertainty descriptively. _____ Bank label: _____

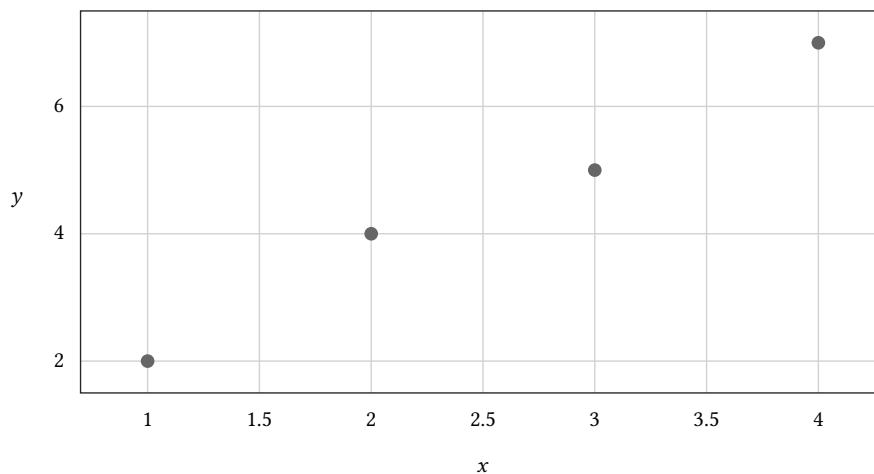
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Correlation and Linear Association

Name: _____ Date: _____ Class: _____

Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. Give the whole requested response, including any reasoning the question asks for.

An exact scatter plot contains (1, 2); (2, 4); (3, 5); (4, 7). Points rise left to right. Classify the visible linear direction and distinguish any nonlinear structure. Use the whole pattern.



Observation	Original x	Original y
1	1	2
2	2	4
3	3	5
4	4	7

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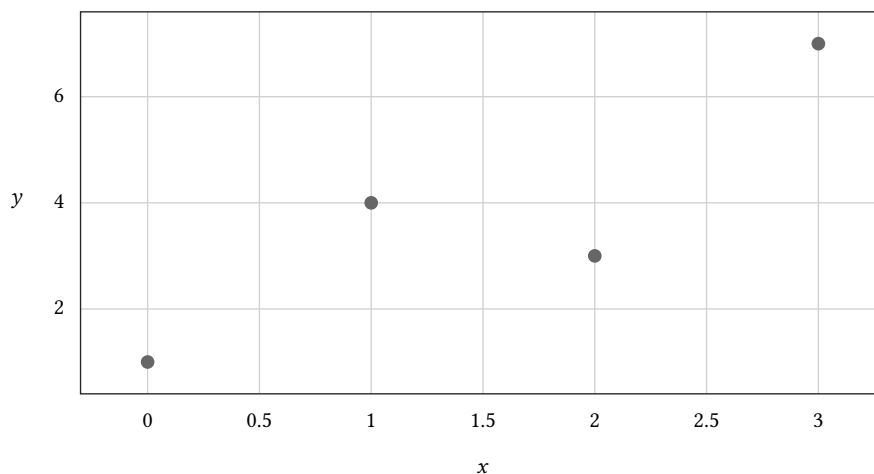
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Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

Incoming: plot a r : 0.88; plot b r : 0.88; qualification: Matching is not unique by value because both are intentionally equal.; reasoning: Translations preserve r exactly.

Two exact scatter plots are given. Plot A: (0, 1); (1, 4); (2, 3); (3, 7). Plot B: (0, -1); (1, -4); (2, -3); (3, -7). Candidate correlations are 0.88, -0.88. B negates y . Match each plot to the compatible supplied r using direction, relative tightness, and any nonlinear limitation. Match.



Observation	Original x	Original y
1	0	1
2	1	4
3	2	3
4	3	7

Observation	Original x	Original y
1	0	-1
2	1	-4
3	2	-3
4	3	-7

Your response: _____

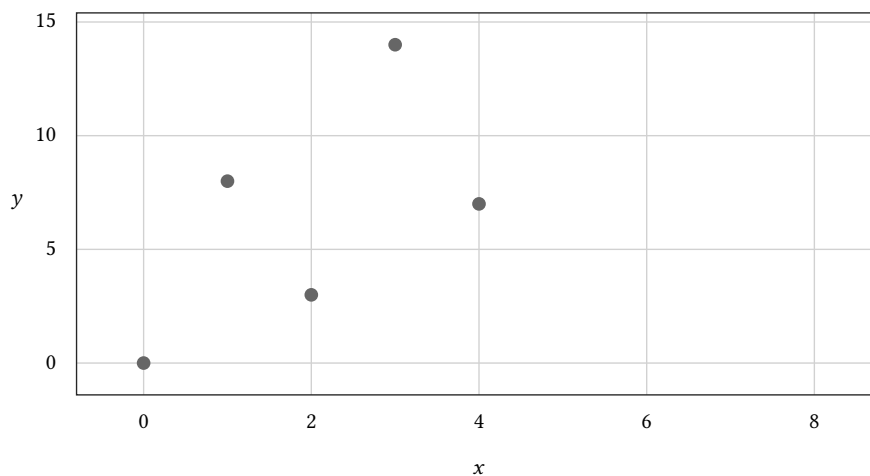
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Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

Plot A uses the stated common scale and contains $(0, 0)$; $(1, 8)$; $(2, 3)$; $(3, 14)$; $(4, 7)$. Plot B contains $(0, 2)$; $(2, 3)$; $(4, 4)$; $(6, 5)$; $(8, 6)$. A is steeper but scattered; B is shallow and exact. Compare linear strength by closeness to a line, not by slope steepness or sign. Rank strength.



Observation	Original x	Original y
1	0	0
2	1	8
3	2	3
4	3	14
5	4	7

Observation	Original x	Original y
1	0	2
2	2	3
3	4	4
4	6	5
5	8	6

Correlation and Linear Association

Full Worked Solutions - excerpt

Worked example

Problem. A dataset has correlation $r = 0.69$. Interchange x and y , including their axis labels. Predict the new correlation and justify using affine transformation rules. Do not confuse swapping with negating.

Answer. effect: preserved; justification: Correlation is symmetric: $r(x, y) = r(y, x)$.; new r : 0.69; original r : 0.69

Explanation and check.

The new correlation is 0.69. Correlation is symmetric: $r(x, y) = r(y, x)$.

Worked example

Problem. A dataset has correlation $r = -0.33$. Use $x_{\text{new}} = x - 100$ and $y_{\text{new}} = y + 12$. Predict the new correlation and justify using affine transformation rules. Track two translations.

Answer. effect: preserved; justification: Translations of either or both variables preserve r .; new r : -0.33 ; original r : -0.33

Explanation and check.

The new correlation is -0.33 . Translations of either or both variables preserve r .