LESSON MAKER PRO

Correlation Check

Calculate r and describe a linear association.

HIGH SCHOOL · AI-S.ID.8

AI-S.ID.8 "Calculate (using technology) and interpret the correlation coefficient of a linear fit."

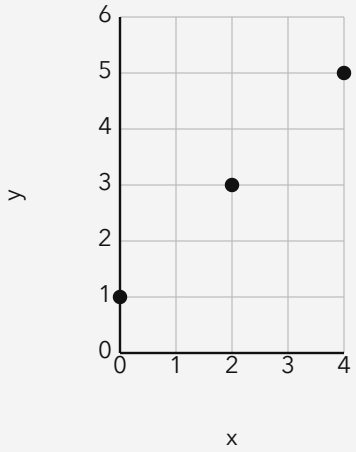
NAME _____ DATE _____

READING CORRELATION

Enter paired x- and y-values into two lists, then use a linear regression or correlation tool to find r. The value of r is from -1 to 1. Its sign shows direction, and values closer to 1 or -1 show a stronger linear association.

WORKED EXAMPLE

Use the plotted data to find r with a graphing calculator or spreadsheet. Then interpret the result.



1. Enter x: 0, 2, 4 and y: 1, 3, 5.
2. Run a linear regression with r displayed.
3. The calculator gives r = 1.
4. A value of 1 means a perfect positive linear association.

Answer: r = 1, perfect positive linear association

PRACTICE 4 problems

1 Use technology to find r for (10, 15), (20, 25), and (30, 35).

ANSWER _____

2 Use technology to find r for (10, 35), (20, 25), and (30, 15).

ANSWER _____

3 Use technology to find r for (10, 20), (20, 40), and (30, 20). State the linear association.

ANSWER _____

_____

4 Use technology to find r for (10, 30), (20, 10), and (30, 20). State the direction and strength.

ANSWER _____

_____

APPLY IT Show your work

1 A gaming club records practice rounds and scores in a timed challenge. Find r and interpret it.

TIMED CHALLENGE RESULTS

Practice rounds	Score
10	50
20	55
30	60
40	65

ANSWER _____

2 Over three days, a student records phone notifications and a focus rating: (8, 9), (16, 5), and (24, 7). Find r and interpret it.

WORK SPACE

ANSWER _____

CHALLENGE One step up

For (12, 4), (14, 0), (16, 0), and (18, 4), technology gives r = 0. Explain why r = 0 does not mean the variables have no relationship.

WORK SPACE AND ANSWER

ANSWER KEY

Correlation Check

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Use technology to find r for (10, 15), (20, 25), and (30, 35).	**r = 1**
2	Use technology to find r for (10, 35), (20, 25), and (30, 15).	**r = -1**
3	Use technology to find r for (10, 20), (20, 40), and (30, 20). State the linear association.	**r = 0; no linear association**
4	Use technology to find r for (10, 30), (20, 10), and (30, 20). State the direction and strength.	**r = -1/2; moderate negative linear association**

PART 2 · APPLY IT

1. **r = 1; perfect positive linear association** Enter practice rounds as x and scores as y. The data lie exactly on an increasing line, so r = 1.
2. **r = -1/2; moderate negative linear association** Enter notifications as x and focus rating as y. The correlation is -0.5, which indicates a moderate negative linear association.

CHALLENGE

r = 0. As x increases, y decreases and then increases, so the data have a U-shaped nonlinear pattern. Correlation measures linear association only.

For Practice 4 and Apply It 2, accept -1/2 or -0.5; the negative sign is required. Accept equivalent descriptions of direction and strength, including no linear relationship for r = 0.