Unit 10 Test

Scatter Plots, Correlation, Lines of Best Fit & Two-Way Tables

Name: _____ Date: _____ Score: _____ / 10

INSTRUCTIONS

For multiple-choice questions, circle the letter of the correct answer. For short-answer and problem-solving questions, show your complete work in the space provided. No calculator unless your teacher says otherwise.

1 **A scatter plot shows points trending upward as x increases. What type of correlation does this show?** Multiple Choice

A Positive
B Negative
C No correlation
D Nonlinear only

2 **A scatter plot shows points trending downward as x increases. What type of correlation does this show?** Multiple Choice

A Negative
B Positive
C No correlation
D Perfect correlation

3 **Short Answer — Given the data points (1, 2) and (4, 8), find the equation of the line through these two points to use as a line of best fit.** Short Answer

4 **Which correlation coefficient indicates the strongest linear relationship?** Multiple Choice

A $r = 0.1$
B $r = -0.95$
C $r = 0.5$
D $r = 0$

5 **A residual is defined as:** Multiple Choice

A Actual y − predicted y
B Predicted y − actual y
C Actual x − predicted x
D The slope of the regression line

6 **Short Answer — Using the line of best fit y = 3x + 5, predict y when x = 10.** Short Answer

7 **A two-way table of 40 students shows: 15 play sports and like math, 10 play sports and dislike math, 8 don't play sports but like math, and 7 neither play sports nor like math. How many students like math?**

Multiple Choice

A 23
B 25
C 18
D 22

8 **Using the same table as question 7, how many students play sports?**

Multiple Choice

A 25
B 23
C 18
D 15

9 **Problem Solving — A two-way table of 100 students shows: 30 own a pet and are in band, 20 own a pet and are not in band, 25 don't own a pet and are in band, and 25 don't own a pet and are not in band. Find the total number of students who own a pet, and the relative frequency (proportion) of students in band among pet owners.**

Problem Solving

10 **Problem Solving — A set of paired data has line of best fit $\hat{y} = 2.5x + 3$. For the actual data point (4, 15), calculate the predicted value and the residual.**

Problem Solving