

Writing Linear Equations and Scatter Plots: math test, Grade 9 – download the PDF

Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1 Slope and a point

/ 3 pts

Write each line in slope-intercept form.

- (a) Slope -4 , through $(2, 3)$.
- (b) Slope 2 , through $(-1, -5)$.

2 Two points

/ 3 pts

A line passes through $(-1, 7)$ and $(3, -1)$.

- (a) Find its equation.
- (b) Find its x-intercept.

3 Modeling plant growth

/ 4 pts

The height y (in cm) of a bean plant was measured x days after planting: $(1, 3)$, $(2, 5)$, $(3, 8)$, $(4, 9)$, $(5, 12)$, $(6, 14)$. A model is $y = 2.2x + 1$.

- (a) Describe the correlation.
- (b) Find the residual at $x = 3$.
- (c) Interpret the slope.
- (d) Predict the height on day 10 and comment on its reliability.

4 Correlation and prediction

/ 3 pts

Over a summer, a pool measured $r = 0.88$ between the number of ice cream cones sold and the number of swimmers who needed help. The data cover temperatures from 60 °F to 95 °F.

- (a) Do the cones cause the swimmers' problems?
- (b) Name a lurking variable.
- (c) Is predicting for 80 °F interpolation or extrapolation? And for 40 °F?

5 Delivery fee

/ 4 pts

A store charges $D(x) = 5$ dollars for deliveries up to 3 miles, and $D(x) = 5 + 1.5(x - 3)$ for $x > 3$ miles.

- (a) Find $D(2)$.
- (b) Find $D(7)$.
- (c) Simplify the rule for $x > 3$.
- (d) What distance costs \$14?

6 An absolute value function

/ 3 pts

Consider $y = |x + 2| - 4$. Find the vertex, the y-intercept, and the x-intercepts.



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