

Scatter Plots and Two-Way Tables: math test solutions, Grade 8 – download the PDF

Test solutions with the detailed point scale. Add up your points and spot what to review.

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

1 Reading a scatter plot

/ 4 pts

- a. Positive association: more months of training, more commands. (1 pt)
- b. The outlier is $(7, 3)$; for example, that puppy missed many sessions or was sick. (1 pt)
- c. The point at $x = 4$ is $(4, 5)$: 5 commands. (1 pt)
- d. Points with $y \geq 7$: $(5, 7)$, $(6, 8)$, $(8, 10)$: 3 puppies. (1 pt)

2 Equation of a trend line

/ 4 pts

- a. $m = \frac{32 - 14}{8 - 2} = \frac{18}{6} = 3$. (1 pt)
- b. $14 = 3(2) + b$, so $b = 8$. $y = 3x + 8$. (1 pt)
- c. About 3 dollars are saved each week. (1 pt)
- d. At the start (week 0), the model predicts 8 dollars already saved. (1 pt)

3 Making predictions

/ 3 pts

- a. $1.2(10) + 3 = 15$ miles. (1 pt)
- b. $1.2x + 3 = 21$, $1.2x = 18$, $x = 15$. Week 15. (1 pt)
- c. No: week 60 gives $1.2(60) + 3 = 75$ miles, which is not realistic. This is extrapolation far outside the data. (1 pt)

4 Breakfast and lateness

/ 4 pts

- a. Row totals 90 and 60; column totals 27 and 123; grand total 150. (1 pt)
- b. $\frac{9}{90} = 10\%$ and $\frac{18}{60} = 30\%$. (1.5 pts)
- c. The percents differ a lot, so there is an association: students who skip breakfast are more often late in this sample. (1.5 pts)

5 True or false?

/ 3 pts

- a. False: it only needs to follow the trend, and its y-intercept can be any value. (1 pt)
- b. False: a third factor can affect both variables. (1 pt)
- c. True: an outlier pulls the line toward it. (1 pt)

6 Residual check

/ 2 pts

- a. $2(7) + 1 = 15$. The actual value 5 is $15 - 5 = 10$ below the prediction. (1 pt)
- b. The line would be pulled down toward the point and become flatter, because this outlier is far below the pattern. (1 pt)



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