**AP Statistics – Linear Regression Concept Check Name**

A student with no previous typing experience takes a three-week typing course and after each day takes a test. The test requires the student to type for 3 minutes with 98% accuracy. The speed is recorded in words per minute (wpm). Here is the data. Day 0 refers to a pre-test taken before the course started. Day 35 refers to a test the student was asked to take two weeks after the course was over.

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| Day | 0 | 1 | 3 | 6 | 7 | 10 | 12 | 14 | 16 | 18 | 19 | 21 | 35 |
| Speed  (wpm) | 7 | 14 | 23 | 36 | 42 | 49 | 56 | 60 | 65 | 67 | 68 | 72 | 69 |

1. What is the explanatory variable and what is the response variable?

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1. Graph the scatterplot to the right.
2. Generate the least-squares line (2 decimal places).
3. There is one point that is influential. Circle it.
4. Give a good reason why it makes sense to eliminate this point.
5. Recalculate the LSRL line with that point eliminated and plot it on the graph.
6. Interpret the slope of this LSRL.

8. Find the correlation coefficient *r* and explain its 9. Find the coefficient of determination *r*2 and significance. explain its significance.

10. What specific points must the LSRL go through? 11. What is the sum of all the residuals?

12. Using this model, find the predicted speed 13. What is the residual on day 19? on day 19.

14. On what day would you expect to reach 50 wpm? 15. For what days are the residuals clearly positive?

16. Is there evidence that the LSRL is a good model 17. If we wanted to predict the student’s typing for this data? Explain. speed 10 weeks after the course started, give

two reasons why this is dangerous.