



Learning Project 7 The Coordinate Plane, Intercepts and Slopes

Inquiry Activity 7-2: A Line of Best Fit/Locating a Point

(Note: Italicized portions should be directed to students.)

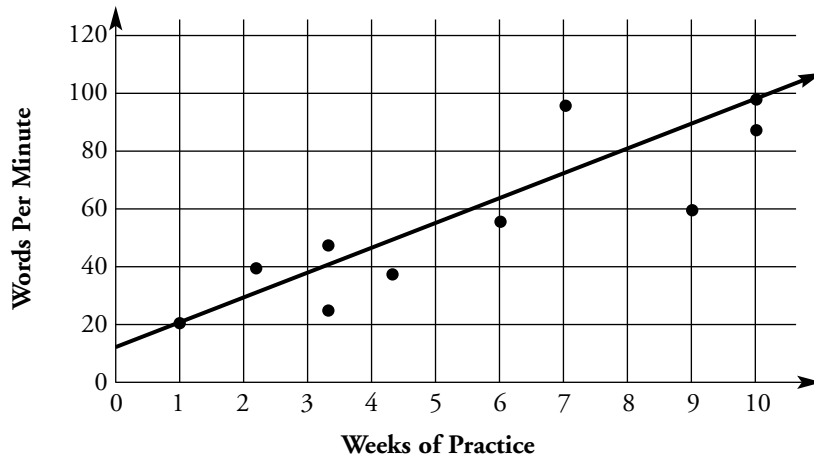
1. Identifying the Problem (Item #4, PA) Calculator allowed.

Read the question carefully, as you would if taking the actual test.

**Calculator
Allowed**



Typing Speed



Partners for Excellence offers its employees training classes to improve their typing skills. The graph above shows the typing speed results of 10 employees, as well as the line of best fit showing typing speed based on these results. The line of best fit can be used to make predictions for future employees who wish to take the classes.

4. What does the line of best fit predict the typing speed, in words per minute, will be for an employee who attends eight weeks of practice?

PLEASE DO NOT WRITE IN THIS TEST BOOKLET.

Mark your answer in the circles in the grid.

Do not mark on the graph above.

Here are some questions you may want to consider when reading test questions.

What words and/or symbols might be important to understand to answer this problem and what are they telling you?

Cannot know what words the learner will choose. The following represents a possible, though non-exclusive, list:
line of best fit, words per minute, weeks of practice, typing speed.

What words and/or symbols are unfamiliar and what do you think they mean?

Some of these words may be prediction, predict, typing speed.

2. Becoming Familiar with the Problem

Ask yourself questions like these about the problem, taking note of the ones that were especially helpful so that you can remember to use them when you take the test.

Reread the question. What are you being asked to find?

Read the title of the graph and the labels on the sides. What facts does the graph tell you?

What information in the graph (the line, the points?) is relevant to what you need?

3. Planning, Assigning and Performing Tasks

Try to answer the test question any way you can, even if you have to guess, but be aware of the reasoning and operations that you are using. The following questions can be helpful.

In your own words, determine what to look for in the graph.

What value on the words-per-minute axis corresponds to 8 weeks of practice?

Find the answer and bubble in the correct answer on the standard grid.

Be ready to explain how you found your answer.

4. Sharing with Others

Telling other people what you know helps you to understand the material better. So take this opportunity not only to share your knowledge, but also to learn it more completely.

Small Groups: *Compare your answer to others in the group and explain why you think yours is correct.*

How did you know which information, the line or the points, was relevant?

Ask this question to reinforce the importance of careful reading in the math test.

Agree on the correct answer and the steps you would recommend to find it.

The likely procedure will include locating the 8, moving straight up to the line, and then following the horizontal line to the 80.

Using several answer grids, bubble in the correct answer in as many ways as you can.

Again, an overhead transparency of the graphic in the item as well as one of the standard answer grids would help the students refer to specific points and ways to answer when they are reporting to the whole class.

Whole class: *Report your group's answer to this question, the steps that you recommend, and the various correct ways to bubble in the answer.*

Take notes on any different ways that others used to find or record the answer.

5. Reflecting, Extending and Evaluating

This stimulus is used for three questions on the test. It can be intimidating at first because students may have never heard of the statistical idea of a line of best fit. They will research the idea here and see how it works in this situation, but it is important to emphasize that they could have answered the questions without knowing the details.

Reflecting: *Think about what you learned.* (group activity or instructor lead.)

Here are some questions to start you thinking about the experience you just had. Thinking about what you have learned and experienced is part of the learning process. When the focus is only on the answer, you don't get much time to think about what was learned.



You probably will not find an explanation of the line of best fit in many of the typical GED books. However, you may find one in some of the newer high school books that integrate mathematical topics from statistics with the traditional algebra and geometry. An explanation at an appropriate level can be found in *Mathematics in Action* (Consortium for Foundation Mathematics, p. 449.) This section also contains exercises that would serve as good practice for the concepts of slope and intercept that follow as well.

Read this problem and examine the graph again. Discuss your understanding of the steps involved in constructing the graph.

First, the data was collected from the 10 employees. The points were entered on the grid (weeks of practice, words per minute) resulting in a scatterplot of points. The points were not all on a straight line, but their position shows an overall trend (that is, as the weeks of practice (input) increased, so did the typing speed (output)). A line was estimated (the eyeball method is good enough for this discussion) and drawn to represent the trend that the data show. Finally, this line is used to predict what typing speed future employees might expect after a number of weeks of practice.

How would you write the point that corresponds to the answer for this problem in ordered pair format? (x,y)

The weeks of practice are along the horizontal axis (input) and words per minute are along the vertical (output) so the point would be (8,80).

Describe any way that you could use the calculator in answering this item.

Extending: Extend what you learned to new situations

In extending, you are being asked to transfer the information presented in the Practice Test question to other information or situations you already know and maybe make new connections to other information.

These questions provide some review and practice in interpolating values on a graph.

What would your answer have been if the question had asked you to estimate the words per minute after 5 weeks of practice?

How many weeks does the line predict it would take to be typing at a rate of 40 words per minute? 60 words per minute?

Explain how this situation of typing speed and weeks practiced makes it reasonable to use this grid rather than the one in the previous activity.

Negative numbers are not reasonable for either typing speed or number of weeks

Evaluating : Assess what you learned and how you learned it.

In this last step, you get a chance to review the content of what you learned and the methods used to learn. There are no right or wrong answers to these questions; it is your chance to look more closely at your learning style and the opportunity to state how you benefited or didn't benefit from the content and/or the methods to help you pass the GED test.

Remember your first reactions when you read this problem. Now that you have answered the question, what advice would you give to test-takers?

Don't panic. Read through the problem. You may find that the question is actually an easy one.