



Learning Project 1 The Number Line and Informational Graphing

Inquiry Activity 1-3: Interpreting Significant Points on a line graph

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

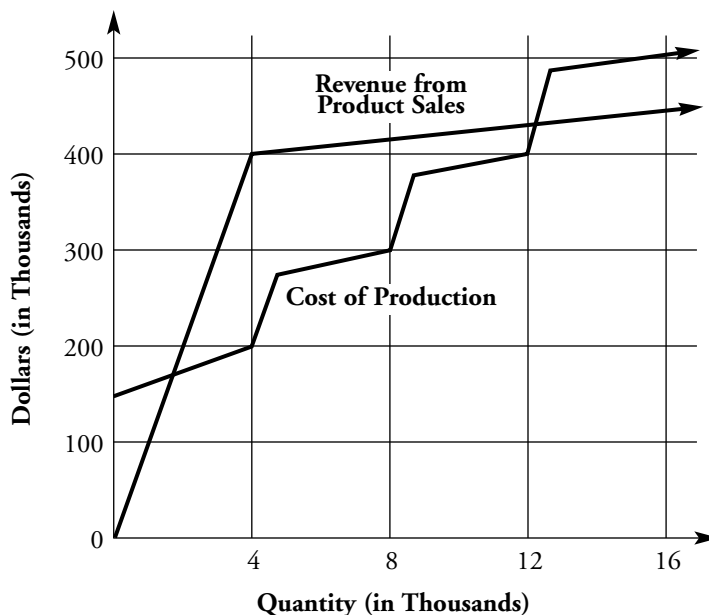
1. Identifying the Problem (Item #21, PA) Calculator not allowed. (Teacher directed)

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

**Calculator
NOT Allowed**



Projected Cost and Revenue Functions For Solartex's Newest Computer Game



Question:

Based on market surveys, the cost of production is eventually projected to be greater than the revenue from sales. The graph shows that this is likely to occur after approximately how many games have been produced?

- 1) 2,500
- 2) 4,500
- 3) 8,500
- 4) 10,500
- 5) 12,500

Here are some problem clarification 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?

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

2. Becoming Familiar with the Problem

The students are already familiar with this graph, but are being asked now to focus on a different point.

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.

Re-read the question. What is this question asking you to find?

Expect that students will not be sure what they need to find at first. You could hint that they follow the line for production as they did in the previous item. Then re-read, “When is the cost greater than the revenue?” The question is asking how many games are being produced when that happens.

What information in the graph is relevant to what you need to find?

The intersection point is the key piece of information. They need to find the value on the horizontal axis that corresponds to that point.

3. Planning and Performing Tasks

Try to answer the test question any way you can, even if you have to guess, but try to 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.

Eliminate answer choices that are not reasonable.

Find the answer. Be ready to defend your answer and the way that you found it.

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 the 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.*

Agree on the correct answer.

Locate the point on the line that is being discussed in the question. If this had not been a multiple-choice question, which number would you have used to approximate the answer? Agree on a good method to approximate a number like this one that falls between the lines on the axis.

Whole class: *Report your group’s answer to this question and show your method to approximate the number.*

They will probably mention that they

- 1) Checked the numbers on the lines that are on both sides of the point, 12,000 and 16,000.
- 2) Found half the distance between the lines, labeled it 14,000, and then repeated that procedure to locate 13,000.
- 3) Since the point falls about halfway between the line for 12,000 and the mark for 13,000, its value is approximately 12,500.



5. Reflecting, Extending and Evaluating (whole class or groups)

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

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.

It may be obvious to most that the points where the two lines intersect represent spots where the production costs and the revenue are equal. Equally obvious may be the fact that when the production line is above the revenue line, the production costs are greater than the revenue. These understandings, like that of the y-intercept, are fundamental to being able to interpret graphs of this kind. To ensure that each student does understand them, ask some other questions that relate.

At low levels of production, the cost is higher than the revenue. After the production and sale of approximately how many games will the revenue be greater than the costs?

It looks as if the point of intersection occurs about halfway between 0 and 4000, about 2000 games.

Over what range of production will this business be profitable?

It will be interesting to listen in on the discussions about what being profitable entails. They already know the numbers – between 2000 and 12,500.

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 perhaps make new connections to other information.

Initiate a discussion in which the students come up with the fact that a business estimates its revenue by multiplying the number of items they expect to sell by the price they will charge per item.

Follow the line that indicates the revenue. It goes up as the number of games produced and sold increases. Explain why that is reasonable.

What possible explanation can there be for the bend in the line?

They must intend to sell the first 4000 games at a higher price than the remaining ones.

On the basis of the projections pictured in this graph, what advice would you give the manager?

They might advise the manager to stop making the games after 12,500, or to charge a higher price after 4000.

Evaluating: *Assess what you learned and how you learned it.* (individual)

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 did not benefit from the content and/or the methods to help you pass the GED test.

What have you learned about reading graphs that you think may be valuable to you in the future or when you are taking the test?

Which particular ideas about reading graphs are still confusing to you?