

Learning Project 1 The Number Line and Informational Graphing

Inquiry Activity 1-2: Interpreting Significant Points on a line graph

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

1. Identifying the Problem (Item #20, PA) Calculator not allowed. (Teacher directed)

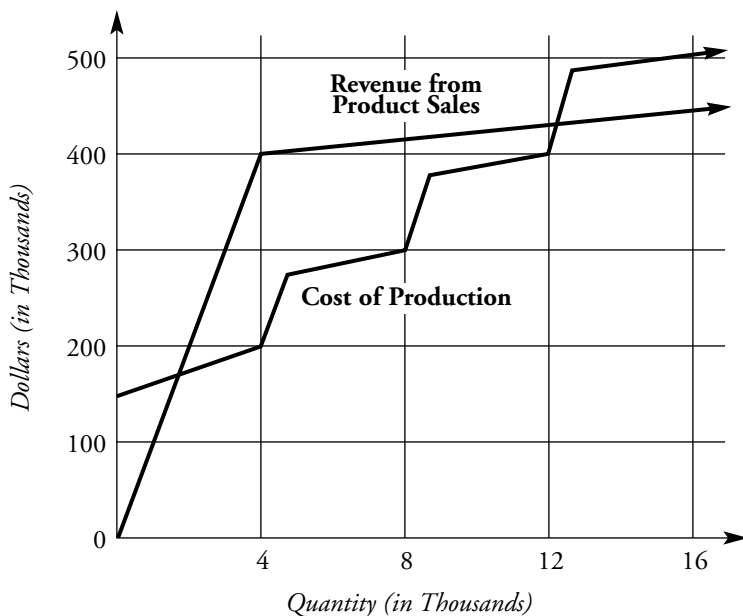
Present this item exactly as it appears in the practice test.

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:

When none of the games has been sold, the revenue from sales will be zero. At the same time, the cost of production is expected to be approximately \$150,000. Why must this be true?

- 1) The game might not be popular at first.
- 2) The price of the game might not be too high at first.
- 3) Start-up money must be spent to produce the games.
- 4) The company may have decided to manufacture the game in small quantities at first.
- 5) The game might sell better if it is introduced at a different time of year.

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

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 are you being asked?

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

What information in the graph 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 try to be aware of the reasoning and operations that you are using. The following questions can be helpful.

Eliminate unreasonable answer choices.

Find the answer.

Be ready to defend 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 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.*

Discuss your understanding of the meaning of the words: “production” and “revenue.” Look them up in the dictionary to verify the meaning that they have in this question.

Locate the line on the graph that represents the cost of production and find the point that is being discussed in the question.

Agree on the correct answer.

Whole class: *Report your group’s answer to this question and indicate the point on the graph that is being discussed.*

5. Reflecting, Extending and Evaluating

Reflecting: *Think about what you learned.*

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.

The point that is discussed here intersects the vertical axis. If we were discussing the coordinate plane, it would be the y-intercept, the (0,b) of $y = mx + b$. In real-life applications, it corresponds to concepts like fixed costs, or in this case, start-up costs, which are incurred whether or not any items are produced or whether any time has passed. Make sure that the foundation of the concept is clear to the students; that is, when the number produced is zero, they have already spent \$150,000.

Can you think of any other situations in your life that are similar to this one in that there is a charge or cost that you must pay up front?

Often plumbers, electricians, or telephone repairmen charge a flat fee for showing up and then also charge an hourly fee for their work. Membership fees, such as those charged by some merchandisers or golf courses, might also be examples.

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.

This graph is more complex than the bar graph from the previous Inquiry Activity. Take some time to analyze it with the students, asking questions like these to make sense of the direction of the line representing cost and the trends that it indicates. The revenue line will be analyzed in the next item.

Follow the line that indicates the cost of production. It goes up as the number of games produced increases. Explain why that is reasonable.

When you consider the aggregate cost (not cost per item) it makes sense that the more you make, the more you have to spend for materials and labor.

What possible explanation can there be for the steep portions of the line?

It is possible that they would have to perform some periodic maintenance or even need to retool after a certain number of items have been produced.

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

Reserve this step for after the second item in this set, which appears in the next Inquiry Activity.