PRINTING BOOKS PROJECT

Purchasing decisions for a Common Core Math 1 textbook for the school system must be made. The Board of Education needs to know the costs of providing a 325-page Common Core Math 1 textbook to three different schools. The schools have agreed to pilot a new textbook this year; the publisher is making page proofs of the book available, but the schools must make the copies needed for the students. An assistant has done some research and has discovered three possibilities. You will be using the information that follows to determine which printing process would be the most economical for the school district.

In the past, the math textbook orders have never exceeded 2250 books and the cost has never exceeded $35,000. Using tables and graphs, as well as identifying general rules, slopes, y-intercepts, and points of intersection, do a mathematical analysis of these different options and write a recommendation for the Board of Education to consider.

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PART 1

An assistant for the Board of Education has done some research and discovered the following three possibilities for printing the textbooks. The information is as follows:

 1. A local printing company: The Common Core Math 1 textbook can

 be printed by a local printer for a cost of $9.50 per book with an

 initial cost of $5000 for typesetting.

 2. A local copy center: The Common Core Math 1 textbook can be

 duplicated at a local copying center for $0.05 per page plus

 $2.00 per book for binding.

 3. The school district: The school district’s own copying center can

 reproduce the textbook at a cost of $0.035 per page plus an

 up-front cost of $3000.

The first step in this process is to complete a table for each of the different possibilities using the information gathered by the assistant. It is suggested that you complete the table using intervals of 200 for the number of books.

1. Local Printing Company

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Number of Books | 0 |  |  |  |  |  |  |  |  |  |  |  |
| Printing Co. |  |  |  |  |  |  |  |  |  |  |  |  |

2. Local Copy Center

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Number of Books | 0 |  |  |  |  |  |  |  |  |  |  |  |
| Copy Center |  |  |  |  |  |  |  |  |  |  |  |  |

3. School District

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Number of Books | 0 |  |  |  |  |  |  |  |  |  |  |  |
| School District |  |  |  |  |  |  |  |  |  |  |  |  |

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PART 2

In this part of the process, you will be taking the information you displayed in the tables and graphing the data on the coordinate plane provided and answered the following questions.

1. On the coordinate plane provided do the following:

 a) Graph each of the three printing possibilities.

 i. Use a different color and symbol to represent the

 printing options.

 ii. Title the graph

 iii. Label the axes and intervals

 iv. Provide a key for the graph

2. For each of the printing options:

 a) Write a NOW-NEXT rule for each of the different printing

 options. Be sure to state a starting value.

 b) Write an explicit equation for each of the different printing

 options. Identify the rate of change and the y-intercept for

 each.

 c) In complete sentences, interpret the real world meaning for

 the slope and y-intercept for each equation.

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PART 3

It is decided that each school in the district can choose a different printing company based on their individual needs, and the following conditions apply:

 1. Sanderson High School will need 400 textbooks next year.

 2. Leesville High School will need 550 textbooks next year.

 3. Knightdale High School will need 1400 textbooks next year.

Using each of the equations you discovered in Part 2, determine the most economical printing company for the three schools. Be sure to show all steps in calculating the cost.

The final part of the project will now require you to take all the information you have gathered and write a concise detailed recommendation to the Board of Education detailing which company would be the most economical for printing the needed Common Core Math 1 textbooks. Remember this recommendation will be used in choosing the printing company, so you should be very specific and include all pertinent information.

**PRINTING BOOKS PROJECT RUBRIC**

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| --- | --- |
| **Points** | **Description of Assessment** |
| 4 points | Contains complete response with clear, coherent, and unambiguous explanation; includes clear and simple diagram, if appropriate, communicates effectively to identified audience; shows understanding of question’s mathematical ideas and processes; identifies all important elements of questions; includes examples and counterexamples; gives strong supporting arguments. |
| 3 points | Contains good solid responses with some, but not all, of the characteristics above; explains less completely; may include minor error of execution but no of understanding |
| 2 points | Contains complete response, but explanation is muddled; presents incomplete arguments; includes diagrams that are inappropriate or unclear, or fails to provide a diagram when it would be appropriate; indicates some understanding of mathematical ideas, but in an unclear way; shows clear evidence of understanding some important ideas while also making one or more fundamental, specific errors |
| 1 point | Omits parts of question and response; has major errors; uses inappropriate strategies |
| 0 points | No response; frivolous or irrelevant response |