1. A factory can produce two products, x and y, with a profit approximated by $P = 5x + 23y - 1000$. The production of y can exceed x by no more than 200 units. Moreover, production is limited by the equation $x + 2y \le 1000$. What production levels yield maximum profit?

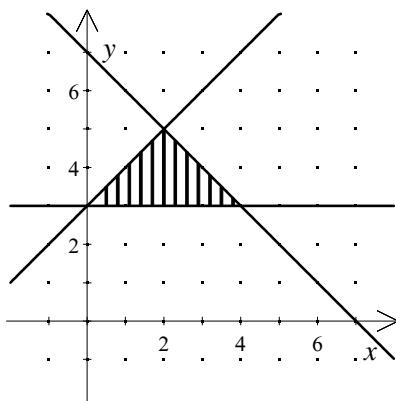   [A] $x = 0, y = 0$ [B] $x = 1000, y = 0$ [C] $x = 200, y = 400$ [D] $x = 0, y = 200$

   [1] _____

2. Evaluate the equation $M = 4x + 2y$ at $(7, 0)$, $(5, 2)$, $(2, 5)$, $(1, 4)$, and $(0, 7)$. Which point gives the maximum value?

   [A] $(0, 7)$ [B] $(1, 4)$ [C] $(2, 5)$ [D] $(5, 2)$ [E] $(7, 0)$

   [2] _____

3. Which values for x and y minimize the equation $M = 2x + 3y$ for the graph below?

   [A] $(0, 3)$ [B] $(0, 7)$ [C] $(2, 5)$ [D] $(7, 0)$ [E] $(4, 3)$

   [3] _____

4. Compare the quantity in Column A with the quantity in Column B.
   The vertices of a graph of restrictions on x and y are $(0, 0)$, $(30, 50)$, $(40, 10)$. P is a function that represents the profit from making x number of small bags and y number of large bags.

   Column A   Column B
   Maximum of P 500

   [A] The quantity in Column A is greater.   [B] The quantity in Column B is greater.

   [C] The two quantities are equal.

   [D] The relationship cannot be determined on the basis of the information supplied.

   [4] _____

5. Compare the quantities in Column A and Column B.
   Column A   Column B

   the maximum value of   the minimum value of

   $C = 2x + 3y$ $B = 4x + 5y$

   [A] The quantity in Column A is greater.   [B] The quantity in Column B is greater.

   [C] The quantities are equal.

   [D] The relationship cannot be determined from the information given.

   [5] _____

6. Compare the quantity in Column A with the quantity in Column B.
   The vertices of a graph of restrictions on x and y are $(0, 0)$, $(0, 40)$, $(20, 40)$, $(60, 20)$, $(60, 0)$. The objective function is $4x + 5y = P$.

   Column A   Column B
   Maximum of P 325

   [A] The quantity in Column A is greater.   [B] The quantity in Column B is greater.

   [C] The two quantities are equal.

   [D] The relationship cannot be determined on the basis of the information supplied.

   [6] _____

[1] C

[2] E

[3] A

[4] D

[5] D

[6] A