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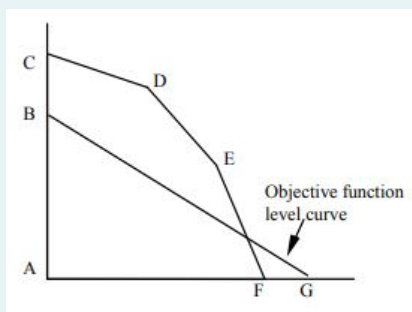
Why is it important to study the graphical method of solving LP problems?

- ☐ a. It provides better solutions than computerized methods
- ☐ b. Because lines are easy to draw on paper.
- ☐ c. It is faster than computerized methods.
- ☒ d. To develop an understanding of the linear programming strategy,



The correct answer is: To develop an understanding of the linear programming strategy,

This graph shows the feasible region (as defined by points ACDEF) and objective function level curve (BG) for a maximization problem. Which point corresponds to the optimal solution to the problem?



- ☐ a. A
- ☐ b. C
- ☐ c. E
- ☐ d. B
- ☒ e. D



The correct answer is: D

The constraint for resource 1 is $6X_1 + 3X_2 = 300$. If $X_1 = 20$, what is the maximum value for X_2 ?

- ☐ a. 180
- ☒ b. 60
- ☐ c. 100
- ☐ d. 40



The correct answer is: 60

The objective function for a LP model is $6X_1 + 4X_2$. If $X_1 = 20$ and $X_2 = 30$, what is the value of the objective function?

- ☐ a. 0
- ☐ b. 120
- ☐ c. 50
- ☒ d. 240



The correct answer is: 240

The constraints $X_1 \geq 0$ and $X_2 \geq 0$ are referred to as

- ☒ a. non-negativity conditions.
- ☐ b. positivity constraints.
- ☐ c. optimality conditions.
- ☐ d. non-positivity constraints.



The correct answer is: non-negativity conditions.

A company uses 8 pounds of resource 1 to make each unit of X_1 and 6 pounds of resource 1 to make each unit of X_2 . There are only 300 pounds of resource 1 available. Which of the following constraints reflects the relationship between X_1 , X_2 and resource 1?

- ☐ a. $8X_1 + 6X_2 = 300$
- ☐ b. $8X_1 + 6X_2 \geq 300$
- ☐ c. $8X_1 \leq 300$
- ☒ d. $8X_1 + 6X_2 \leq 300$



The correct answer is: $8X_1 + 6X_2 \leq 300$

The following linear programming problem has been written to plan the production of two products. The company wants to maximize its profits.

X_1 = number of product 1 produced in each batch

X_2 = number of product 2 produced in each batch

MAX: $150 X_1 + 250 X_2$

Subject to: $5 X_1 + 2 X_2 \leq 250$ - resource 1

$3 X_1 + 7 X_2 \leq 175$ - resource 2

$X_1, X_2 \geq 0$

How many units of resource 1 are consumed by each unit of product 1 produced?

- ☒ a. 50
- ☐ b. 2
- ☐ c. 250
- ☐ d. 5

✗

The correct answer is: 5

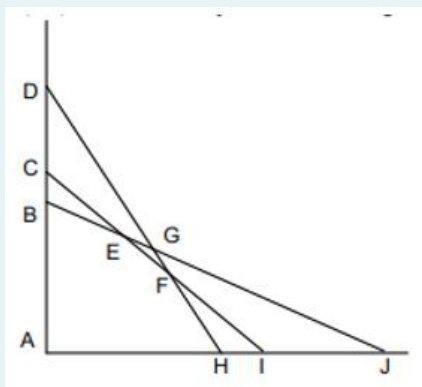
Which of the following actions on applicable constraints would expand the feasible region of an LP model?

- ☒ a. Loosening the constraints.
- ☐ b. Tightening the constraints.
- ☐ c. Adding an additional constraint.
- ☐ d. Multiplying each constraint by 2.

✓

The correct answer is: Loosening the constraints.

The following diagram shows the constraints for a LP model. Assume the point (0,0) satisfies constraint (B,J) but does not satisfy constraints (D,H) or (C,I).



Which set of points on this diagram defines the feasible solution space?

- ☐ a. F, G, H, J
- ☐ b. F, G, I, J

- ☒ c. A, D, G, J
- ☐ d. G, E, F



The correct answer is: F, G, I, J

The constraint for resource 1 is $5X_1 + 4X_2 \leq 200$ and resource 2 is $4X_1 + 6X_2 \leq 240$. If $X_1 = 10$ and $X_2 = 15$, how much of resource 1 is unused?

- ☐ a. 50
- ☒ b. 90
- ☐ c. 140
- ☐ d. 40



The correct answer is: 90

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