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**Unit 5 Prerequisite 2** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Integer Programming

1. Objective Function: Constraints:

 





Optimal Solution: Maximum:

Sentence: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Objective Function: Constraints:

 







Optimal Solution: Minimum:

Sentence: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. In June 2004, an online furniture retailer offered the following items at the indicated prices:

*Teak Double Rocker*, $745 *Teak Tennis Bench*, $124

Suppose that the number of hours required to produce each item is as shown in the following table.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Cut | Finish | Package |
| Rocker  | 5 | 8 | 1 |
| Bench  | 2 | 3 | 1 |

The company has a maximum of 360 hours available in the Cutting Department, a maximum of 730 hours available in the Finishing Department, and a maximum of 150 hours available in the Packaging Department. Suppose that the company makes a profit of $314 from the sale of each rocker and $57 from the sale of each bench. Assuming that all items produced are sold, how many rockers and benches should the company produce in order to maximize profit?

Decision Variables: Constraints:

 Objective Function:

Optimal Solution: Maximum Profit:

Sentence: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. A carton of peaches holds 60 medium peaches or 70 small peaches. In August 2002, the wholesale price for local peaches in Los Angeles was $9.00 per carton for medium peaches and $10.00 per carton for small peaches. He estimates that weekly demand for peaches is at least 400 peaches but no more than 600 peaches. He wants to buy enough peaches to meet the minimum estimated demand, but no more than the maximum estimated demand. How many boxes of each size of peaches should he buy if he wants to minimize his wholesale cost?

Decision Variables: Constraints:

 Objective Function:

Optimal Solution: Minimum Cost:

Sentence: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. An online drugstore sells Tylenol Extra Strength in a variety of bottle sizes. The large bottle contains 250 caplets and costs $15.50, and the small bottle contains 150 caplets and costs $12.25. A family wants to order a supply of at least 750 caplets. The mother also wants 2 or more of the smaller bottles for her purse and car. How many large and small bottles should the family order if it wants to minimize costs?

Decision Variables: Constraints:

 Objective Function:

Optimal Solution: Minimum Cost:

Sentence: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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