Regy 00000026169

No 4:

x1: Amount of the first product that is made per day

x2: Amount of the second product that is made per day

z: daily profit (in dollars)

z = 2x1 + 3x2

Constraints:

2x1 + x2 ≤ 120 (formerly 10x1 + 5x2 ≤ 600, minutes taken for process 1 for every unit)

3x1 + 10x2 ≤ 300 (formerly 6x1 + 20x2 ≤ 600, minutes taken for process 1 for every unit)

4x1 + 5x2 ≤ 300 (formerly 8x1 + 10x2 ≤ 600, minutes taken for process 1 for every unit)

(every single process caps at 10 hours per day)

Result:



We need to make 53 of the first product per day and 14 of the second product per day to attain the highest profit of 148 dollars per day.

No 5:

A: Amount of Product A to make

B: Amount of Product B to make

z: daily profit (in dollars)

z = 20A + 50B

Constraints:

-0.2A + 0.8B ≤ 0 (from A/(A+B) ≥ 0.8, A’s production cannot exceed 80% of the total production of both products)

A ≤ 100 (max daily production of product A)

A + 2B ≤ 120 (from 2A + 4B ≤ 240, amount of daily material available)

Result:



By making 14 of Product A and 53 of Product B daily, we can achieve the highest daily profit of 2930 dollars.

No 6:

x1: Amount of aluminum sheets to make

x2: Amount of aluminum bars to make

z: profit per ton(in dollars)

z = 40x1 + 35x2

Constraints:

-x1 ≤ 0

-x2 ≤ 0 (can’t make negative amount of objects)

x1 ≤ 550 (max demand for sheets)

x2 ≤ 580 (max demand for bars)

3x1 + 4x2 ≤ 2400 (from x1/800 + x2/600 ≤ 1, which states that each day is capped to 800 sheets or 600 bars)

Result:



The most amount of profit is 28545 dollars per ton, which can be made by making 550 aluminum sheets and 187 aluminum bars per day.

No 10:

x1: The amount of Grano (in boxes) to be allocated to the store’s shelves

x2: The amount of Wheaties (in boxes) to be allocated to the store’s shelves

z: daily profit (in dollars)

z = 1x1 + 1.35x2

Constraints:

0.2x1 + 0.4x2 ≤ 60 (max shelf space for both cereals)

x1 ≤ 200 (max demand for boxes of Grano)

x2 ≤ 120 (max demand for boxes of Wheaties)

Result:



Giving Granos more shelf space will lead to the most amount of profit from that space, getting 267.5 dollars a day from those 60ft, with 200 boxes of Granoes and 50 boxes of Wheaties.

No 13:

x1: Amount of monthly radio advertisements (per minute)

x2: Amount of monthly TV advertisements (per minute)

z: Estimated “amount” of advertising effectiveness (1 point is equal to 1 minute of radio advertisement)

z = x1 + 25x2

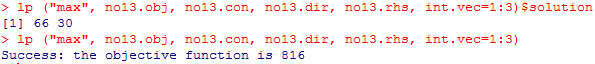
Constraints:

15x1 + 300x2 ≤ 10000 (budget constraints)

x1 ≤ 400 (estimated max effectiveness of radio advertisements)

-x1 + 2x2 ≤ 0 (from x1 ≥ 2x2, there has to be at least twice as many radio advertisements over TV ones)

Result:



The most optimal use of budget will be broadcasting 66 minutes of radio ads and 30 minutes of TV ads, for 816 minutes’ worth of radio ads per month.