Problem:

Sara wants to take care of her health, so she started watching her meals

She wants a daily diet that contains at least 60 grams (g) of fat, 211 g of carbohydrates, 85 g of protein, and 2.3g of sodium

She can eat several foods in one meal

She has a 3 different food:

1.burger X:

contains 35g of fat, 10g of carbohydrates, 25g of protein, and 0.085 g of sodium

420 cal per ounce and costs 22 SR per ounce.

2.salmon Y:

contains 15g of fat, 1g of carbohydrates, 36g of protein

And 0.17 g sodium

280 cal per ounce and costs 65 SR per ounce.

3.ceasar salad Z:

contains 16g of fat, 8g of carbohydrates, 16g of protein, and 0.98 g of sodium

230 cal per ounce and costs 18SR per ounce.

Solution:

find the best meal with the lowest cost and lowest calories (Minimize the calories and the cost)

Variable:

X Є quantity of burger meals, Y Є quantity of salmon meals, Z Є quantity of ceasar salad meals

Domain:

X Є {35, 10, 25, 0.085}, Y Є {15, 1, 36, 0.17} , Z Є {16, 8, 16, 0.98} respectively.

Minimize:

V = 22X + 65Y + 18Z (total cost)

U = 420X + 280Y + 230Z (calories)

Objective function:

P = 22X + 65Y + 18Z + 420X + 280Y + 230Z

Subject to:

35X + 15Y + 16Z ≥ 60 (fat)

10X + Y + 8Z ≥ 211 (carbohydrates)

25X + 36Y + 16Z ≥ 85 (protein)

0.085X + 0.17Y + 0.98Z ≥ 2.3 (sodium)

X ≥ 0

Y ≥ 0

Z ≥ 0