x = pizzas

y = sammich(lol)

A pizza is sold for $50 and it costs $25 to make

pizza: 50 - 25 = 25

A sandwich is sold for $20 and it costs $5 to make

sammich: 20 - 5 = 15

Objective Function:

profit = 25x + 15y

Constraints:

Time: 8x + 3y ≤ 60

total\_items: x + y ≤ 10

ints: x ≥ 0, y ≥ 0

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Time | Num Items | Profit |
| Pizza - x | 8 | 1 | 25 |
| Sammich - y | 3 | 1 | 15 |
| Totals | ≤60 | ≤10 |  |

Only Pizzas:

y = 0

8x + 3(0) ≤ 60

8x ≤ 60

x ≤ 60 ÷ 8

x = 7.5

x = 7 # Cant make half a pizza so we use the whole number.

Pizza Profit:

P = 25x + 15y

P = 25(7) + 15(0)

P = 175 + 0

P = $175

Profit for pizza only is $175

Only Sammich:

x = 0

x + y ≤ 10

0 + y ≤ 10

y ≤ 10

Y = 10

Sammich Profit:

P = 25x + 15y

P = 25(0) + 15(10)

P = 0 + 150

P = $150

Profit for sammich only is $150

Balanced Options:

8x + 3y = 60

x + y = 10

y = 10 – x # solving for y

8x + 3(10-x) = 60 # substituting

8x + 30 – 3x = 60

(8x – 3x) + 30 = 60

5x + 30 = 60

5x = 60 – 30

5x = 30

x = 30 ÷ 5

x = 6

That means:

Y = 10 – x

Y = 10 – 6

Y = 4

Balanced profit:

P = 25x + 15y

P = 25(6) + 15(4)

P = 150 + 60

P = $210

Profit for 6 pizzas and 4 sammich is $210

Only Pizza: Profit for 7 Pizza = 175

Only Sammich: Profit for 10 Sammich = 150

Pizza & Sammich: Profit for 6 Pizza and 4 Sammich = 210