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: $8x + 3y \leq 60$

total_items: $x + y \leq 10$

x and y are ints: $x \geq 0$, $y \geq 0$

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

Only Pizzas:

$y = 0$

$8x + 3(0) \leq 60$

$8x \leq 60$

$x \leq 60 \div 8$

$x \leq 7.5$

$x = 7$ # Can't 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:

$x = 0$

$x + y \leq 10$

$0 + y \leq 10$

$y \leq 10$

$Y = 10$

Making sure we are good on sammich prep time:

$3 \times 10 = 30$

$30 \leq 60$

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

Quick Validation for time and item limits:

8 x 6 = 48

3 x 4 = 12

48 + 12 = 60

6 pizzas + 4 sammich = 10

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

As we can see, a combination of 6 pizza and 4 sammich coming in at a whopping $210 is where the fancy food truck would get the best bang for their buck. This keeps that at the 10 item limit and within the 60 min time limit.