

Mr. Maurer sells hot dogs for \$3 and burritos for \$5. If he sells all his food he will earn \$250. Instead he gets hungry and eats half of the hot dogs and 5 burritos. Now his food is only worth \$150.

- Find the number of hot dogs & burritos.

① $x = \text{hot dogs}$, $y = \text{burritos}$

$$3x + 5y = 250 \longrightarrow 3x + 5y = 250$$

$$3\left(\frac{x}{2}\right) + 5(y-5) = 150 \longrightarrow \frac{3x}{2} + 5y - 25 = 150$$

\uparrow half of hot dogs \uparrow ate 5 burritos

$$\frac{3x}{2} + 5y = 175$$

I will use elimination to cancel the "y's".

$$\begin{array}{r} 3x + 5y = 250 \\ + (-\frac{3x}{2} - 5y = -175) \end{array}$$

$$3 - \frac{3}{2} = 1.5 \longrightarrow 1.5x = 75$$

$$\frac{1.5x}{1.5} = \frac{75}{1.5} \quad \text{Plug in to find } y$$

$$\begin{array}{r} 3(50) + 5y = 250 \\ 150 + 5y = 250 \\ -150 \quad -150 \end{array}$$

$$\begin{array}{r} 5y = 100 \\ \frac{5y}{5} = \frac{100}{5} \\ y = 20 \end{array}$$

There were 50 hot dogs and 20 burritos to start. There are 25 hot dogs and 15 burritos at the end.

Verify:

$$\begin{array}{r} 50(3) + 20(5) \stackrel{?}{=} 250 \\ 150 + 100 = 250 \quad \checkmark \\ 25(3) + 15(5) \stackrel{?}{=} 150 \\ 75 + 75 = 150 \quad \checkmark \end{array}$$

② If he ate half of the hot dogs and 5 burritos I can work backwards to find the prices.

Total of original food = 250
 Total of remaining food = 150

So, he ate \$100 of food.
 So, half the hot dogs and 5 burritos must cost \$100.

x = hot dogs. y = burritos

$$3 \cdot \left(\frac{x}{2}\right) + 5(5) = 100$$

↑ half the hot dogs ↑ 5 burritos at \$5 each.

$$3 \cdot \left(\frac{x}{2}\right) + 25 = 100$$

$$3 \cdot \left(\frac{x}{2}\right) = 75$$

$$x = 25 \cdot 2$$

$$x = 50$$

← Plug in for x to solve for y.

③ You can make 2 tables, one for the original food and another for the left over food. x = hot dogs y = burritos.

The original food has twice as many hot dogs. (x)
 The original food has 5 more burritos. (y)

Original	x	y	\$
	10	10	80
	20	20	160
	40	20	220
	50	20	250

Want \$250 in original table

Want \$150 in remaining table. Remaining

x	y	\$
5	5	40
10	15	105
20	15	135
25	15	150