

You own an M&M factory. You have 10 machines to process M&Ms. Each machine produces 100 bags of M&Ms. You can make either plain or peanut M&Ms in each machine. Plain M&Ms sell for \$2 per bag, and peanut sell for \$3 per bag. You want to make at least \$2400.

Define your variables:

$x = \#$ of peanut machines
 $y = \#$ of plain machines

Write 2 inequalities:

$$\begin{cases} x + y \leq 10 \\ 300x + 200y \geq 2400 \end{cases}$$

$$\begin{aligned} 300x + 200y &\geq 2400 \\ -300x & \quad \quad \quad -300x \\ \hline 200y &\geq -300x + 2400 \\ \frac{200y}{200} &\geq \frac{-300x + 2400}{200} \end{aligned}$$

Graph your 2 inequalities:

$$\begin{aligned} y &\leq -x + 10 \\ y &\geq -\frac{3}{2}x + 12 \end{aligned}$$

What are some possible solutions that use all of the machines?

8 peanut : 2 plain
 9 peanut : 1 plain

What are some possible solutions that don't use all of the machines?

8 peanut : 1 plain
 6 peanut : 3 plain

Is it possible to make only 1 type of M&M and still meet your goal?

Yes, run 10 peanut machines

