

1. (a) $x=0, y=9, z=7$
(b) no solution. Note: no solution means no solution for all of the variables.

2. Parametric solution:

$$x = -8 + 4z$$

$$y = 33 - 5z$$

$$z = \text{any number}$$

We can not buy a part of an animal. So all of the variables must be an integer. We also know that all of the variables must be greater than or equal to zero.

$$\begin{array}{lll} x \geq 0 & y \geq 0 & z \geq 0 \\ -8 + 4z \geq 0 & 33 - 5z \geq 0 & \\ 4z \geq 8 & 33 \geq 5z & \\ z \geq 2 & 33/5 \geq z & \\ & z \leq \frac{33}{5} \approx 6.6 & \end{array}$$

In addition we know that the variables can not be any larger than 25

$$\begin{array}{lll} x \leq 25 & y \leq 25 & z \leq 25 \\ -8 + 4z \leq 24 & 33 - 5z \leq 24 & \\ 4z \leq 32 & 7 \leq 5z & \\ z \leq 8 & 7/5 \leq z & \\ & z \geq \frac{7}{5} \approx 1.4 & \end{array}$$

Taken all together, we find that $z = 2, 3, 4, 5, 6$.