Writing a solution

This is an example of what you will have to do next week.

My uncle owns a farm. In his yard, he keeps cows and hens. When I visited him last week, I counted 50 heads and 162 "feet".
How many hens and cows does my uncle own ?

Solution

Firstly, let's name the unknown quantities : x will denote the number of cows and y the number of chickens.
Assuming

- all animals have one head (which is fairly reasonable)
- a hen has two feet
- a cow has 4

we get two equations :

$$x + y = 50 \qquad (1)$$

because adding x cow heads and y duck heads give us 50 heads, and

$$4x + 2y = 162 \qquad (2)$$

when we account for the feet.
Let's multiply both sides of (1) by 2, we get

$$2x + 2y = 100 \qquad (3)$$

We can now subtract (3) to (2), which gives us

$$2x = 62$$

Now we have the value of x : it's 31.
Replacing x by 31 in (1), we finally find that $y = 19$.

Thus, the uncle owns 31 cows and 19 hens.