

Mathematics Problem of the Week 2

There were no correct solutions this week

Contact Tariq Nuruddin (Surrey A3670) for your prize or email MathProblem@kpu.ca.

Problem XYZ solution:

Let c = # white chicken

s = # black swans

h = # white horses

w = # white sheep

b = # black sheep

$3 = 1$ white dog + 1 grey cat + 1 green parrot

The total number of animals in Donald's farm is 106. So

$$c+s+h+w+b+3=106, \text{ or equivalently, } c+s+h+w+b=103.$$

The total number of white animals is 67. Thus

$$c+h+b+1=67, \text{ or equivalently, } c+h+b=66.$$

The total number of black animals is:

$$\# \text{black animals} = \text{total} - (\# \text{white animals}) - (\# \text{grey animals}) - (\# \text{green animals}) = 106 - 67 - 1 - 1 = 37.$$

Therefore $s+b=37$.

The total number of beaks is 65. Each individual chicken, swam and the parrot have one beak each. Hence $c+s+1=65$, or equivalently, $c+s=64$.

The total number of legs is 294. The cat has 4 legs, the dog has 4 legs, the parrot has 2 legs. So

$$c+s+h+w+b+4+4+2=294, \text{ or equivalently, } 2c+2s+4h+4w+4b=284.$$

Solve

c	$+s$	$+h$	$+w$	$+b$	$=103$
c		$+h$	$+w$		$=66$
	s			$+b$	$=37$
c	s				$=64$
$2c$	$+2s$	$+4h$	$+4w$	$+4b$	$=284$

The solution is: $c=40, s=24, h=8, w=18, b=13$.

In conclusion: # sheep = $18+13=31$. There are 31 sheep in Donald's farm.