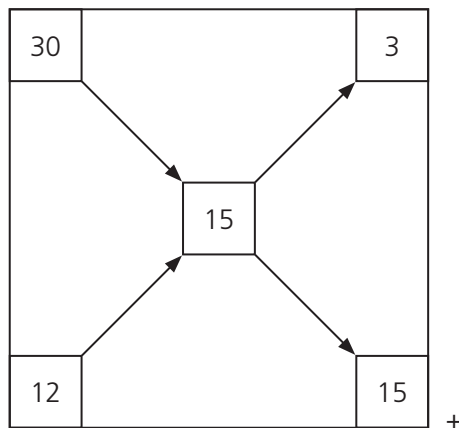# Ration Formulation using the 'Pearson Square'

The 'Pearson Square' is a tool that can be used to calculate the portion of two feeds needed to meet protein or energy requirements of an animal. For this tool to work, one of the feeds used must be higher in ME or CP than the desired level and the other feed must be below the desired level.

Exercise:

Calculate the portion of a grain needed to make a 15% CP mix. The grain we have available is lupins at 30% protein and barley at 12% protein.

Step 1
Draw a square and insert the desired crude protein (15%) in the middle of the square.

Step 2
Place the two grains and their respective crude protein contents on the left hand corners of the square.

Step 3
Calculate the difference between the middle value and the value on the bottom and top left hand corners of the square and place the result diagonally opposite. These values represent the portion of each grain required to produce a grain mix with a CP level of 15%.
30-15=15 (Value in the bottom right corner of the square)
12-15=3 (Value in the top right corner of the square)

Note – disregard the negative or positive value of the numbers.

Step 4
Calculate the percentage of each grain.
Add the two portion figures to give the total and calculate each feed as a percentage.

3+15=18

Lupins
(Difference of middle value and barley value) 3 ÷ 18 (total of the two differences) 0.167 x 100

= (% of lupins) 16.7 %

Barley
(Difference of middle value and lupin value) 15 ÷ 18 (total of the two differences) 0.833 x100

= (% of barley) 83.3

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