Math Diversion Problem 701

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Easy to criticize, more difficult to be correct.
— Charlie Chan

The problem is found at:

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Source:  https://www.algebra.com/algebra
    Question 200033
Title:  Mixed-Rate Problem
 Presenter: Patrick
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1 The Problem

Question 200033:[1] Soybean meal is 14% protein, corn meal is 7% protein. How many pounds of each should be mixed together to get 280 lb mixture at 13% protein?

2 The Solution

This is a standard 'total is the sum of its parts' problem. Both overall pounds and pounds of protein in both constituent meal types is conserved in the resulting mixture.

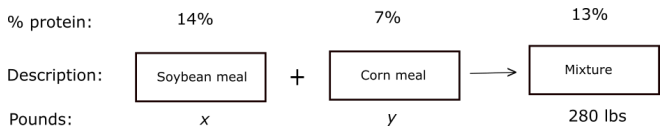

Figure 1. Protein is a physical constituent of the two kinds of meal and it will be conserved upon mixing any quantities of the two.

$$\text{Conservation of overall pounds:} \qquad x + y = 280\,, \tag{1a}$$

$$\text{Conservation of protein:} \qquad .14x + .07y = .13(280)\,. \tag{1b}$$

This pair of equations has solutions $x = 240$ and $y = 40$, both in pounds.

[1] Found at https://www.algebra.com/algebra.