Math Diversion 995

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Title: Question 311277: A Mixed-Rate Problem
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1 Problem

Albert buys and sells books, and always purchase it at the same price. He then sells the books for \$5 more than what he paid for. Two months before, he broke even after buying 56 books and selling 49. What is his buying price and selling price?

2 Solution

Let P represent Albert's buying price, therefore, his selling price is $P + 5$. The net income will be the gains minus the losses, as shown in the figure below.

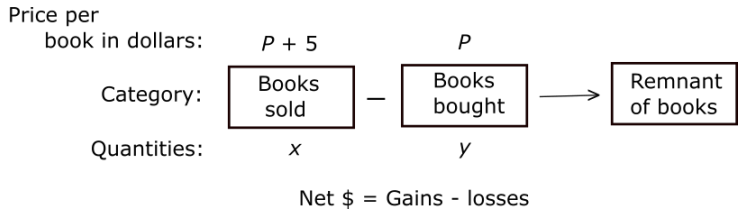

Figure 1. The net income in dollars is the sum of its part; it's just that one of those parts is negative.

To say that Albert 'broke even' means that his net for that period of time was zero. Therefore, with $x = 49$ and $y = 56$, we get

$$(P + 5) \cdot 49 - P \cdot 56 = 0\,, \tag{1}$$

which has solution $P = 35$. Therefore, $P + 5 = 40$.