# Math Diversion Problem 765

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> The only way to learn mathematics is
> to do mathematics.
> — Paul Halmos

The material here is found at:

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Source: The Ether of Great Mathematical Ideas
Title: A Word Problem: Mixed Rates
 Presenter: Patrick
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## 1 The Problem

A shop keeper wants to make 4 pounds of a tea blended from two ingredients: black tea, costing \$2.20 per pound, and orange pekote tea, costing \$3.00 per pound. If the value of the blended tea is to be \$2.50 per pound, how much of the ingredients are to be use to maintain the value of the ingredients in the blend?

## 2 Solution

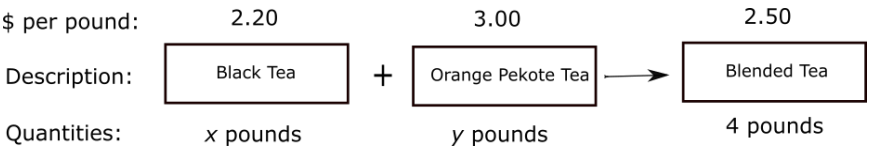


Figure 1. We'll be writing conservation equations on both poundage and cost, or value, on the teas, before and after blending.

Now we extract the equations we need.

$$\begin{aligned} \text{Conservation of poundage:} \quad & x + y = 4\,, \\ \text{Conservation of cost (value):} \quad & 2.20x + 3.00y = 2.50(4)\,. \end{aligned}$$

The solution for this couple of equations is: $x = 2.5$, and $y = 1.5$, both in pounds, of course.

**Final note:** These coupled equations were designed to account only for the actual value of the combined teas before and after mixing to be the same. In real life, a shopkeeper might add a small markup to reflect the time required to make the mixture.