Math Diversion Problem 888

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> I take the positivist viewpoint that a physical theory is just
> a mathematical model and that it is meaningless to ask
> whether it corresponds to reality. All that one can ask
> is that its predictions should be in agreement
> with observation. — Stephen Hawking
> [*The Nature of Space and Time*, p.3–4]

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Source:  http://regentsprep.org/Regents/math/ALGEBRA/AE3/PracWo
Title: Cups in Pitchers
 Presenter:  Patrick
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1 Problem

Two small pitchers and one large pitcher can hold 8 cups of water. One large pitcher minus one small pitcher constitutes 2 cups of water. How many cups of water can each pitcher hold?

2 Solution

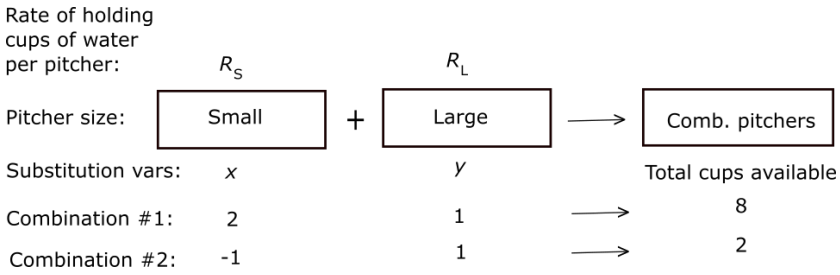

Figure 1. Standard setup for calculation: $R_S x + R_L y =$ Total cups.

We can easily glean from Figure 1 the information to write the coupled equations

$$\begin{aligned}(2)R_S + (1)R_L &= 8\,,\\ (-1)R_S + (1)R_L &= 2\,,\end{aligned} \tag{1}$$

which as solution $R_S = 2$ cups per small pitcher, and $R_L = 4$ cups per large pitcher.