

Math Diversion 942

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The ugliest curve you're ever likely to see in your life
is the *learning curve*. Deal with it.
— The Author

Source: The Ether of Great Mathematical Ideas
Title: A mixed-rate problem
Presenter: Patrick

1 The Problem

How much pure antifreeze liquid should be added to 1 gallon of 40% antifreeze to get 60% antifreeze? (Concentrations here are volume concentrations, measured in [volume/volume] units).

2 The Problem

Let's make a diagram.

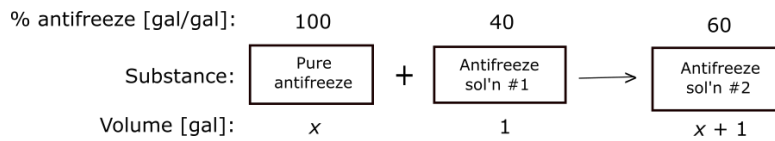


Figure 1. How unmathematical when I pour some arbitrary amount of antifreeze into my car's radiator. Algebra! Who knew?

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- 1) Conservation of volume is already accounted for.
 - 2) Next, we write down the conservation of 'pure' antifreeze:

$$(1.00)(x) + (0.4)(1) = (0.6)(x + 1). \quad (1)$$

The solution for x is 0.5 gal.