Math Diversion 726

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> We won't be bullied into an
> answer we don't like.
> — John Baez

The problem is found at:

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Source: https://www.basic-mathematics.com/
     hard-word-problems-in-algebra.html
Title: 100 hard word problems in algebra: #57
 Presenter: Patrick
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1 Problem

The amount of water a dripping faucet wastes water varies directly with the amount of time the faucet drips. If the faucet drips 2 cups of water every 6 minutes, find out how long it will take the faucet to drip 10.6465 liters of water.

2 Solution

My plan is to just start somewhere comfortable. So,

$$Q\,[\text{cups}] = \frac{2\,[\text{cups}]}{6\,[\text{min}]} \cdot T\,[\text{min}]\,. \tag{1}$$

Obviously, I think it's a great idea to include the units, especially since they be a'changing soon.

At some point we're going to have to convert liters to cups or vice versa.

$$Q\,[\text{cups}] = Q\,[\text{L}]\frac{c\,[\text{cups}]}{\ell\,[\text{L}]} = Q\,[\text{L}]\frac{4.23\,[\text{cups}]}{1\,[\text{L}]} = (10.6465\,[L])\frac{4.23\,[\text{cups}]}{1\,[\text{L}]} = 45.0347\,[\text{cups}]\,. \tag{2}$$

Solving (1) for T, we have that

$$\cdot T\,[\text{min}] = Q\,[\text{cups}]\frac{6\,[\text{min}]}{2\,[\text{cups}]} = 45.0347\,[\text{cups}]\frac{6\,[\text{min}]}{2\,[\text{cups}]} \approx 135\,[\text{min}]\,. \tag{3}$$

That's about two hours and 15 minutes.