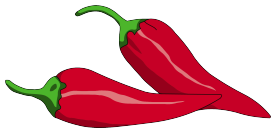
Problem of the Week
Problem C and Solution
Needs More Heat

Problem

Samu bought 20 g of curry powder in a container. He used 2 g of the curry powder in a recipe and thought it wasn't spicy enough, so he added 2 g of hot chili powder to his curry powder container and mixed it thoroughly. The next day he used 2 g of his newly mixed curry powder in a recipe and thought it still wasn't spicy enough, so he added another 2 g of hot chili powder to his curry powder container and mixed it thoroughly.

What is the ratio of the mass of the original curry powder to the mass of hot chili powder in the container now?



Solution

After Samu used the curry powder the first time, there was $20 - 2 = 18$ g of the curry powder left. Samu then added 2 g of hot chili powder, so the container had 18 g of the original curry powder and 2 g of hot chili powder.

After Samu used his newly mixed curry powder, there was $20 - 2 = 18$ g of the mixture left. We need to determine how much of this is the original curry powder and how much is hot chili powder. Of the mixture, $\frac{18}{20}$ or $\frac{9}{10}$ is the original curry powder and the remainder is hot chili powder. So if there is 18 g of this mixture, then $\frac{9}{10} \times 18 = 16.2$ g is the original curry powder and the remaining $18 - 16.2 = 1.8$ g is hot chili powder.

After Samu added another 2 g of hot chili powder, the container had 16.2 g of the original curry powder and $1.8 + 2 = 3.8$ g of hot chili powder. Thus, the ratio of the mass of the original curry powder to the mass of hot chili powder is

$$16.2 : 3.8 = 162 : 38 = 81 : 19$$