



## Problem of the Week

### Problem C and Solution

### Remix

#### Problem

A bin contains 10 kg of peanuts. 2 kg of peanuts are removed and 2 kg of raisins are added and thoroughly mixed in. Then 2 kg of this mixture are removed and 2 kg of raisins are added and thoroughly mixed in again. What is the ratio of the mass of peanuts to the mass of raisins in the final mixture?

#### Solution

When 2 kg of the 10 kg of peanuts are removed, there are 8 kg of peanuts remaining.

Since 2 kg of raisins are added, then there are 2 kg of raisins in the bin.

The peanuts and raisins are then thoroughly mixed and the total mass of the mixture is  $8 + 2 = 10$  kg.

Since 2 kg of this mixture is removed and this is one-fifth of the total mass of 10 kg, then one-fifth of the mass of peanuts (or  $\frac{1}{5} \times 8 = 1.6$  kg) is removed and one-fifth of the mass of raisins (or  $\frac{1}{5} \times 2 = 0.4$  kg) is removed.

This leaves  $8 - 1.6 = 6.4$  kg of peanuts and  $2 - 0.4 = 1.6$  kg of raisins.

When 2 kg of raisins are then added, the mass of raisins becomes  $1.6 + 2 = 3.6$  kg.

There are now 6.4 kg of peanuts and 3.6 kg of raisins.

Therefore, the ratio of the mass of peanuts to the mass of raisins is

$$6.4 : 3.6 = 64 : 36 = 16 : 9.$$

