Problem of the Week
Problem C and Solution
It's Lost

Problem

The water content of a certain fruit, by weight, is 80%. Therefore, 20% of the fruit, by weight, is other material. When left in the sun to dry, the fruit loses 75% of its water content, and the amount of other material remains the same. What percent of the dried fruit is water?

Solution

Solution 1

Let's consider a piece of fruit that originally weighs 100 g. If 80% of the weight is water, that means that 80 g is water and 20 g is other material.

When left in the sun to dry, the fruit loses 75% of its water weight. So it loses 75% of 80 g $= 0.75 \times 80 = 60$ g of water, and $80 - 60 = 20$ g of water remains.

The dried fruit still contains 20 g of other material. Therefore, the dried fruit consists of 20 g of water and 20 g other material.

The dried fruit is therefore $\dfrac{20}{20+20} \times 100\% = 50\%$ water.

Solution 2

Suppose the fruit originally weighs x g. If 80% of the weight is water, that means that 80% of $x = 0.8 \times x = 0.8x$ g is water and 20% of $x = 0.2x$ g is other material.

When left in the sun to dry, the fruit loses 75% of its water weight. So it loses 75% of $0.8x = 0.75 \times 0.8x = 0.6x$ g of water, and therefore $0.8x - 0.6x = 0.2x$ g of water remains.

The dried fruit still contains $0.2x$ g of other material. Therefore, the dried fruit consists of $0.2x$ g of water and $0.2x$ g other material.

Since the amount of water in the dried fruit is the same as the amount of other material, the dried fruit consists of 50% water and 50% other material.