

Apples and Bananas

There are three boxes, one containing only apples, the second only bananas and the third both apples and bananas. The boxes were once correctly labeled, but unfortunately the labels have been moved so that each box is now incorrectly labeled. By observing just one piece of fruit drawn from one of the boxes, can you determine the contents of each box?

Solution to Apples and Bananas

For discussion purposes, let us denote the contents of the three boxes as A for apples, B for bananas, and AB for apples and bananas. And let us use quotation marks to denote how each box is labelled: "A" for apples, "B" for bananas, and "AB" for apples and bananas.

Observe one fruit drawn from the box (incorrectly) labelled "AB". Let us say that it is an apple. Then the box labelled "AB" must be box A because it cannot have both apples and bananas. The box labelled "B" then cannot be A (already taken) and cannot be B (must be incorrectly labelled). So, it must be AB. That leaves the box labelled "A", which must be B.

If the fruit drawn from box "AB" is a banana, box "AB" must be B, box "A" must be AB, and box "B" must be A.