

Here are the full, or partial solutions.

All years, question 1

Welcome to the third installment of Portia's Caskets! This time, Portia tells you that every casket has been made by one of two famous Florentine craftsmen, Bellini and Cellini. She explains that Cellini always writes a false statement on the lids of the caskets he makes, while Bellini only puts true statements on the lids of the caskets he builds. As before, Portia is truthful.

For this first puzzle, Portia tells you that she has hidden a dagger in one of the caskets. To pass this test, you must avoid choosing the casket with the dagger.



Solution

We consider each container in turn, first assuming it was made by Bellini and checking for logical consistency, then assuming it was made by Cellini and checking again.

Let's start with the lead casket as it looks like it will give more information:

Case 1: The lead casket was made by Bellini

The statement on the lead casket is true, and therefore the gold and silver caskets must have been manufactured by Cellini and thus have false statements on their lids.

The gold statement is a lie, the dagger is not in the gold casket. The silver statement is also a lie and so the dagger is in the silver casket.

There is no contradiction here, the dagger could be in the silver box.

Case 2: The lead casket was made by Cellini

The statement of the lead casket is false, and therefore two of the caskets must have been fashioned by Bellini, not the lead one, so the gold and silver caskets must have true statements.

The gold statement is true so the dagger is in the gold box. The silver statement is also true and so the dagger is not in the silver casket.

There is no contradiction here, the dagger could be in the gold box.

The dagger could be in the gold or silver caskets, so we choose the lead one.

All years, question 2

In this test, Portia places a portrait of herself in one of only two caskets, there are no daggers. As in the first puzzle, each casket is made by either Cellini or Bellini.

Which casket holds Portia's portrait?



Solution

Again, we will assume that one of the caskets is made by Bellini, and again we will begin with the casket that looks like it will provide more information. In this case, the silver one.

Case 1: The silver casket was made by Bellini

The silver box has a true statement as it was made by Bellini. From this silver statement, the gold casket must have been made by Cellini.

The statement on the gold box is false, so the portrait is inside.

We could just stop here, we have found a logically consistent answer, and if the problem is well-formed, the other case should lead to the same conclusion.

Case 2: The silver casket was made by Cellini

The statement on the silver box is false, so both caskets were made by Cellini.

The statement on the gold box is false, so the portrait is inside.

This case leads to the same conclusion, the portrait is in the gold casket.

All years, question 3

Again each of the caskets has been fashioned either by Bellini or Cellini. Portia has again placed a portrait of herself in one of the three boxes. This time, to win the prize (a moment of inspiration on a foggy day) you must find the portrait and tell the maker of each casket.



Solution

We start by noticing the lead casket gives most information about the caskets:

Case 1: The lead casket was made by Bellini

The statement on the lead box is true, this means that the gold and silver containers were made by Cellini.

Both the gold and silver statements are false. No contradictions. The portrait must be in the lead box and we have Gold: Cellini, Silver: Cellini, Lead: Bellini.

Case 2: The lead casket was made by Cellini

The statement on the lead box is false. At most one of the caskets was made by Cellini.

Since we assumed the lead box was made by Cellini, the gold and silver caskets must have been made by Bellini, which means the statements on both are true.

But this leads to an inconsistency since both boxes claim to contain the portrait.

This case leads to a contradiction, Case 2 cannot be correct.

So we have confirmed Case 1: The portrait must be in the lead box and the gold and silver caskets were made by Cellini, while the lead casket was made by Bellini.