Puzzle #3: Bad Wine
(To be discussed on October 14, 2011)

1. A king has 1000 bottles of exquisite wine and one of them is poisoned. Whoever drinks the bad wine, even very small amount, will die within 5 days. The king decides to force his prisoners to drink the wine, so he can figure out which bottle is bad before the kingdom’s annual feast in a week.

   If there were 1000 prisoners, he could simply assign each prisoner to a distinct bottle and check who dies. But unfortunately, the king has only 10 prisoners. Can he still enjoy the wine at the feast?

2. The next year, one out of 240 bottles of wine gets poisoned, with two weeks to go before the feast. This time, however, there are only 5 prisoners around. How should the king test the wine?