Brain Twisters for Kgp Visit

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Problem 1.

A farmer is taking a wolf, a goat, and a basket of cabbages to market, and he comes to a river where there is a small boat. He can only fit one item of the three into the boat, along with him at any one time. He cannot leave the wolf with the goat, or the goat with the cabbage for obvious reasons. Fortunately, the wolf detests cabbage. How does the farmer transport all three items across the river?

Problem 2.

You have 10 stacks of coins, each consisting of 10 dollar coins. One entire stack is counterfeit, but you do not know which one. You do know what the weight of each legitimate dollar coin is and you do know that each counterfeit coin weighs one gram more than a legitimate coin. You may weigh the coins on a weighing scale, which gives you a measurement in grams (see figure below). Note that this is *not* the type of weighing scale where there are two pans on two sides and you see which item is heavier than another by putting them on the two pans.

You may weigh the coins on the scale. What is the smallest number of weighings necessary to determine which is the counterfeit stack?

Problem 3.

You have six weights. One pair is red, one pair white, and one pair blue. In each pair, one weight is a trifle heavier than the other but otherwise appears to be exactly like its mate. The three heavier weights (one of each color) all weigh the same. This is also true of the three lighter weights.

In two separate weighings on a balance scale, how can you identify which is the heavier weight of each pair?