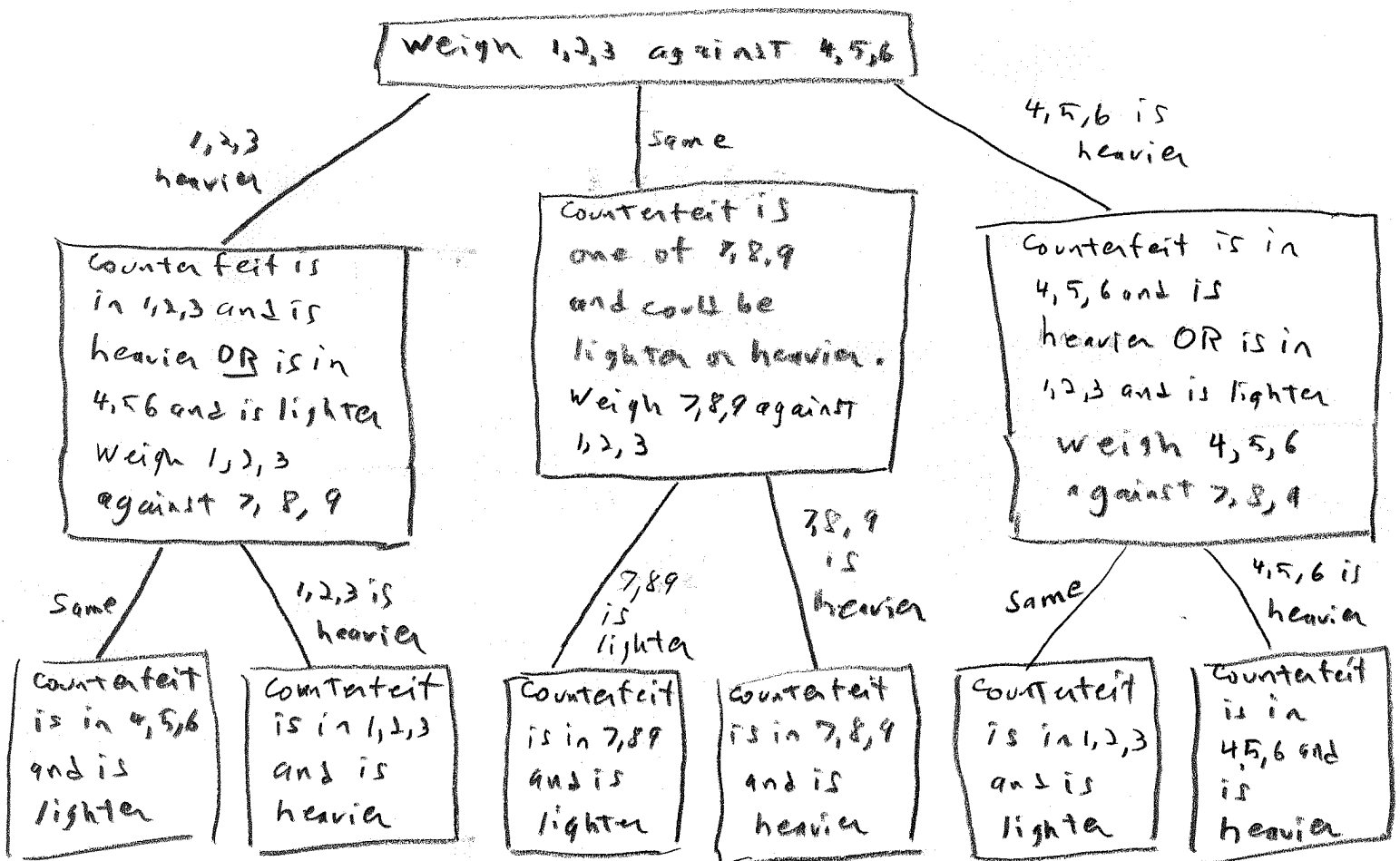


we have 9 coins (1, 2, 3, 4, 5, 6, 7, 8, 9) and a balance,  
 8 of the coins are identical real coins. The other coin is  
 a counterfeit that can be heavier or lighter than a  
 real coin. Find the counterfeit by using the balance 3 times.



Each of the 6 cases on the bottom  
 can be handled with one more  
 weighing, comparing two of the  
 coins. If those two coins are equal,  
 the 3<sup>rd</sup> coin is the counterfeit.  
 If they are different, we know which  
 of the two is the counterfeit because  
 we know whether the counterfeit is  
 heavy or light.