Step 5: Divide the third group of 3 coins into tree equal parts and go to the next step.
Step 6: Compare two selected coins, using the balance. This action (experiment) may give two results. In one one case, the weights of both coins are equal. It means that the third selected coin is lighter than a good coin and we have the answer to the problem. In the other case, the balance shows that the weight of one coin is less than the weight of the other coin. It means that the lighter of these two coins is not a good coin and we have the answer to the problem.
Step 7: Divide the lighter group of 3 coins into three equal parts and go to Step 6.
Step 8: Divide the lighter group of 8 coins into three groups: 3,3 and 2 coins and go to the next step.
Step 9: Compare two selected groups of 3 coins, using the balance. This action (experiment) may give two results . In one one case, the weights of both coins are equal. It means that the lighter coin is in the third group of 2 coins because there is only one lighter coin. Then go to step 10. In the other case, the balance shows that the weight of the one group of 3 coins is less than the weight of the other group of 3 coins. It means that the lighter coin is in the lighter group of 3 coins because there is only one lighter coin. Then go to step 5.
Step 10: Compare two selected coins, using the balance. This action (experiment) may only give one result the balance shows that the weight of one coin is less than the weight of the other coin because we know that there is only one lighter coin. It means that the lighter of these two coins is not a good coin and we have the answer to the problem.
This algorithm shows how to find answer to the problem performing three or less weighings. Information estimates prove that it is impossible to improve this algorithm, obtaining the result using only two weighings or less.
Problems 1, 2 and their versions have many practical applications in such areas as information search, knowledge acquisition, ordering, control, to mention but few.