EXTRA CREDIT PROBLEM #2

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| You are standing in a hallway lined with 500 closed doors. You then open all of the 500 doors. After this, you then close every 2nd door (so the 2nd, 4th, 6th…498th and 500th are all closed). Then, you go to every third door and open it if it is closed or close it if it is open. You proceed to repeat this process for every fourth door, every fifth door, every sixth, etc…. and so on until the final step is to do this with every 500th door (the last one only). So, for example, on pass number 16 – you will switch every 16th door. After your hundredth pass of the hallway, in which you switch doors 100, 200, 300, 400 and 500. The questions to answer is how many doors are now open after all 500 passes through the hallway and which specific doors are open. (Answers must have an explanation and any work that was used) |