Finding a "lost" combination for a Master padlock.

This method will allow you to narrow down the number of possible combinations for a Master padlock from 64,000 to 100. A tremendous improvement, but will nonetheless require trial and error. The information contained here is derived from posts to alt.locksmithing, which I have consolidated, expanded upon, and verified. It is my wish, that this will explain to anyone (not just locksmiths) how and why this works.

These days, combination padlocks are almost as common as the ways to defeat them. The obvious answer is a pair of bolt cutters, because they will easily remove any padlock. However, depending on the situation, it may not be a good idea to ruin the lock, and it is nearly impossible to carry bolt cutters discretely. If you have the money, you can purchase a code book from Master for several hundred dollars. Code books are nice (all you need is the serial number), but they are usually too expensive to be a feasible alternative. This method, on the other hand, is easily committed to memory, simple to carry out, and completely free.

First, get a hold of a locked Master combination padlock, preferably one in good condition, but to which you do not know the combination. If you are a skeptical person, or not systematic enough to accurately try 100 combinations, you may use a lock that you know the combination to, and verify that this method works.

Pull the hatch tight (U-shaped part which opens), and begin to turn the dial, either you will hear a snap and feel the hatch pop up slightly, or you will simply reach a place you cannot turn past. If you felt it pop, then you are now in the correct place to determine the numbers. If not, then you were there to start with. Regardless, turn the dial back and forth (while you pull up on the hatch), and you will find that you can turn it only a little ways before it stops (usually only 2 or 3 numbers wide). Sometimes this will center around a number on the dial, while other times it will not. **This is important**. Write down the upper and lower limits (i.e. 2-2.5, 3.5-4.5, etc.). You should find exactly twelve, with the pairs being about 3 numbers apart (i.e. starting number to next starting number is ~3) One of these catching places will correspond to the third number in the locks combination.

You can effectively find all catching places by using the pop described above. Between each catching place, will be a slightly higher area on which the hatch will ride. After you have found the first sticking place, let up a little on the hatch, turn it a small degree, and pull. You are now on top of one of the high areas, and should turn until it pops down. Now, you are in the next catching place. This, combined with knowing how far apart they are spaced, will ensure that you find all twelve.

What causes this is really simple, and is not as mysterious as it may seem. The reason that you find twelve catching places, and that the dial pops, is because of the "cogs" on the third wheel. The higher areas between catching places are really the cogs (which look like little bumps). When you pull up on the hatch, the dial can turn only until it encounters a cog. In the old days there were (most likely) no cogs on the wheel, and thus it would catch on the actual groove for unlocking, easily giving you the third number. However, Master since changed this and put 12 cogs on. Every catching place that you find, will correspond directly to a cog, however, since they are all evenly spaced, and 12 (number of cogs) is not a factor of 40 (number of numbers), some catch centers (should be 8 but is really 7, see below) will not fall directly on a number. Valid combinations do not include fractions. This narrows the possibility down from 12 to 5.

We still must determine which of the 5 remaining possibilities are the decoys, placed by Master, and which one is the real third number. Interestingly, the cogs are *not* all evenly spaced. The one on the right side of the notch (looking in from the back) is just enough thicker to move the catch point (which would have been off-centered) and cause it fall directly on a number. (Hence 8 instead of 7.) Because the other cogs are evenly spaced, at 3.3 numbers apart, every third one is just adding 10. All the non-fractional catch centers that end in the same digit are the decoys, while this "real" number will be different. It has been said that the real number *may* have the same last digit as the decoys, however I have yet to see an example of this. It is reasonable, that in this situation, you could calculate the differences between the catches to determine the cog that is wider. *(see example below)*

One of my master locks caught in the following manner:

Range:	**Center:**	**Starting point diff**: *(current line minus previous line)*
2.5-3.5	3	3
6-7	6.5	3.5
9-10	9.5	3
12.5-13.5	13	3.5
16-17	16.5	3.5
19-20	19.5	3
22.5-23.5	23	3.5
26-27	26.5	3.5
29.5-30.5	30	3.5 < **LOOK!!**
32.5-33.5	33	3
36-37	36.5	3.5
39.5-0	39.75	3.5

The only centered catches are 3, 13, 23, 30, 33. You can, of course, throw out the off-centered matches as you find them. All numbers end in a 3 except for 30, thus 30 is the third number in the combination. Also, as you can see, the pattern of starting differences is broken at the real last number.

Apparently, Master's combinations are not random. The first and third numbers are congruent mod 4, and the second number is off from those two by 2 mod 4 (the first and third numbers leave the same remainder when divided by 4, and the second leaves a remainder + or – 2 from those). So, in this example, where the third number is 30, then the first number is one of 2, 6, 10, 14, 18, 22, 26, 30, 34, or 38 and the second number is one of 0, 4, 8, 12, 16, 20, 24, 28, 32, or 36.

Possible Combinations:

1st#:	**2nd#:**	**3rd#:**
2	0	30
6	4	
10	8	
14	12	
18	16	
22	20	
26	24	
30	28	
34	32	
38	36	

10 possibilities for #1, 10 possibilities for #2, 1 possibility for #3 = 100 possible combinations.