

# 12 Days of ChrisMATH — Day 12

## Mastermind

You must find a secret number code of a given length, using only clues from previous guesses. Digits are from 0 to 9 and can repeat unless clues forbid it. The first digit is never 0.

Each clue follows the format:

Guess #	Guess	✓	~
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✓ shows how many digits in the guess are both correct and in the right position. This is checked first for each digit.

~ shows how many digits in the guess are correct, but in the wrong position. This is checked second, after we ignore the digits that were correct in the correct position.

Each digit is only counted once.

For example, suppose the secret number is 1123.

Guess #	Guess	✓	~
1	1331	1	2

Notice the first 1 is correct and in the correct place. The second 1 is correct, but should be in the second place (since we already checked that the first digit is correct). The first 3 is in the wrong position, since it should be in position 4. The secret number only has one 3, so the second 3 in the guess counts as an incorrect digit.

## Level 1

4-digit code:

Guess #	Guess	✓	~
1	1234	1	1
2	5678	0	2
3	2673	0	0
4	6583	0	2
5	9054	0	2

## Level 2

5-digit code:

Guess #	Guess	✓	~
1	13579	0	2
2	67411	0	1
3	56789	0	1
4	31415	1	1
5	32233	2	0
6	34567	1	0
7	28273	0	2
8	57174	1	0
9	16384	0	3

## Level 3

In this puzzle, there may be more than one answer that works for all of the clues! To solve this level, you must find the **SUM** of all possible 6-digit codes that work.

6-digit code:

Guess #	Guess	✓	~
1	123456	0	2
2	246801	0	3
3	911427	0	2
4	314159	0	3
5	641024	0	3
6	271828	0	1
7	161803	0	2
8	172932	0	1
9	397024	0	3
10	937719	0	1
11	690412	0	3