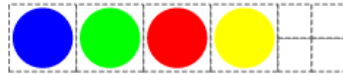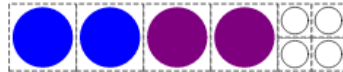red, green, blue, yellow, cyan and purple are the options - you are allowed repeats
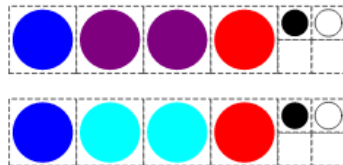
1. In the example below, there are no pegs, so none of the four colors blue, green, red or yellow appear in the final pattern. This means that the final pattern consists of just cyan and purple colors. How many possible patterns are there? What are they? What might be a good second guess?
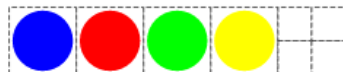

2. The example below of an initial guess (where the response is four white pegs) completely determines the solution. What is it?
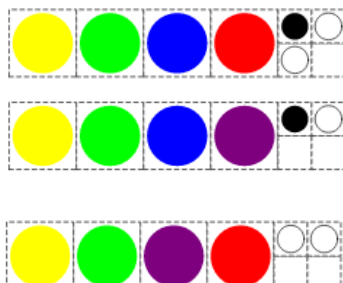

3. In the following game, changing both the purple pegs to cyan pegs makes no change in the results. Can we therefore conclude that there are no purples or cyans in the final pattern?
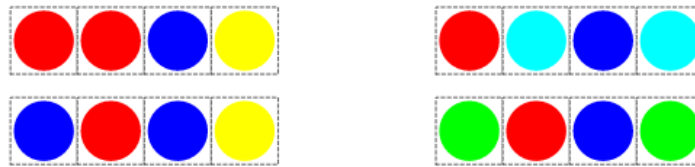

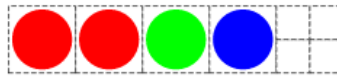4. Here's the next step in the game above. Now what can you conclude?

5. What can you conclude about the secret pattern if the following represent the first three guesses in a game?
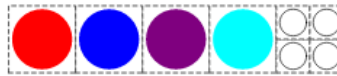
6. Assuming that you are playing the game above, which of the following are possible secret positions?

7. What can be concluded from the following initial move? It seems like we didn't learn anything: the response of no pegs means that there were zero matches.

8. Given this result (4 white pegs) for the initial guess, how many possible secret values are there? What are they?

9. (*) Given the following first two moves, there are only five possibilities for the secret position. What are they?

10. (*) Find all 16 possible patterns, given the initial information from the game started in question 5 above.

11. (**) What does this table represent?

	AAAA	AAAB	AABB	AABC	ABCD
[BBBB]	1	1	1	1	1
[BBWW]	0	3	4	5	6
[BWWW]	0	0	0	4	8
[WWWW]	0	0	1	2	9
[BBB]	20	20	20	20	20
[BBW]	0	24	32	40	48
[BWW]	0	27	36	84	132
[WWW]	0	0	16	44	136
[BB]	150	123	114	105	96
[BW]	0	156	208	230	252
[WW]	0	61	96	222	312
[B]	500	317	256	182	108
[W]	0	308	256	276	152
[ ]	625	256	256	81	16
H	1.49844	2.69343	2.8851	3.0437	3.05667