BULLS AND CREOTS
A Mathematical/deduction Game

The objective of this two-player game is to figure out your opponent's number.

First, you each pick a secret three-digit number in which no numerals are alike. The first numeral cannot be 0. For instance, you cannot have the number 012 but you could have 102 or 120. You cannot have the number 101 because two numerals are alike. Write your number where your opponent cannot see it but where you can refer to it when he makes a guess.

For the game, you will take turns guessing the other player's three-digit number. The response of your opponent will be made on this chart:

#	B	C	
			0
			1
			2
			3
			4
			5
			6
			7
			8
			9

The # column is where you will write your guess. The B column is for Bulls and the C column is for creots. "Bulls" mean that you have the right numeral in the right place and "Creots" are for numerals that are correct but are in the wrong place. Bulls = right number; right place. Creots = right number; wrong place. The 0 – 9 chart on the side is to cross out numerals that you know are not in the other player's number.

Here's how a game might look:

Austin and Cami are playing. They have their charts ready. Austin chooses the number 123 and writes it on the back of his paper. Cami chooses number 654 and writes it on a slip of paper she keeps in her pocket.

Austin begins and guesses that Cami's number is 876, which he writes on his chart. Only a 6 is in Cami's number but it's in a different spot than what Austin guessed. She says, "one creot." Austin's chart now looks like this:

#	B	C
876		1

Cami guesses 425, which she writes on her chart, and Austin says, "one bull." Cami's chart now looks like this:

#	B	C
425	1	

Austin now tries to guess what number he has that's the right number but in the wrong place, as Cami tries to guess which number she has that's the right number in the right place. Here's how the game might continue (with each of them taking turns):

Austin's Chart
(He's trying to guess Cami's number: 654)

#	B	C		0
				~~1~~
876		1		~~2~~
721	0	0		3

(He knows that 1, 2, and 7 are not in Cami's number. He crosses them out on his chart. He also knows that the 8 or the 6 from the first guess is the creot.)

Right-side digits: 4, 5, 6, ~~7~~, 8, 9

634	2			

(He can't be sure if the 6 from his first guess is now the bull. But he'll use it again.)

630	1			

(He's going to guess that the 6 is a bull and that he should use the 4 from the previous guess. That means that the 8 from the first guess and the 3 from the third and fourth guesses might be out.)

694	2			

(The only number he hasn't used is 5.)

654	WINNER!			

Cami's Chart
(She's trying to guess Austin's number: 123)

#	B	C		0
				1
425	1			2
416		1		3

(she now knows that the 4 is not the bull and that it's not in Austin's number at all because it can't change from a bull to a creot. She also knows she has another number.)

Right-side digits: ~~4~~, 5, ~~6~~, 7, 8, 9

629	1			

(She can't be sure if the 6 or the 2 is the bull. She'll only use one of them in the next guess.)

637		1		

(She now knows the 6 is not in Austin's number. From the first guess she knows either the 2 or the 5 is the bull. But if the 5 were the bull, then the 9 in the third guess would be the bull and they're in the same position. The 2 must be the center numeral. The 4 and the 6 are out. That leaves the 1 in the second guess to be the creot and the 3 or the 7 in the fourth guess to be the creot.)

321	1	2		

(She knows exactly what Austin's number is. Unfortunately for Cami, it's Austin's turn.)

Cami demands a rematch.