Two players $A$ and $B$ alternate turns during a game as follows: Player $A$ starts by calling a whole number between 1 and 10. Each turn a player calls a whole number larger than the previous by at most 10. The player who calls 100 wins. For example, a game can start as $A$ calls 3, $B$ calls 12, $A$ calls 22, $B$ calls 24, $A$ calls 25, etc.

Give a winning strategy for player $A$. Explain why this strategy always works.

**Solution by Robert Reiner.** The strategy would be for person $A$’s numbers to be 1, 12, 23, 34, 45, 56, 67, 78, 89, 100 [regardless of what $B$ calls]. The concept is that one way $A$ can have a strategy would be to have some control about the amount of increase per round [one round consist of player $A$’s call followed by player $B$’s call]. Thus, person $A$ would call out the number that would make the difference between his/her last number and the current number equal to 11, since any other difference can not be regularly achieved [note that since $B$ can only increase the previous number called by $A$ by at most 10 then, according to the rules, player $A$ can always complete that increase to 11, by adding a number between 1 and 10 to $B$’s increment]. Additionally, since $1 + 9 (11) = 100$, person $A$’s first number should be 1 so that in the tenth round, person $A$ will be able to call out 100.

**Note.** All sentences in brackets were added by the organizing committee to make the solution clearer.