1. Race to 100

The Race to 100 is a game for two players which is played as follows. Players alternate turns selecting integers (which may be re-used) from 1 to 10. A running total is kept with each player’s selection being added to the grand total. The first player to make the total 100 (or more) wins.

(a) Play the game a few times.
(b) Which player will win if both players play optimally?
(c) Describe the winning strategy.

Now let’s vary the game in two ways.

(d) What happens if the players select integers from 1 to $n$ instead?
(e) What happens if the target number is $m$ instead?