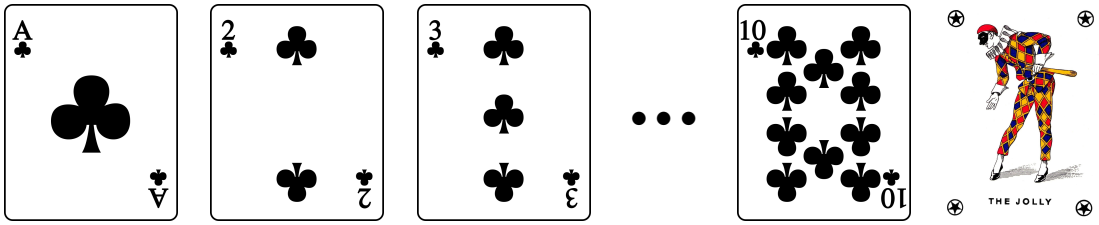
Joker's Wild

A game is played with a small deck of eleven cards: the numbers one (ace) through ten and a Joker. Each turn the player chooses to either draw a card or quit. If a number is drawn then it is added to the current score (which starts at zero), but if a Joker is drawn then the player's score drops to zero and the game ends. Assume the player aims for a target score of S, i.e. they will draw another card if their current score is below S, or quit otherwise.



Problem. What target S would maximize the expected value of their score?

Hint. The next card's expected value is a function of the current score.

Submit your solution online by scanning QR code and filling out the form, or submit at

`sites.google.com/unomaha.edu/unopow`

A photo of handwritten work is fine. You can also turn in solutions physically at the UNO math department's mail room (located on the second floor of the Durham Science Center).