



## Problem of the Week

### Problem B

### Gamer!

Geoff plays a game using two standard six-sided dice: a black one and a white one. To win the game, Geoff must roll the dice and have the numbers on the two top faces sum to 11.

- (a) What is the probability that he rolls a 7 with just the black die?
- (b) What is the theoretical probability that he rolls a 1 on the black die and a 6 on the white die?
- (c) If he rolls both dice and calculates the sum of the numbers on the two top faces, what sum(s) have the lowest theoretical probability of being rolled?
- (d) What is the theoretical probability of rolling both dice and the sum of the numbers on the two top faces is 7?
- (e) What is the theoretical probability of rolling both dice and the sum of the numbers on the two top faces is 11?
- (f) Roll two dice thirty-six times and keep track of the number of times the numbers on the two top faces sum to 11. What was your empirical probability of rolling a sum of 11?
- (g) Share your results in part (f) with your classmates. How many had their empirical probability of rolling a sum of 11 equal the theoretical probability of rolling a sum of 11?

