**1.*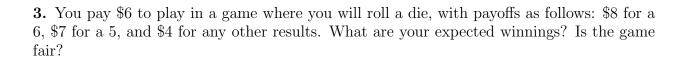* A lottery requires you to choose 4 cards from an ordinary deck: 1 heart, 1 club, 1 diamond, and 1 spade in that order from the 13 cards in each suit. If all four choices are selected by the lottery, you win $5000. It costs $1 to play. What is the expected payback for this game?

**2.** In one form of roulette, you bet $1 on even. If one of the 18 even numbers comes up, you get your dollar back, plus another one. If one of the 20 noneven numbers comes up, you lose your dollar. What is the expected payback for this game?

**3.** You pay $6 to play in a game where you will roll a die, with payoffs as follows: $8 for a 6, $7 for a 5, and $4 for any other results. What are your expected winnings? Is the game fair?

**4.** At age 50, you receive a letter from an insurance company. According to the letter, you must tell the company immediately which of the following two options you will choose: take $20,000 at age 60 (if you are alive, $0 otherwise) or $30,000 at age 70 (again, if you are alive, $0 otherwise). Based only on the idea of expected value, which should you choose?