1. Dr. Lew Zer is buying prizes for the math department’s fundraiser. Lottery tickets will be sold for $5 a piece. There will be first, second and third prizes. The probability of winning a first prize is 0.10, the probability for a second prize is 0.20, and the probability of winning third prize is 0.40. The second and third prizes cost the department $3 and $1, respectively. How much should Lew spend on the first prizes, if he wants to make a profit of $1 per ticket sold?

2. Joan owns a $5,000 CD at her local bank that currently pays 4% interest on the year. Her friend is suggesting that she buy stock in a new start-up company. Predictions are that she will be able to double her investment within one year, if the company succeeds, and that she will lose 75% of her investment, if the company fails. At what probability of success would the investment in the start-up be the better choice?