**Problem 1:** A fair game consists of spinning a wheel with the numbers 1 through 6 on it, though not all the numbers are equally likely. If the spinner lands on an even number, you must pay $2. If the number lands on a 3 or 5, you win or lose nothing, but if the spinner lands on a 1, you win $5.

| Amount | −$2 | $0 | $5 |
|---|---|---|---|
| Probability | 0.50 | 0.35 | |

(a) Fill in the probability for winning $5 in the table above to make the table a probability distribution.

(b) What is the average amount a player expects to win per game in the long run?

(c) Based on the information from (b), should one play this game? Explain.

(d) Compute the standard deviation, $\sigma$, for the probability distribution. Show your work.

**Problem 2:** An economic wellness survey is being conducted on a city to determine its funding needs. The analysis team determines that for this city, incomes are approximately normally distributed with mean $\mu = 40.1$ and standard deviation $\sigma = 15.7$, measured in tens of thousands of dollars.

(a) What percent of people make less than $50,000 a year?

(b) What percent of people make more than $50,000 a year?

(c) What percent of people make more than $80,000 a year?

(d) What percent of people make between $50,000 and $80,000 a year?