# DISCRETE RANDOM VARIABLES

| LAST NAME | FIRST NAME | DATE |
|---|---|---|
| | | |

**1** (8 points). A random experiment for this activity consists in tossing two fair six-sided dice.

(a) Construct the sample space for this experiment.

(b) Let $Y$ the random variable with the predicted theoretical distribution of the sum of two fair six-sided dice. Fill out its pmf table, and construct a frequency histogram:
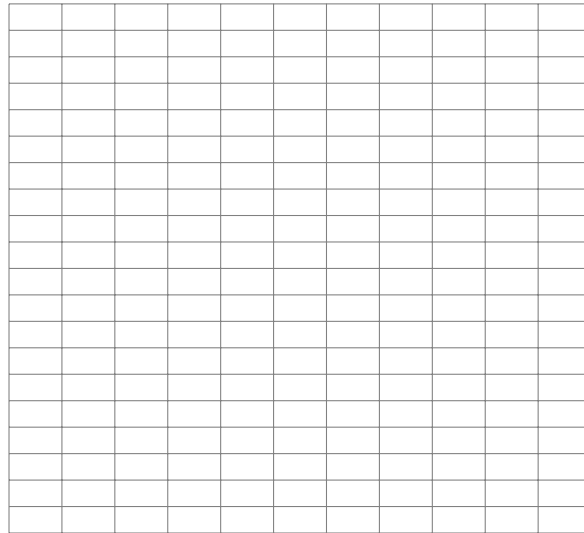
| $y$ | $P(Y = y)$ |
|---|---|
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |

(c) Find $EY$

(d) Toss the dice at least 20 times (but no more than 40 times) to construct the empirical distribution of the random variable $X$, which is the sum of the values shown. Fill out the following table with your empirical pmf values, and use the grid to construct a frequency histogram for your empirical distribution.

| $x$ | tally | $P(X = x)$ |
|-----|-------|------------|
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |

(e) Fill out the following table with your empirical cdf values, and use the grid below to construct a cumulative frequency ogive for your empirical distribution.

| $x$ | $P(X \leq x)$ |
|-----|----------------|
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |