

This quiz covers material from sections 8.1 and 8.2. Show your work.

1. (5 points) A survey was conducted among 200 students on campus regarding the number of parking tickets they received last semester and the results were as follows:

Number of Tickets	0	1	2	3	4	5	6	7	8
Frequency	92	32	35	14	12	7	2	4	2

a. (1 pt) Create a probability distribution for the number of tickets received.

Answer: The total number of outcomes is

$$92 + 32 + 35 + 14 + 12 + 7 + 2 + 4 + 2 = 200$$

So the probability distribution is just the relative frequency:

x	P(X=x)
0	.46 = 92/200
1	.16
2	.175
3	.07
4	.06
5	.035
6	.01
7	.02
8	.01

b. (2 pts) Draw the histogram.

c. (2 pts) What is the expected number of tickets that a student received last semester?

Answer: By our formula, we get,

$$E(X) = 1 \cdot .16 + 2 \cdot .175 + 3 \cdot .07 + 4 \cdot .06 + 5 \cdot .035 + 6 \cdot .01 + 7 \cdot .02 + 8 \cdot .01 \approx 1.4$$

2. (3 points) For the following probability distribution, find

x	-3	-1	0	2	3	6
P(X=x)	.1	.15	.05	.4	.25	.05

a. (1 pt) $P(X \leq 2)$

Answer:

$$P(X \leq 2) = P(X = -3) + P(X = -1) + P(X = 0) + P(X = 2) = .1 + .15 + .05 + .4 = 0.7$$

b. (1 pt) $P(X > 0)$

Answer:

$$P(X > 0) + P(X = 2) + P(X = 3) + P(X = 6) = .4 + .25 + .05 = 0.7$$

c. (1 pt) $E(X)$

Answer:

$$E(X) = -3 \cdot .1 + -1 \cdot .15 + 0 \cdot .05 + 2 \cdot .4 + 3 \cdot .25 + 6 \cdot .05 = 1.4$$