

The manager of a credit card department of a large bank has collected data during the past two years concerning the number of credit cards approved per week. The results from these two years indicated in the table below:

Number of Credit Cards Approved per week	Frequency
0	10
1	15
2	30
3	26
4	13
5	8
6	1
7	1

Tasks:

1. Make a probability distribution representing the number of credit cards approved per week.

Number of credit cards approved	Frequency	Probability
0	10	0.089
1	15	0.133
2	30	0.267
3	26	0.231
4	13	0.115
5	8	0.071
6	1	0.009
7	1	0.009
<b>Total</b>	<b>104</b>	<b>1.000</b>

2. Compute the expected number of credit cards approved per week.

$$E(X) = \sum(x * p(x))$$

$$= (0 * 0.089) + (1 * 0.133) + (2 * 0.267) + (3 * 0.231) + (4 * 0.115) + (5 * 0.071) + (6 * 0.009) + (7 * 0.009)$$

$$= \mathbf{2.333}$$

3. Compute the standard deviation and the variance.

$$\text{Var}(X) = \sum[(x - E(X))^2 * p(x)]$$

$$\text{Var}(X) = (0 - 2.333)^2 * 0.089 + (1 - 2.333)^2 * 0.133 + (2 - 2.333)^2 * 0.267 + (3 - 2.333)^2 * 0.231 + (4 - 2.333)^2 * 0.115 + (5 - 2.333)^2 * 0.071 + (6 - 2.333)^2 * 0.009 + (7 - 2.333)^2 * 0.009$$

$$= \mathbf{2.095}$$

$$\text{SD}(X) = \sqrt{\text{Var}(X)} = \sqrt{2.095} = \mathbf{1.447}$$

4. Find the probability that there would be 8 credit cards approved in a week.

The probability that 8 credit cards would be approved in a week is **0.009**.

5. What is the probability that no credit card would be approved in a week?

The probability that no credit card would be approved in a week is **0.089**.