

Practice Problems

1. Summation Notation**A. Data**

i	x_i
1	1
2	2
3	3
4	4

Find:

1. $\sum_{i=1}^4 x_i$
2. $\sum_{i=1}^4 x_i^2$

B. Data

i	x_i
1	-1
2	3
3	7

Find the following, where $c = 11$:

1. $\sum_{i=1}^3 x_i^2$
2. $\left(\sum_{i=1}^3 x_i \right)^2$
3. $\sum_{i=1}^3 c$

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C. Data

i	x_i	y_i
1	10	0
2	8	3
3	6	6
4	4	9
5	2	12

Find:

1. $\sum_{i=1}^5 x_i$
2. $\sum_{i=1}^5 y_i$
3. $\left(\sum_{i=1}^5 y_i \right)^2$
4. $\sum_{i=1}^5 x_i y_i$

2. Summary Statistics

You have just completed a survey in which you asked 20 inmates at the Kingston Penitentiary how many years remain in their sentences. You obtain the following data: 0 1 1 1 5 3 0 3 4 3 5 1 1 1 3 3 6 2 5 7.

- a. Construct a frequency distribution for the sample.
- b. Construct the relative frequency Distribution for the sample.
- c. What is the mean number of years remaining?
- d. What is the median number of years remaining?

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- e. What is the mode
- f. Calculate: (i) the sample variance; (ii) The sample standard deviation, and; (iii) the range.
- g. What is the range of years remaining within 2 standard deviations of the mean?

Answers to Practice Problems

$$A - 1. \quad \sum_{i=1}^4 x_i = x_1 + x_2 + x_3 + x_4 = 1 + 2 + 3 + 4 = 10$$

$$A - 2. \quad \sum_{i=1}^4 x_i^2 = x_1^2 + x_2^2 + x_3^2 + x_4^2 = 1^2 + 2^2 + 3^2 + 4^2 = 30$$

$$B - 1. \quad \sum_{i=1}^3 x_i^2 = 59$$

$$B - 2. \quad \left(\sum_{i=1}^3 x_i \right)^2 = 81$$

$$B - 3. \quad \sum_{i=1}^3 c = 11 + 11 + 11 = 33$$

$$C - 1. \quad \sum_{i=1}^5 x_i = 30$$

$$C - 2. \quad \sum_{i=1}^5 y_i = 30$$

$$C - 3. \quad \left(\sum_{i=1}^5 y_i \right)^2 = 900$$

$$C - 4. \quad \sum_{i=1}^5 x_i y_i = 120$$