

**EX:** An engineer measures the following beta values for bipolar transistors with the aim of finding nominal values of gain, (i.e., beta), to list on a datasheet.

$$\beta_1 = 111 \quad \beta_2 = 136 \quad \beta_3 = 159 \quad \beta_4 = 141 \quad \beta_5 = 109 \quad \beta_6 = 121$$

$$\beta_7 = 117 \quad \beta_8 = 105 \quad \beta_9 = 99 \quad \beta_{10} = 102$$

Find the sample mean of the data.

**SOL'N:** The sample mean is the average of the data values:

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n X_i = \frac{1}{n} X_1 + \dots + \frac{1}{n} X_n$$

Here,  $n = 10$  is the number of data points, and the  $X_i$  are the  $\beta$  values. Using a spreadsheet to sum the  $\beta$  values and divide by 10, we have our sample mean:

$$\text{sample mean} \equiv \bar{X} = \frac{1200}{10} = 120$$