

Objetivo:

Lesson

Find measures of center, spread, and position.

0 - 9

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- The **range** is the difference between the greatest and least values in a set of data.
- The **variance** in a set of data  $x_1, x_2, \dots, x_n$  is the mean of the squares of the deviations or differences from the mean. The formula for population variance  $\sigma^2$  is

$$\sigma^2 = \frac{(x_1 - \mu)^2 + (x_2 - \mu)^2 + \dots + (x_n - \mu)^2}{n}$$

- The **standard deviation** in a set of data  $x_1, x_2, \dots, x_n$  is the average amount by which each individual value deviates or differs from the mean. It is the square root of the variance. The formula for population standard deviation  $\sigma$  is

$$\sigma = \sqrt{\sigma^2} \text{ or } \sqrt{\frac{(x_1 - \mu)^2 + (x_2 - \mu)^2 + \dots + (x_n - \mu)^2}{n}}$$

Ejemplo: Calcular la varianza y la desviación estándar de las calificaciones de la clase A.

Class A
85, 76, 92, 88, 80

$$\sigma^2 = \frac{1608}{5} = 321.6$$

$$\sigma^2 = \frac{(x_1 - \mu)^2 + (x_2 - \mu)^2 + (x_3 - \mu)^2 + (x_4 - \mu)^2 + (x_5 - \mu)^2}{n}$$

$$\mu = \frac{(85 + 76 + 92 + 88 + 80)}{5} = \frac{421}{5} = 84.2$$

$$\sigma = \sqrt{321.6} = 5.67$$

$$\sigma^2 = \frac{(85 - 84.2)^2 + (76 - 84.2)^2 + (92 - 84.2)^2 + (88 - 84.2)^2 + (80 - 84.2)^2}{5} = 84.2$$