1. What is the variance of the following dataset?   **1 / 1 punto**

$$D = \{1, 2, 3, 2\}$$

Please use decimal numbers in your answer.

0.5

✓ **Correcto**
Well done!

2. What is the standard deviation of the dataset $D = \{1, 2, 3, 2\}$ which we   **1 / 1 punto**
already used in the previous question? You should provide a decimal
number as your answer.

0.7

✓ **Correcto**
Indeed: You just needed to take the square-root of the variance.

3. What would be the new variance if we added 1 to each element in the   **1 / 1 punto**
dataset $D = \{1, 2, 3, 2\}$ from Question 1? Please use decimal numbers
in your answer.

0.5

✓ **Correcto**
Yes: adding a constant to the dataset does not change its variance.

4. What would be the new variance if we multiplied each sample in a dataset D by 2.

<div align="right">

1 / 1 punto

</div>

○ The variance of the new dataset will be two times the variance of D.

◉ The variance of the new dataset will be four times the variance of D.

○ The variance of the new dataset will not change.

✓ **Correcto**
Well done!

5. Assuming we have mean $\bar{x}_{n-1}$ and variance σ_{n-1}^2 for some dataset D_{n-1} with $n-1$ samples. What would be the variance σ_n^2 if we add a new element x_* to the dataset (assuming you have computed the new sample mean $\bar{x}_n$) ?

<div align="right">

1 / 1 punto

</div>

◉ $\sigma_n^2 = \frac{n-1}{n}\sigma_{n-1}^2 + \frac{1}{n}(x_* - \bar{x}_{n-1})(x_* - \bar{x}_n)$

○ $\sigma_n^2 = \frac{n-2}{n-1}\sigma_{n-1}^2 + \frac{1}{n}(x_* - \bar{x}_{n-1})(x_* - \bar{x}_n)$

○ $\sigma_n^2 = \frac{n-1}{n}\sigma_{n-1}^2 + \frac{1}{n}(x_* - \bar{x}_{n-1})^2$

○ $\sigma_n^2 = \frac{n-1}{n}\sigma_{n-1}^2 + \frac{1}{n-1}(x_* - \bar{x}_{n-1})(x_* - \bar{x}_n)$

✓ **Correcto**
Great job!