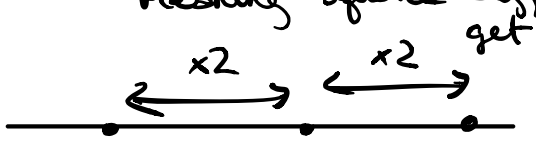
The variance of a Dataset will increase when each element is multiplied by the same constant. The variance will increase proportionate to the square of that constant.

$$\mu = \frac{1}{N}\sum_{n=0}^{N} x_n$$

$$\text{var}(x) = \frac{1}{N}\sum_{n=0}^{N}(x_n-\mu)^2$$

Meaning squared differences get larger.



$$\mu_1 = \frac{1}{N}\sum_{n=0}^{N} c\cdot x_n$$

$$= \frac{c}{N}\sum_{n=0}^{N}(x_n-\mu)$$

$$\text{var}_1(x) = \frac{1}{N}\sum_{n=0}^{N}(cx_n-\mu_1)^2$$

$$= \frac{1}{N}\sum_{n=0}^{N}(cx_n-c\cdot\mu)^2$$

$$= \frac{1}{N}\sum_{n=0}^{N}[c\cdot(x_n-\mu)]^2$$

$$= \frac{1}{N}\sum_{n=0}^{N}[c^2\cdot(x_n-\mu)^2]$$

$$= \frac{c^2}{N}\sum_{n=0}^{N}(x_n-\mu)^2$$

$$= c^2 \text{ var } X.$$