

- Régua (Altura)

$$s_p = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}} \rightarrow \sqrt{\frac{(21.0-21.7)^2 + (21.0-21.7)^2 + (21.0-21.7)^2 + (21.0-21.7)^2 + (21.0-21.7)^2}{5-1}}$$

$$\rightarrow \sqrt{\frac{(-0.7)^2 + (-0.7)^2 + (-0.7)^2 + (-0.7)^2 + (-0.7)^2}{4}} \rightarrow \sqrt{\frac{0.49 + 0.49 + 0.49 + 0.49 + 0.49}{4}}$$

$$\rightarrow \sqrt{\frac{2.47}{4}} \rightarrow \frac{\sqrt{2.47}}{\sqrt{4}} \rightarrow \frac{0.99}{2} \rightarrow s_p = 0.495 \text{ mm}$$

~~0.7214~~

- Paquímetro (Diâmetro)

$$s_p = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}} \rightarrow \sqrt{\frac{(0.24-0.24)^2 + (0.24-0.24)^2 + (0.24-0.24)^2 + (0.24-0.24)^2 + (0.24-0.24)^2}{5-1}}$$

$$\rightarrow \sqrt{\frac{0 + 0 + 0 + 0 + 0}{4}} \rightarrow \sqrt{\frac{0}{4}} \rightarrow \frac{0}{2} \rightarrow s_p = 0 \text{ mm}$$

$$\rightarrow \sqrt{\frac{0.24^2}{4}} \rightarrow \frac{\sqrt{0.24^2}}{\sqrt{4}} \rightarrow \frac{0.16}{2} \rightarrow s_p = 0.08 \text{ mm}$$

~~0.054772~~

- Paquímetro (altura)

$$s_p = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}} \rightarrow \sqrt{\frac{(1.40-1.40)^2 + (1.40-1.40)^2 + (1.40-1.40)^2 + (1.40-1.40)^2 + (1.40-1.40)^2}{5-1}}$$

$$\rightarrow \sqrt{\frac{0 + 0 + 0 + 0 + 0}{4}} \rightarrow \frac{0}{2} \rightarrow s_p = 0 \text{ mm}$$

- micrometro (Diâmetro)

$$s_p = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}} \rightarrow \sqrt{\frac{(0.00-0.00)^2 + (0.00-0.00)^2 + (0.00-0.00)^2 + (0.00-0.00)^2 + (0.00-0.00)^2}{5-1}}$$

$$\rightarrow \sqrt{\frac{0 + 0 + 0 + 0 + 0}{4}} \rightarrow \frac{0}{2} \rightarrow s_p = 0 \text{ mm}$$

- micrometro (altura)

$$s_p = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}} \rightarrow \sqrt{\frac{(0.00-0.00)^2 + (0.00-0.00)^2 + (0.00-0.00)^2 + (0.00-0.00)^2 + (0.00-0.00)^2}{5-1}}$$

$$\rightarrow \sqrt{\frac{0 + 0 + 0 + 0 + 0}{4}} \rightarrow \frac{0}{2} \rightarrow s_p = 0 \text{ mm}$$

→ INCERTEZA FINAL (mm) - massa

$$C = \sqrt{s_p^2 + C_r^2} \rightarrow \sqrt{0^2 + 0.01^2} \rightarrow \sqrt{0^2 + 0.01^2} \rightarrow C = 0.01 \text{ mm}$$