

Regra

→ Cálculos utilizando as medidas encontradas a partir da Regra.

• Valor mais provável da grandeza:

↳ Diâmetro (\bar{D}): $\bar{D} = \frac{17,0 + 16,0 + 16,0 + 16,0 + 17,0}{5} \rightarrow \boxed{\bar{D} = 16,4 \text{ mm}}$

↳ Altura (\bar{H}): $\bar{H} = \frac{17,0 + 17,0 + 17,0 + 17,0 + 17,0}{5} \rightarrow \boxed{\bar{H} = 17,0 \text{ mm}}$

• Desvio Padrão - Diâmetro:

↳ $\sigma_p = \sqrt{\sum \frac{(a_i - \bar{a})^2}{n-1}}$ $\rightarrow \sigma_p = \sqrt{\frac{(17-16,4)^2}{4} + \frac{(16-16,4)^2}{4} + \frac{(16-16,4)^2}{4} + \frac{(16-16,4)^2}{4} + \frac{(17-16,4)^2}{4}}$
 $\rightarrow \sigma_p = \sqrt{\frac{(0,36)}{4} + \frac{(0,16)}{4} + \frac{(0,16)}{4} + \frac{(0,16)}{4} + \frac{(0,36)}{4}}$
 $\rightarrow \sigma_p = 0,51 \text{ mm}$ ~~0,51~~ **0,347723**

• Desvio Padrão - Altura:

$\rightarrow \sigma_p = \sqrt{\frac{(17-17)^2}{4} + \frac{(17-17)^2}{4} + \frac{(17-17)^2}{4} + \frac{(17-17)^2}{4} + \frac{(17-17)^2}{4}}$
 $\rightarrow \sigma_p = \sqrt{0+0+0+0+0}$
 $\rightarrow \sigma_p = 0 \text{ mm}$

• Incerteza final:

↳ Diâmetro: $\rightarrow \sigma_D = \sqrt{\sigma_p^2 + \sigma_r^2}$

$\rightarrow \sigma_D = \sqrt{(0,51)^2 + (0,5)^2}$

$\rightarrow \sigma_D = 0,714232853 \text{ mm}$ ~~0,714232853~~ **0,74162**

↳ Altura: $\rightarrow \sigma_H = \sqrt{(0)^2 + (0,5)^2}$

$\rightarrow \sigma_H = 0,5 \text{ mm}$

• Cálculo da Densidade (g/mm^3):

$\rightarrow \bar{\rho} = \frac{4 \cdot \bar{M}}{\pi \cdot \bar{D}^2 \cdot \bar{H}}$

$\rightarrow \bar{\rho} = 0,004833316275 \text{ g/mm}^3$

$\rightarrow \bar{\rho} = \frac{4 \cdot (16,1)}{\pi \cdot (16,4)^2 \cdot (17)}$

$\rightarrow \bar{\rho} = \frac{64,4}{\pi \cdot 76896,17}$