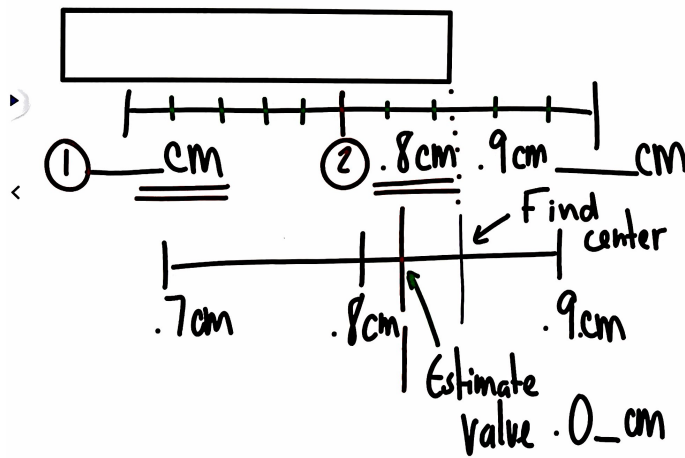


Measuring Length

Aug-20-2024 5:52 PM 1/4



- ## Steps
- ① Main Unit Value (large number/unit) left number
 - ② Smaller Division (normally ± 0.1)
 - ③ Estimate Final Digit (normally ± 0.01)
 - ④ Write Answer w/ Unit

Rounding w/ measured values

Aug-20-2024 5:52 PM 2/4

Add / Subt.

Round to least # places after decimal

$$\begin{array}{r} 3.2\text{cm} + 5.1\text{cm} \\ \text{(1)} \quad \quad \text{(1)} \\ \hline = 8.3\text{cm} \\ \text{(1)} \end{array}$$

$$\begin{array}{r} 31\text{cm} + 12.6\text{cm} \\ \text{(0)} \quad \quad \text{(1)} \\ \hline 43.6\text{cm} = 44\text{cm} \\ \text{(0)} \end{array}$$

$$2\text{cm} : \text{0 pl. after}$$

$$1.3\text{cm} : \text{1 pl. after}$$

$$9.18\text{cm} : \text{2 pl. after}$$

$$\begin{array}{r} 0.0931\text{cm} - 0.032\text{cm} \\ \text{(4)} \quad \quad \text{(3)} \quad \quad \text{(3)} \\ \hline = 0.0899\text{cm} \\ \text{(4)} \\ \hline = 0.090\text{cm} \\ \text{(3)} \end{array}$$

Rounding w/ Measured values

Mult/Divide

Round to 2 (or less*) # places after decimal
($\text{cm} \cdot \text{cm} = \text{cm}^2$, $\text{cm}/\text{mL} = \text{cm}/\text{mL}$)

$$34.13\text{cm} \cdot 10.1\text{cm} = 344.\overline{713}\text{cm}^2$$

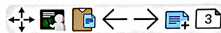
$$\frac{12.6\text{cm}}{3\text{mL}} = 4.\overline{2}\text{cm/mL} = \underline{344.71\text{cm}^2}$$

(1)
Don't Round

$$\begin{array}{r} 2.9\overline{136}\text{cm}^2 \\ \underline{2.91\text{cm}^2} \\ * 3.1\text{cm}^2 \\ \text{Don't Round!} \end{array}$$

Rounding Rules

0-4: Stay Same
5-9: Round up



Error Review

Relative Error (RE)

Actual amount "off" to
correct (theo) value

$$RE = \text{Expvalue} - \text{Theovalue}$$

$$\text{Exp} > \text{Theo} : + RE$$

$$\text{Exp} < \text{Theo} : - RE$$

$$RE = ? \quad \begin{array}{l} \text{Expvalue} = 15.2\text{cm} \\ \text{Theovalue} = 18.1\text{cm} \end{array}$$

$$\begin{aligned} RE &= \text{Expvalue} - \text{Theovalue} \\ &= 15.2\text{cm} - 18.1\text{cm} \\ &= \underline{-2.9\text{cm}} \end{aligned}$$

