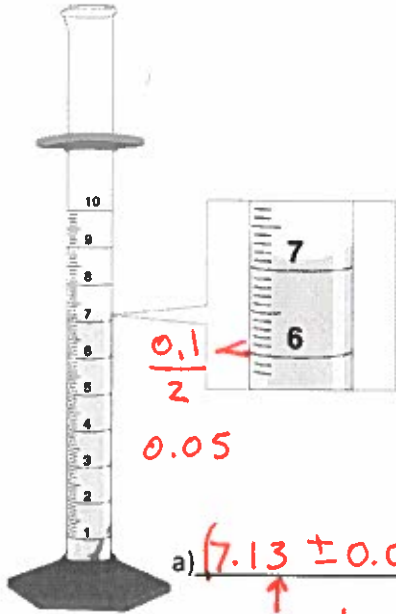
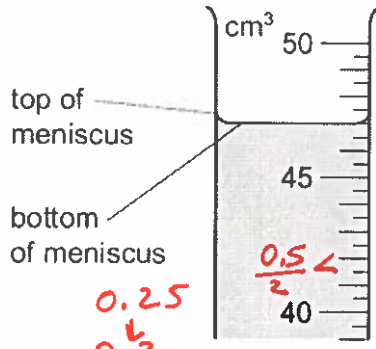


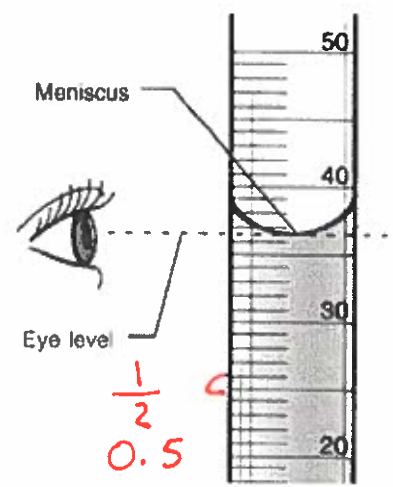
1. Determine the measurements shown on each of the graduated cylinders shown below. Indicate the absolute uncertainty and units with each measurement. Each cylinder indicated the # of millilitres.



a) $(7.13 \pm 0.05) \text{ mL}$
↑
accepted 1 to 6

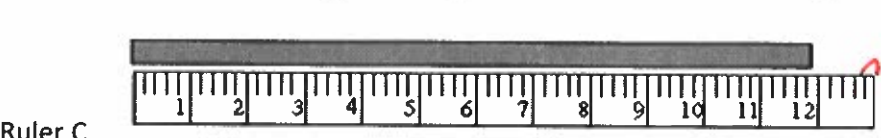
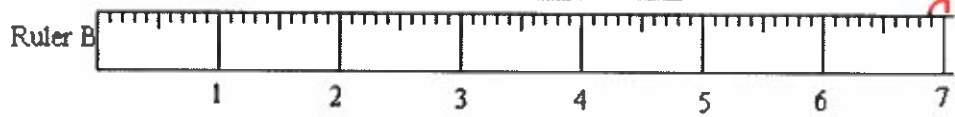
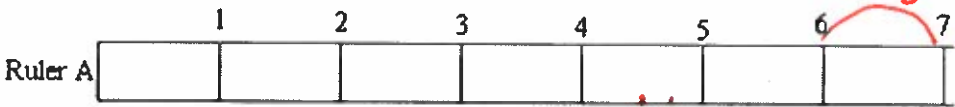


b) $(47.0 \pm 0.3) \text{ cm}^3$



c) $(36.6 \pm 0.5) \text{ mL}$
↑
accept range

2. Determine the length of each steel rod shown below. Indicate the absolute uncertainty and units with each measurement. All measurements are in cm.



a) $(4.8 \pm 0.5) \text{ cm}$ b) $(4.83 \pm 0.05) \text{ cm}$ c) $(1.9 \pm 0.1) \text{ cm}$

3. An irregular object is placed into a graduated cylinder that contains $(54.3 \pm 0.5) \text{ mL}$ of water. The water level appears to rise to $(86.6 \pm 0.5) \text{ mL}$. How much water does the object displace? Include units and uncertainties in your final answer. Show your work.

$$\begin{aligned}
 (A - B) \pm (\delta A + \delta B) &= (86.6 - 54.3) \pm (0.5 + 0.5) \\
 &= 32.3 \pm 1.0 \\
 &= 32 \pm 1
 \end{aligned}$$

Final Answer: $(32 \pm 1) \text{ mL}$