Measuring length and time: SI units, vernier, micrometer, pendulum

- Fundamental quantities: length (m), mass (kg), time (s), temperature (K), current (A), amount of substance (mol).
- **Vernier:** main scale before the zero + matching line × 0.01 cm. Accuracy 0.01 cm (0.1 mm).
- **Micrometer:** sleeve (watch the 0.5 mm marks) + thimble × 0.01 mm. Accuracy 0.01 mm.
- True reading = reading − zero error. Avoid parallax: eye at 90° to the scale.
- **Period** = time for one complete oscillation. Time 20 and divide by 20 to cut the reaction-time error.

Formula card

vernier = main + (line × 0.01 cm)

micrometer = sleeve + (division × 0.01 mm)

true reading = reading − zero error

$$T = \frac{\text{time for } n \text{ oscillations}}{n}$$

n = number of oscillations