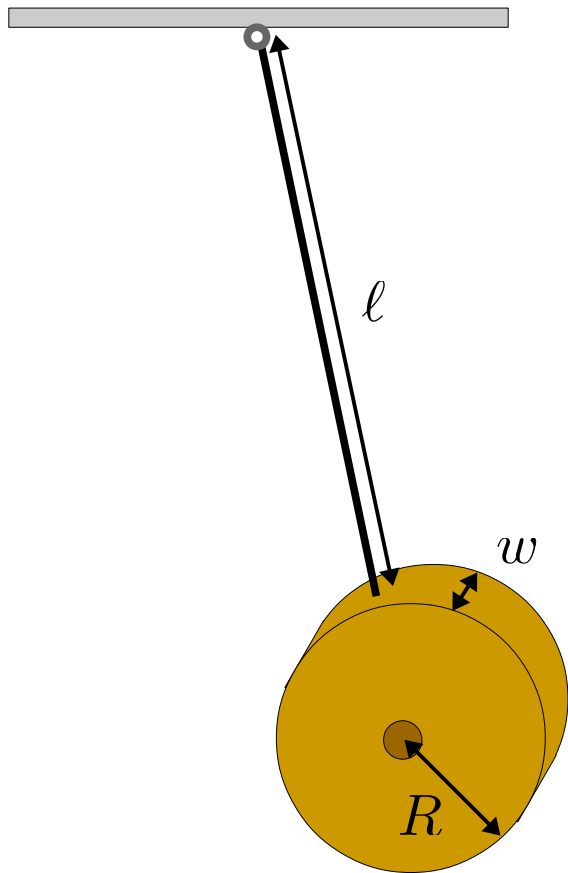


Example: Moment of Inertia

A cylindrical brass pendulum bob of width w , radius R , and density ρ is suspended from a thin wire with length ℓ and negligible mass, as shown in the figure below. Your measured values for the relevant quantities are shown below. What is the moment of inertia of the bob – and the uncertainty in that moment – as it oscillates in the plane parallel to its circular face?



Measured Values

$$R = 3.43 \text{ cm} \pm 0.05 \text{ cm}$$

$$w = 1.20 \text{ cm} \pm 0.05 \text{ cm}$$

$$\rho = 8550 \text{ kg/m}^3 \pm 250 \text{ kg/m}^3$$

$$\ell = 80.7 \text{ cm} \pm 0.1 \text{ cm}$$