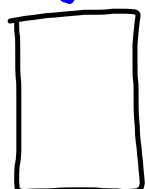


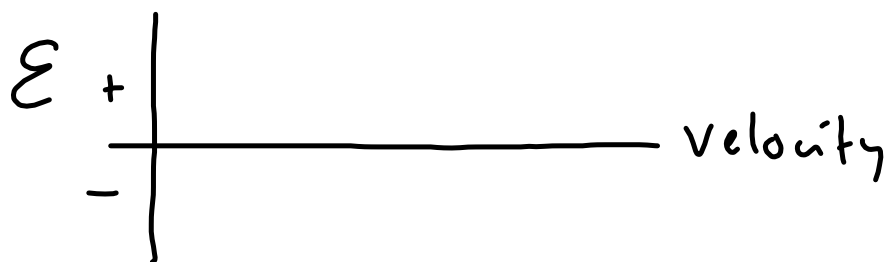
# Dropping Magnets

 magnets



solenoid

• Determine relationship between height and emf.



$$\begin{aligned}\mathcal{E} &= -\frac{d\Phi_B}{dt} & \Phi_B &= \int \vec{B} \cdot d\vec{A} = BA \cos \theta \\ & & & \\ &= -\frac{d}{dt} (BA \cos \theta) \\ &= -A \cos \theta \frac{dB}{dt} \\ &= -A \cos \theta \frac{dx}{dt} \frac{dB}{dx} \\ \mathcal{E} &= -A \cos \theta \frac{dB}{dx} v\end{aligned}$$