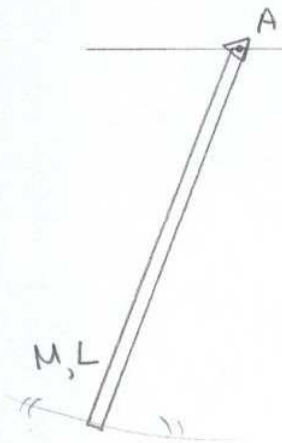


Find the Period T for a thin uniform stick of mass M & length L pivoted about one end.

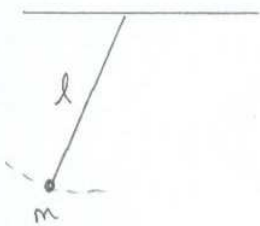
14-13



$$T = 2\pi \sqrt{\frac{I_A}{MgD}} = 2\pi \sqrt{\frac{\frac{1}{3}ML^2}{Mg \frac{L}{2}}} = 2\pi \sqrt{\frac{\frac{L}{3}}{\frac{L}{2}}}$$

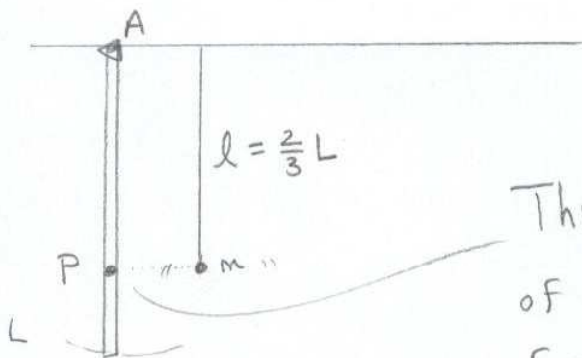
$$T = 2\pi \sqrt{\frac{2}{3} \frac{L}{g}}$$

What would be the length of a simple pendulum having the same period?



We require $T_{sp} = T_{stick}$

$$2\pi \sqrt{\frac{l}{g}} = 2\pi \sqrt{\frac{2}{3} \frac{L}{g}}, \quad \therefore l = \frac{2}{3} L$$



This point P is called the "center of oscillation" or "center of percussion" for our pivot point A .

Now invert the stick & pivot it about point P .