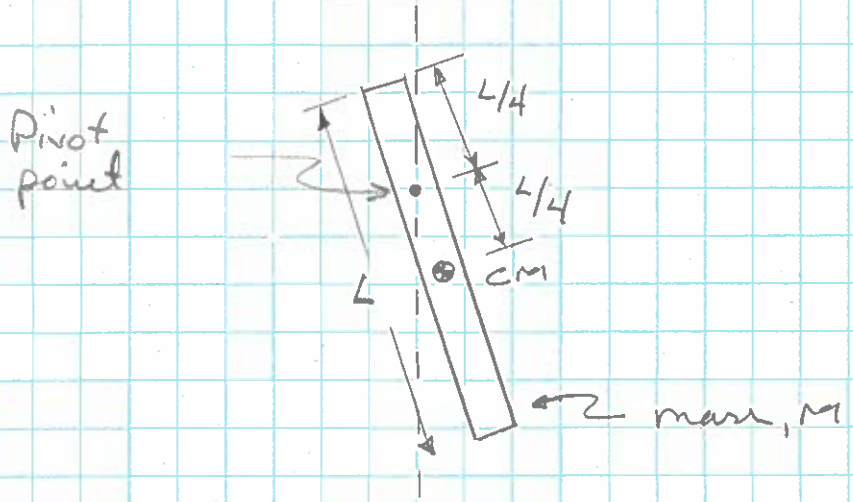

For physical pendulum and small angles:

$$\omega = \sqrt{\frac{Mg\ell}{I}}$$

ℓ = distance from pivot to CM

I = inertia about pivot point

where: $\ell = L/4$

$$I = I_{CM} + M\ell^2$$

and from table 12.2 $I_{CM} = \frac{1}{12}ML^2$

So $$I = \frac{1}{12}ML^2 + \frac{1}{16}ML^2 = \frac{7}{48}ML^2$$

and,

$$\omega = \sqrt{\frac{Mg(L/4)}{\frac{7}{48}ML^2}} = \sqrt{\frac{48g}{28L}} = \sqrt{\frac{12g}{7L}}$$

so $$f = \frac{\omega}{2\pi} = \frac{1}{2\pi}\sqrt{\frac{12g}{7L}}$$