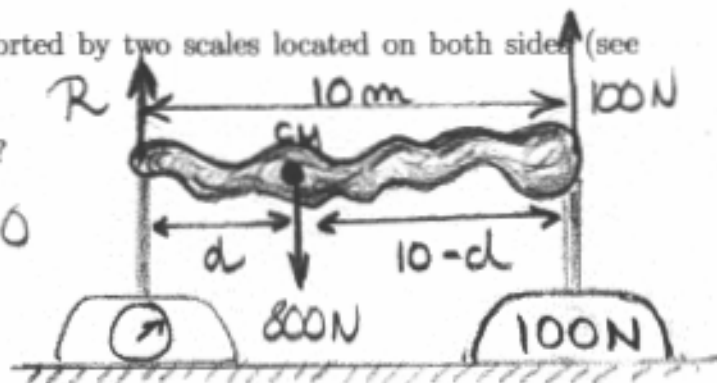


A 10 m and 800 N irregular plank is supported by two scales located on both sides (see figure). The scale on the right reads 100 N.



5) What is the reading of the other scale?

- a) 800 N
- b) 700 N
- c) 600 N
- d) 500 N
- e) 400 N

$$R + 100 = 800$$

$$R = \underline{700 \text{ N}}$$

6) At what distance from the left scale is the center of mass of this plank?

- a) 5.00 m
- b) 2.50 m
- c) 1.25 m
- d) 7.50 m
- e) 6.25 m

$$\tau_{\text{NET, CM}} = (100)(10-d) - R d = 0$$

$$1000 - 100d - 700d = 0$$

$$d = 1000/800 = 10/8 = \underline{1.25 \text{ m}}$$

We build a physical pendulum with a homogeneous rod of length 4 m and 5 kg of mass. (Recall that the moment of inertia of a rod rotating about its endpoint is $I = (1/3)ML^2$).

7) We pivot this rod about an end point and we swing it with an amplitude of 30° . What would its period be?

- a) 5.7 s
- b) 9.7 s
- c) 4.0 s
- d) 8.3 s
- e) 3.3 s

$$T = 2\pi \sqrt{\frac{I}{mgD}}$$

$$= 2\pi \sqrt{\frac{\frac{1}{3}m(4)^2}{mg(2)}} = 2\pi \sqrt{\frac{8}{3g}} \approx \underline{3.3 \text{ s}}$$

8) If we decrease the amplitude of the oscillations to just 15° , its period would then be:

- a) 5.7 s
- b) 9.7 s
- c) 4.0 s
- d) ...

SAME