

97. The parallel axis theorem gives  $I = I_{\text{com}} + Mh^2$  for the rotational inertia about any axis (parallel to the axis used to compute  $I_{\text{com}}$ ). Let us assume that an axis has already been chosen through the center of mass of the body such that  $I_{\text{com}}$  is as small as it possibly can be. Since  $Mh^2 > 0$  for all nonzero values of  $h$ , then  $I > I_{\text{com}}$  from the parallel axis theorem as long as  $h \neq 0$ . Thus, with  $h = 0$  we get  $I = I_{\text{com}}$  and therefore the smallest possible value of rotational inertia.