80. Although we will not be "working" this problem, we do – briefly – share a few thoughts about it.

(a) A figure in the textbook that may be referred to is Fig. 8-16. The idea, crudely stated, is to show that although all bodies will return to the same height they're released from (in the absence of dissipative effects), the one with the least rotational inertia (say, a sphere) will get there the fastest because its speed is greatest at every point inbetween.

(b) Several people might be pulling on ropes attached to a merry-go-round to set it into motion. The ropes should be at different angles (measured relative to tangent lines at the appropriate points). The idea is to calculate the net torque using Eq. 12-15 and then to find the angular acceleration (using Eq. 11-37) of the merry-go-round.

(c) This might require particular care in the wording, especially regarding a clown "falling off." If he falls off in what might described as the "natural way" (simply letting go and pursuing a straight-line trajectory tangent to the merry-go-round) then there is no change in the angular momentum. It's easier to see that there'd be a change in angular momentum in the case of a clown (initially at rest) stepping onto the moving merry-go-round.

(d) This is an important astrophysical application of the angular momentum concept (angular momentum is conserved in gravitational-dominated situations such as binary star systems). When the masses of the stars are similar and the mass transfer is relatively steady, they are often known as Algol binaries, and realistic numerical values can be found in many astronomy textbooks (and, probably, on the Web).