

AP Physic C, Mechanic course, *Homework*

31. Two blocks, each of mass $m = 3.50$ kg, are hung from the ceiling of an elevator as in Figure P5.31. (a) If the elevator moves with an upward acceleration \vec{a} of magnitude 1.60 m/s², find the tensions T_1 and T_2 in the upper and lower strings. (b) If the strings can withstand a maximum tension of 85.0 N, what maximum acceleration can the elevator have before a string breaks?

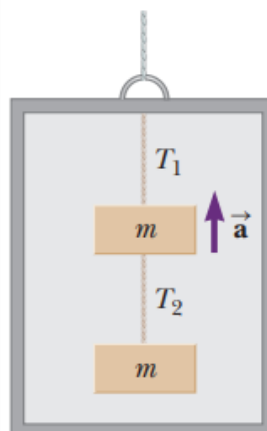


Figure P5.31

Problems 31 and 32.

32. **S** Two blocks, each of mass m , are hung from the ceiling of an elevator as in Figure P5.31. The elevator has an upward acceleration a . The strings have negligible mass. (a) Find the tensions T_1 and T_2 in the upper and lower strings in terms of m , a , and g . (b) Compare the two tensions and determine which string would break first if a is made sufficiently large. (c) What are the tensions if the cable supporting the elevator breaks?

