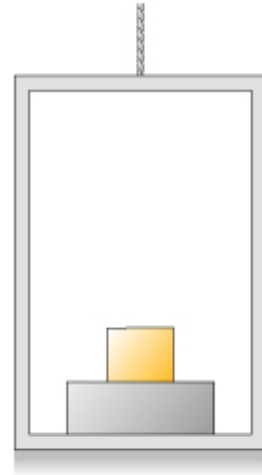


Monday Feb. 6, 2006

In Lecture quiz #3, Physics 131

Name: \_\_\_\_\_

The elevator shown here is carrying two blocks. For questions 1 and 2, the elevator is moving with constant speed upward.



1. Circle the right answer: the magnitude of the force that the upper block exerts on the lower block is [(a) *less than* (b) *equal to* (c) *greater than*] the magnitude of the force that the lower block exerts on the upper block.
2. Circle the right answer: the magnitude of the force that the lower block exerts on the upper block is [(a) *less than* (b) *equal to* (c) *greater than*] the magnitude of the force that the earth's gravity exerts on the upper block.
3. Now the elevator is moving upward with **increasing** speed. Circle the right answer: the magnitude of the force that the upper block exerts on the lower block is [(a) *less than* (b) *equal to* (c) *greater than*] the magnitude of the force that the lower block exerts on the upper block.

**Answers:**

1. (b) by Newton's third law
2. (b) by Newton's second law. The two forces are NOT a 3<sup>rd</sup> law pair, but they are equal and opposite if the acceleration is 0.
3. (b) by Newton's third law. This is an absolute law about forces which is not changed when the system accelerates. The forces are larger than in part 1 in order to allow the upper block to accelerate upward, but the pair remain equal and opposite because they are a 3<sup>rd</sup> law pair.