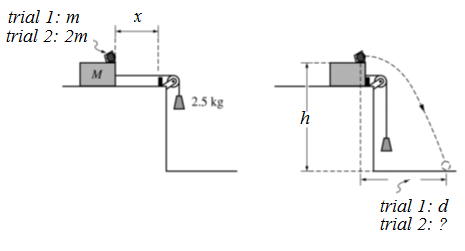
[[](http://2.bp.blogspot.com/-wutPptZ1hHY/VRNMBenzJNI/AAAAAAAABGY/hHFvkRHkK9Q/s1600/my%2Bparagraph%2Bresponse%2Bitem.png)](http://2.bp.blogspot.com/-wutPptZ1hHY/VRNMBenzJNI/AAAAAAAABGY/hHFvkRHkK9Q/s1600/my%2Bparagraph%2Bresponse%2Bitem.png)

  (7 points, suggested time about 13 minutes)

A ball of mass *m* is in a cup of negligible mass attached to a block of mass *M* that is on a table.  A string passing over a light pulley connects the blocks to a 2.5 kg object, as shown above.  The cup is a vertical distance *h* off of the floor.  All friction is negligible.

 In Trial 1, the system is released from rest, the block accelerates to the right, and after moving a distance *x* the block collides with a bumper near the end of the table.  The ball continues to move and lands on the floor at a position a distance *d* horizontally from where it leaves the cup.  In Trial 2, the mass *m* of the ball in the cup is doubled.  The system is again released from rest.  The block collides with the same bumper, the ball continues to move, and lands on the floor.

 In trial 2, does the heavier ball land a horizontal distance from the table that is greater than, less than, or equal to *d*?  Justify your answer in a clear, coherent, paragraph-length explanation.

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