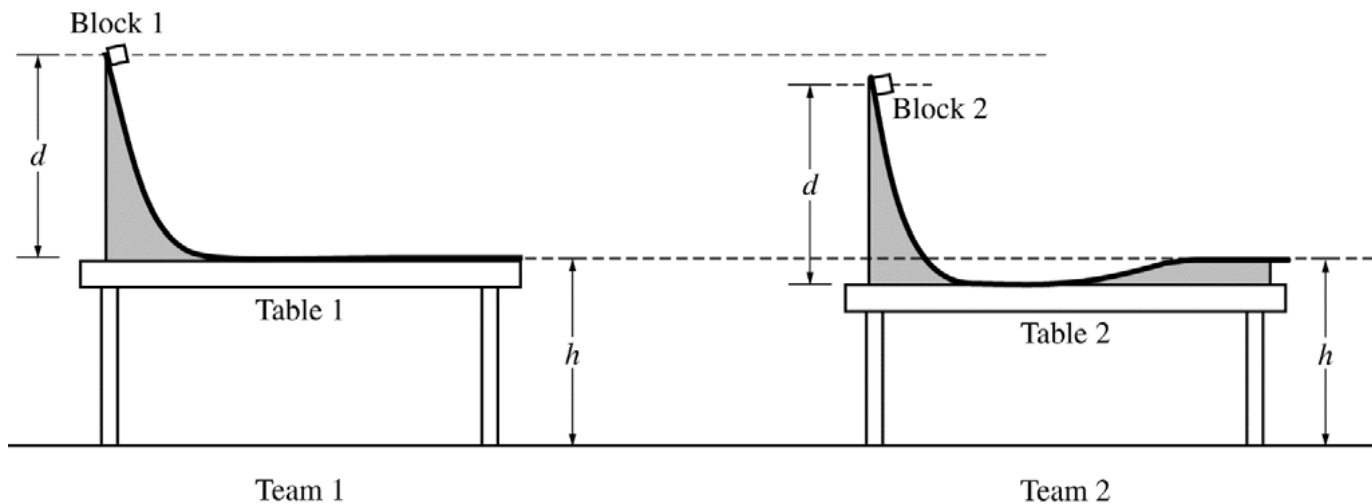




4. (7 points, suggested time 13 minutes)

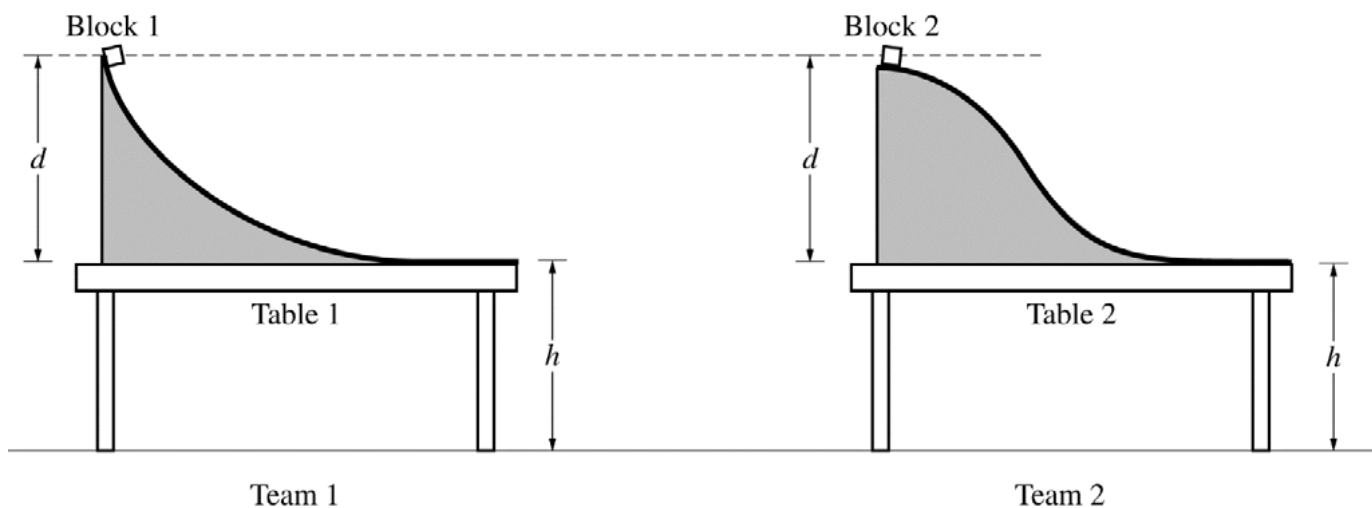
A physics class is asked to design a low-friction slide that will launch a block horizontally from the top of a lab table. Teams 1 and 2 assemble the slides shown above and use identical blocks 1 and 2, respectively. Both slides start at the same height d above the tabletop. However, team 2's table is lower than team 1's table. To compensate for the lower table, team 2 constructs the right end of the slide to rise above the tabletop so that the block leaves the slide horizontally at the same height h above the floor as does team 1's block (see figure above).

- (a) Both blocks are released from rest at the top of their respective slides. Do block 1 and block 2 land the same distance from their respective tables?

☐ Yes ☐ No

Justify your answer.

In another experiment, teams 1 and 2 use tables and low-friction slides with the same height. However, the two slides have different shapes, as shown below.



- (b) Both blocks are released from rest at the top of their respective slides at the same time.

- i. Which block, if either, lands farther from its respective table?

☐ Block 1 ☐ Block 2 ☐ The two blocks land the same distance from their respective tables.

Briefly explain your reasoning without manipulating equations.

- ii. Which block, if either, hits the floor first?

☐ Block 1 ☐ Block 2 ☐ The two blocks hit the floor at the same time.

Briefly explain your reasoning without manipulating equations.