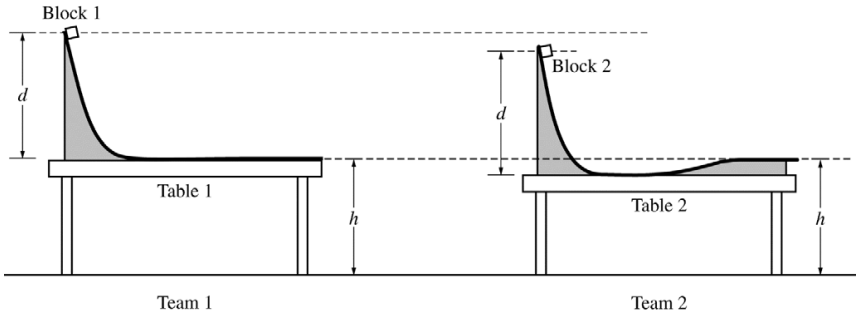


4. (7 points, suggested time 13 minutes)

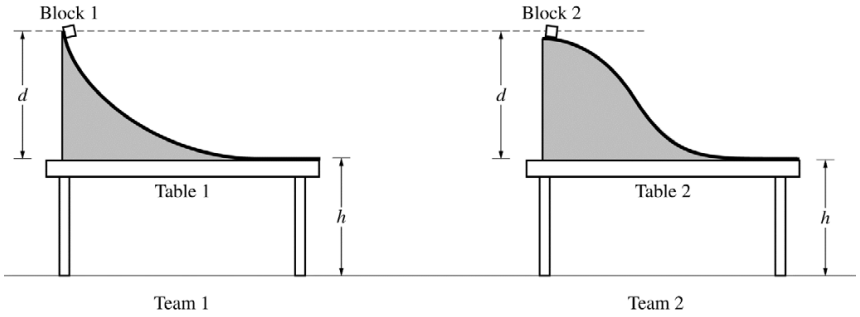
A physics class is asked to design a low-friction slide that will launch a block horizontally from the top of a lab table. Teams 1 and 2 assemble the slides shown above and use identical blocks 1 and 2, respectively. Both slides start at the same height d above the tabletop. However, team 2's table is 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.