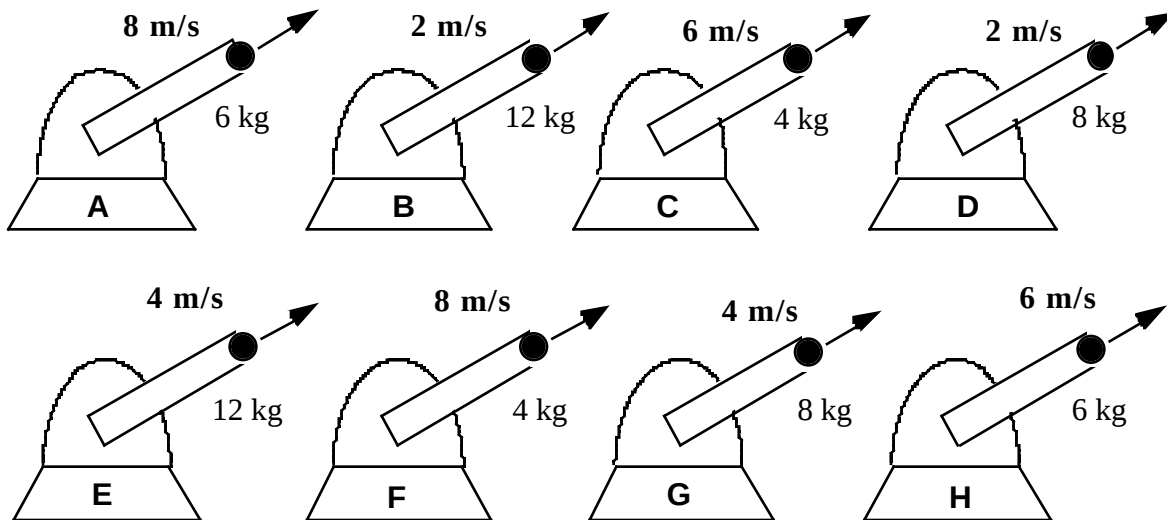


Cannon Shots—Acceleration at the Top ⁵²

The figures below depict eight cannons shooting shells into the air. All of the cannons are aimed at the same angle of 35 degrees. All of the cannons are identical. The shells are all the same size and shape, but the masses of the shells, as well as their speeds as they leave the cannons, are different. The values of these variables are specified in the figures.

Rank these situations from highest to lowest on the basis of the acceleration at the highest point reached by the shells. (We assume for this situation that the effect of air resistance can be ignored.)



Highest 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ Lowest

Or, all of the shells have the same (nonzero) acceleration at the top. _____

Or, all of the shells have the zero acceleration at the top. _____

Please carefully explain your reasoning.

How sure were you of your ranking? (circle one)

Basically Guessed

Sure

Very Sure

1

2

3

4

5

6

7

8

9

10