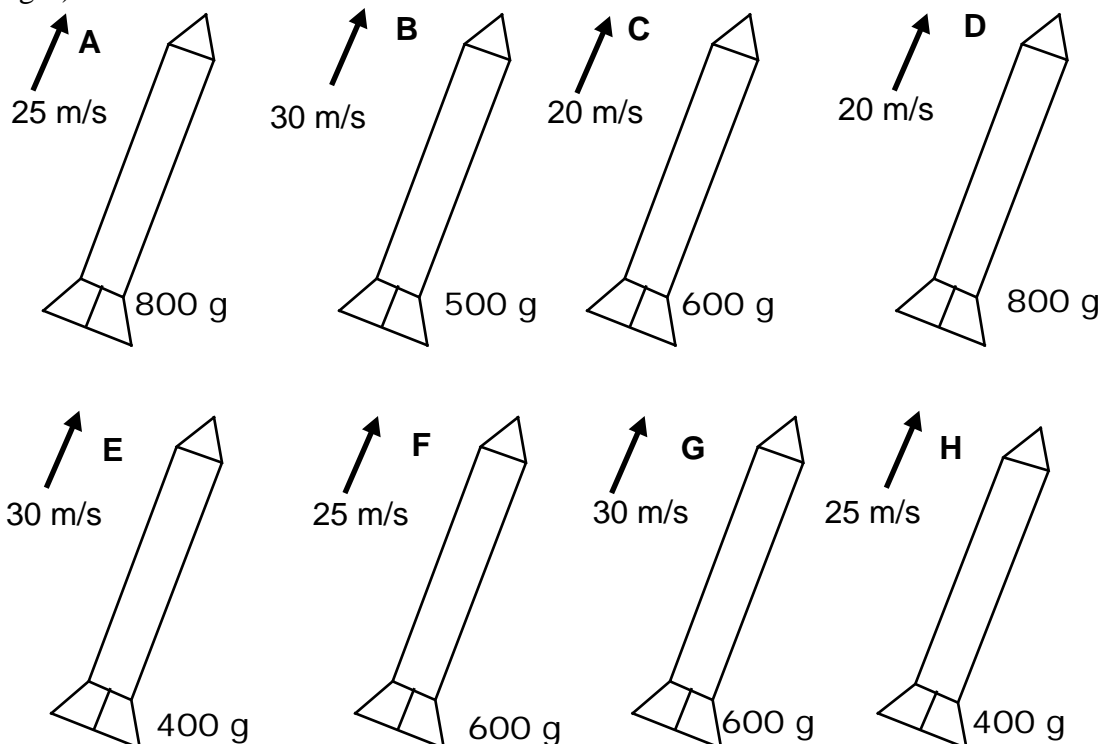


Model Rockets Fired at an Angle—Horizontal Speed at Top ⁵¹

The eight figures below depict eight model rockets that have just had their engines turned off. All of the rockets are aimed upward at the same angle, but their speeds differ. All of the rockets are the same size and shape, but they carry different loads, so their masses differ. The specific mass and speed for each rocket is given in each figure. (In this situation we are going to ignore any effect air resistance may have on the rockets.) At the instant when the engines are turned off, the rockets are all at the same height.

Rank these model rockets from greatest to least on the basis of the horizontal speed at the top (at the maximum height).



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

Or, all rockets will have the same horizontal speed (not zero) at the top. _____

Or, all rockets will have zero horizontal speed 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

⁵¹ D. Maloney