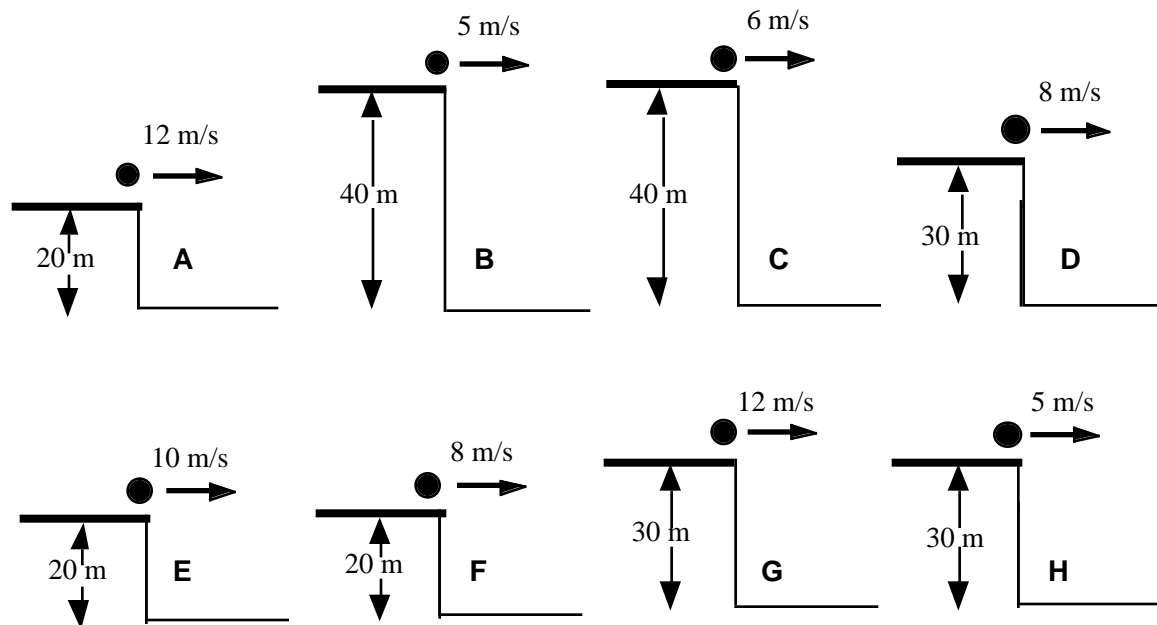


## Spheres Thrown Horizontally Off Cliffs—Time to Hit Ground <sup>48</sup>

The eight figures below show spheres that have been thrown horizontally, i.e., straight out, off cliffs. All of the spheres are the same size and have the same mass, but they are thrown at different speeds off cliffs of different heights. The specific speeds and heights are given in each figure.

Rank these spheres from longest to shortest on the basis of how long they take to reach the ground. That is, put first the sphere that takes the most time in the air, and put last the sphere that takes the shortest time in the air.



Longest 1\_\_\_\_\_ 2\_\_\_\_\_ 3\_\_\_\_\_ 4\_\_\_\_\_ 5\_\_\_\_\_ 6\_\_\_\_\_ 7\_\_\_\_\_ 8\_\_\_\_\_ Shortest

Or, all of the spheres take the same time in the air. \_\_\_\_\_

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

<sup>48</sup> D. Maloney