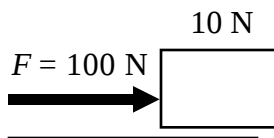


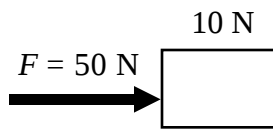
Pushing Box with Friction—Change in Kinetic Energy ⁷³

Various similar boxes are being pushed for 10 m across a floor by a horizontal force as shown below. The weights of the boxes and the applied horizontal force for each case are given in the indicated figures. The frictional force is 20% of the weight of the box ($g = 10 \text{ N/kg}$).

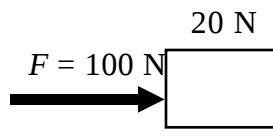
Rank the change in kinetic energy for each box from the greatest change in kinetic energy to the least change in kinetic energy. All boxes have an initial velocity of $+10 \text{ m/s}$ (+ direction is to the right and - to the left, with $-4 < -2$).



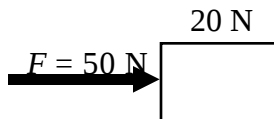
A



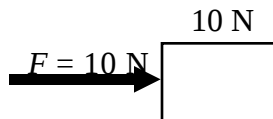
B



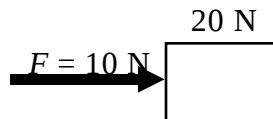
C



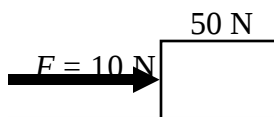
D



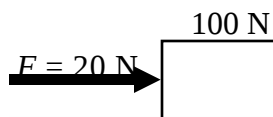
E



F



G



H

Greatest 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ Least

Or, all changes in kinetic energy are the same. _____

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

⁷³ C. Hieggelke, T. O’Kuma