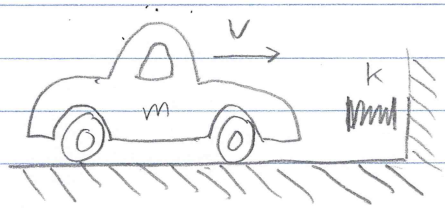
20-P-MOM-DY-44

A spring is used to stop the momentum of a $m = 2000\,kg$ car traveling at $v = 10\,m/s$. Assuming that the car does not deform, Determine the horizontal impulse needed to stop the car. How would the horizontal impulse change if a rigid brace was used instead of a spring?



Solution: $mv_1 + \int F\,dt = mv_2$

$$mv_2 - mv_1 = -\int F_s\,dt$$

$$\int F_s\,dt = 20\,000\ N \cdot s$$

doesn't matter if a rigid brace was used. impulse remains the same.