

Solutions

2.1 A Impulse equals momentum change. Increasing stopping time for the same momentum change reduces average force. Identify external forces before applying momentum conservation.

2.2 $p=mv=2\times 3=6\text{ kg m/s}$.

2.3 False. Balanced forces do not require the object to be at rest. Mass and weight have different units and meanings.

2.4 momentum. momentum means Mass multiplied by velocity.

3.1 $\Delta p=2(-1-3)=-8\text{ kg m/s}$; average force $=-40\text{ N}$. Direction reverses although speed falls from 3 to 1 m/s. Using magnitudes loses the direction information.