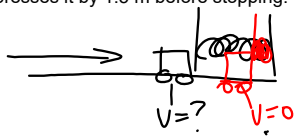


Use Mechanical Energy conservation to find the speed of a 600.0 kg bumper car when it impacts a rubber bumper ($k = 1800 \text{ N/m}$) and compresses it by 1.5 m before stopping.



$$ME = ME'$$

$$KE = PE_s$$

$$\frac{1}{2}mv^2 = \frac{1}{2}kx^2$$

$$v = \sqrt{\frac{kx^2}{m}}$$

$$v = \sqrt{\frac{(1800 \frac{\text{N}}{\text{m}})(1.5 \text{ m})^2}{600 \text{ kg}}}$$

$$v = 2.6 \text{ m/s}$$

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$$\frac{\text{N} \cdot \text{m}^2}{\text{kg}}$$

$$\frac{\text{N}}{\text{kg}} = \frac{\text{kg} \cdot \text{m}^2}{\text{kg} \cdot \text{s}^2}$$

$$\frac{\text{N}}{\text{kg}} = \frac{\text{m}^2}{\text{s}^2}$$

Dec 3-3:47 PM