Answer on Question 48735, Physics, Mechanics — Kinematics — Dynamics   A100 kg car is moving with a velocity of 100 m/s. How fast should a 250 kg motorcycle move to have the same kinetic energy as the truck

Solution

Assume m_1 and v_1 is mass and velocity of car and m_2 and v_2 is mass and velocity of motorcycle. Then

$$\frac{m_1 v_1^2}{2} = \frac{m_2 v_2^2}{2}$$

$$v_2 = v_1 \sqrt{\frac{m_1}{m_2}} = 100 \cdot \sqrt{\frac{100}{250}} \approx 63.2 \, m/s$$

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