

HW7-1 Soln)

a)

Consider the magnitudes:

$$p = mv \quad p_{3\text{kg}}/p_{2\text{kg}} = m_{3\text{kg}}v_{3\text{kg}}/m_{2\text{kg}}v_{2\text{kg}} = 3(3)/2(4) = 1.125$$

b)

$$KE = \frac{1}{2}mv^2 \quad KE_{3\text{kg}}/KE_{2\text{kg}} = \frac{1}{2}m_{3\text{kg}}v_{3\text{kg}}^2 / \frac{1}{2}m_{2\text{kg}}v_{2\text{kg}}^2 = \frac{1}{2}(3)3^2 / \frac{1}{2}(2)4^2 = 0.844$$

Although momentum and kinetic energy are both 'qualities' associated with the motion of an object, they are different. To answer the question specifically, the kinetic energy counts the speed more heavily than does the momentum.