

$$\rho = mv$$

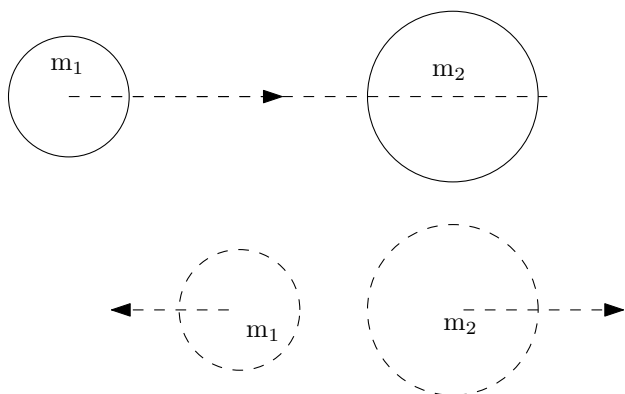
$$KE = \frac{1}{2}mv^2$$

$$PE = mgh$$

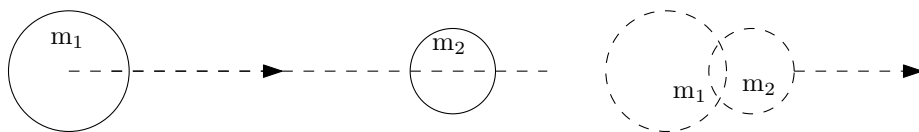
$$\rho_o = \rho_f$$

$$KE_o + PE_o = KE_f + PE_f$$

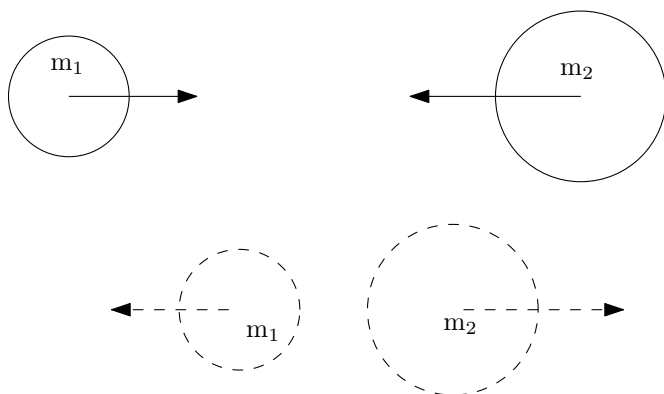
1. $m_1 = 3 \text{ kg}$ smacks into the stationary $m_2 = 5 \text{ kg}$ at 20 m/s . If m_1 bounces back at 6 m/s , what is the final velocity of m_2 ? What if m_1 comes to rest after hitting m_2 ?



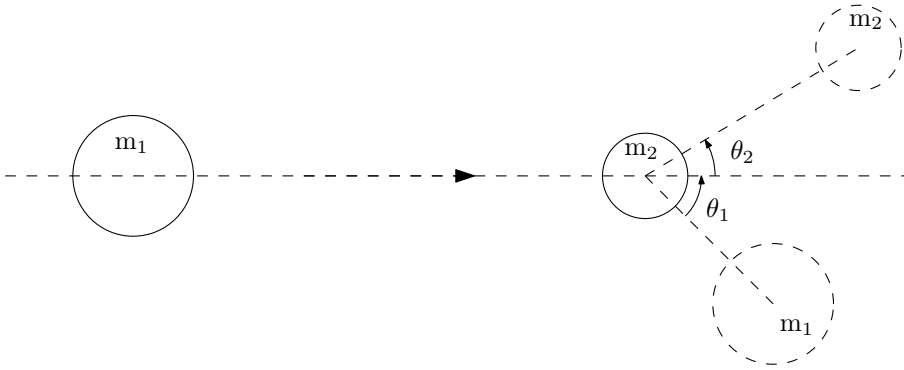
2. $m_1 = 5 \text{ kg}$ is traveling at 10 m/s and collides with $m_2 = 5 \text{ kg}$ which is at rest. They stick together. How fast are they moving?



3. $m_1 = 1 \text{ kg}$ collides with $m_2 = 2 \text{ kg}$, head-on. They were both initially traveling at 7 m/s . If m_2 recoils with a speed of 2 m/s , how fast and in what direction is m_1 going after the collision?



4. $m_1 = 3 \text{ kg}$ collides with $m_2 = 2 \text{ kg}$, sending m_2 off at an angle of 25° with a speed of 5 m/s . If m_1 was initially traveling at 4 m/s , and m_2 was initially at rest, how fast and at what angle is m_1 going now?



5. For the following picture, what is v_1, v_2, v_3 , and v_4 ? (This is a ball rolling on a track, and there is no friction)

