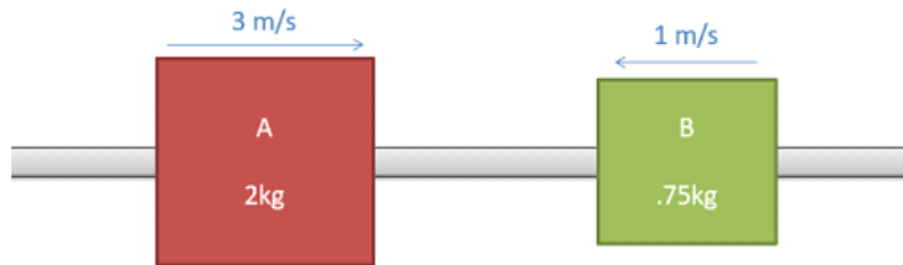# Problem 3

Two masses on a frictionless rod as shown below are set to impact with each other. If the coefficient of restitution between the objects is .6, what is the velocity of each body after the collision?

$$\sum m V_i = \sum m V_f$$

$$(2)(3) + (.75)(-1) = (2)(V_{AF}) + (.75) V_{BF}$$

$$5.25 = 2 V_{AF} + .75 V_{BF}$$

$$e = .6 = - \frac{V_{AF} - V_{BF}}{3 - (-1)}$$

$$-2.4 = V_{AF} - V_{BF}$$

$$V_{AF} = V_{BF} - 2.4$$

$$5.25 = 2(V_{BF} - 2.4) + .75 V_{BF}$$

$$\boxed{V_{BF} = 3.65 \, m/s}$$

$$\boxed{V_{AF} = 1.25 \, m/s}$$