

Calculate the momentum of a 150 g red squirrel running with a speed of 2.3 m/s

0.345

$p = m * v$ , but  $m$  must be in kg

$$p = 150 \text{ g} * (1 \text{ kg} / 1000 \text{ g}) * 2.3 \text{ m/s}$$

A 70 kg cop traveling 6 m/s tackles a 75 kg thief running 3.5 m/s in the same direction. What was their common speed immediately after the collision?

4.71 m/s

$p_i = (70 \text{ kg} * 6 \text{ m/s}) + (75 \text{ kg} * 3.5 \text{ m/s})$ ,  
because they're going in the same direction

$p_f = (70 \text{ kg} + 75 \text{ kg}) * v_f$ , because this is an  
inelastic collision where they 'stick' to each  
other

To find the final velocity, use conservation of  
momentum:  $p_i = p_f$