

### Answer on Question #48704 – Physics - Mechanics | Kinematics | Dynamics

which requires more force to stop if they have the same acceleration : sumo wrestler or fairy? Explain why?

**Solution:**

$M$  – The mass of the sumo wrestler;

$m$  – The mass of the fairy;

$a_s = a_f = a$  – acceleration of the wrestler and fairy;

$F_s$  – force we must apply to stop sumo wrestler;

$F_f$  – force we must apply to stop fairy;

According to the Newton's Second law:

$$F = \text{mass} \cdot \text{acceleration}$$

Hence, we must apply some forces  $F_s$  and  $F_f$  of our bodies to stop their motion:

Force to stop sumo wrestler:

$$F_s = M \cdot a_s = M \cdot a$$

Force to stop fairy:

$$F_f = m \cdot a_f = m \cdot a$$

If the  $M > m$  (mass of the wrestler is bigger than mass of the fairy)

$$F_s > F_f$$

Thus, more force requires to stop sumo wrestler.

**Answer:** more force requires to stop sumo wrestler.