Answer on Question #53211, Physics / Other

How large a mass will 32 N accelerate at the same rate achieved by 13 N acting on 8.3 kg?

Solution:

The magnitude of force is equated to the product of the mass times the acceleration.

$$F = ma$$

From given

$$a = \frac{F_1}{m_1} = \frac{13\ \text{N}}{8.3\ \text{kg}}$$

The mass

$$m_2 = \frac{F_2}{a}$$

Hence,

$$m_2 = \frac{F_2}{F_1} m_1 = \left(\frac{32\ \text{N}}{13\ \text{N}}\right) * (8.3\ \text{kg}) = 20.43\ \text{kg} \approx 20.4\ \text{kg}$$

Answer. $20.43\ \text{kg}$