Question #63704, Physics / Other

you pull your little sister on a sled across an icy (frictionless) surface. when you exert a constant horizontal force of 120N, the sled has an acceleration of 2.5m/s^2. of the sled as a mass of 7.4kg, what is the mass of your sister?

Solution

$$F = ma = \left(m_{sl} + m_{sis} \right) a \, ;$$

$$m_{sis} = \frac{F}{a} - m_{sl} \, ;$$

$$m_{sis} = \frac{120}{2.5} - 7.4 = 40.6 \, \text{kg}$$

Answer: 40.6 kg.