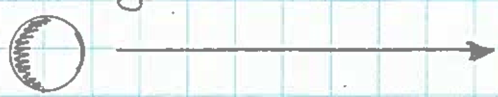
$m = 1.0\,g$



$p = 400{,}000 \ \frac{kg\,m}{s}$

Relativistic Momentum (magnitude):

$$p = \gamma_p m u = \frac{mu}{\sqrt{1 - u^2/c^2}}$$

So:

$$p^2 = \frac{m^2 u^2}{(1 - u^2/c^2)}$$

$$p^2\left(1 - \frac{u^2}{c^2}\right) = m^2 u^2$$

$$p^2 = m^2 u^2 + \frac{p^2 u^2}{c^2}$$

$$= u^2\left(m^2 + \frac{p^2}{c^2}\right)$$

$$\therefore \quad u = \sqrt{\frac{p^2}{(m^2 + p^2/c^2)}} = 2.4 \times 10^8 \frac{m}{s} < c$$

NOTE: If you tried the nonrelativistic Newtonian momentum:

$$p = mu \Rightarrow u = \frac{p}{m} = 4 \times 10^8 \ m/s > c$$