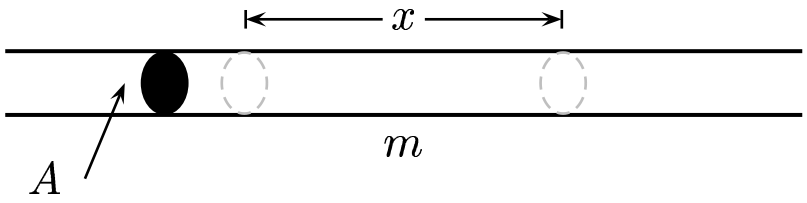
Consider a rope with uniform cross section.
Its density is $\rho = 1$ kg/m^3.
Its cross section is A $= 0.1$ m^2.



Find its linear mass density: $\mu = \dfrac{\text{mass}}{\text{length}} = \dfrac{m}{x}$ in terms of its density and the cross section.

A) $\mu = \rho\, A$

B) $\mu = \dfrac{\rho}{A}$

C) $\mu = \dfrac{A}{\rho}$

$$[\mu] = \frac{\mathrm{M}}{\mathrm{L}} = [\rho^x \mathrm{A}^y] = \left(\frac{\mathrm{M}}{L^3}\right)^x (\mathrm{L}^2)^y.$$

Equating powers of M and L leads to $1 = x$ and $-1 = -3\,x + 2\,y$.
Substituting $x = 1$ into the second equation gives $-1 = -3 + 2\,y$.
So, $y = 1$, or $\mu = \rho\, A$
Answer bf A.