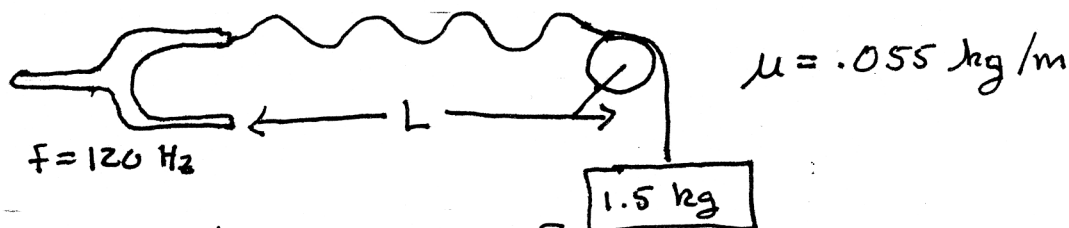


Problem

Given a tuning fork connected to a weighted string as shown



A) Speed of a transverse wave?

$$v = \sqrt{T/\mu} = \sqrt{mg/\mu} = \sqrt{\frac{(1.5 \text{ kg})(10 \text{ m/s}^2)}{.055 \text{ kg/m}}}$$

$$v = 16.5 \text{ m/s} \quad \text{independent of } f \text{ or } L$$

B) What is the wavelength?

$$v = \lambda f \quad \text{or} \quad \lambda = \frac{v}{f} = \frac{16.5 \text{ m/s}}{120 \text{ s}^{-1}} = .14 \text{ m}$$

C) What if the mass is increased

v increases $\Rightarrow \lambda$ increases

D) What role does L play?

If $L = n\left(\frac{\lambda}{2}\right)$ then you obtain a standing wave.