

11. The wave speed v is given by $v = \sqrt{\tau/\mu}$, where τ is the tension in the rope and μ is the linear mass density of the rope. The linear mass density is the mass per unit length of rope: $\mu = m/L = (0.0600 \text{ kg})/(2.00 \text{ m}) = 0.0300 \text{ kg/m}$. Thus

$$v = \sqrt{\frac{500 \text{ N}}{0.0300 \text{ kg/m}}} = 129 \text{ m/s} .$$