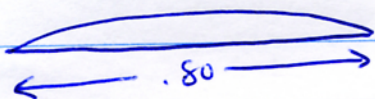


4.



$$\lambda = 2L = 1.6 \quad f = 600$$

$$v = f\lambda = (600)(1.6) = 960 \text{ m/s}$$

$$v = \sqrt{\frac{T}{\mu}}$$

$$\mu = \frac{\text{mass}}{\text{length}} = \frac{.005}{.80} = .00625$$

$$960 = \sqrt{\frac{T}{.00625}} \quad T = (.00625)(960)^2 = \underline{\underline{5760 \text{ N}}} \quad \text{(A)}$$

$$v = 80 \frac{\text{miles}}{\text{hr}} \times \frac{10 \text{ km}}{62 \text{ miles}} \times \frac{1000 \text{ m}}{\text{km}} \times \frac{\text{hr}}{3600 \text{ s}} = 35.84 \text{ m/s}$$

detector moving  
toward

$$f_{\text{obs}} = \frac{340 + 35.84}{340} 600 = \underline{\underline{663 \text{ Hz}}}$$

detector moving  
away

$$f_{\text{obs}} = \frac{340 - 35.84}{340} 600 = \underline{\underline{537 \text{ Hz}}}$$