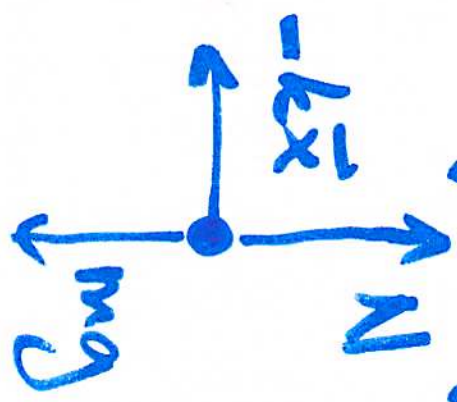
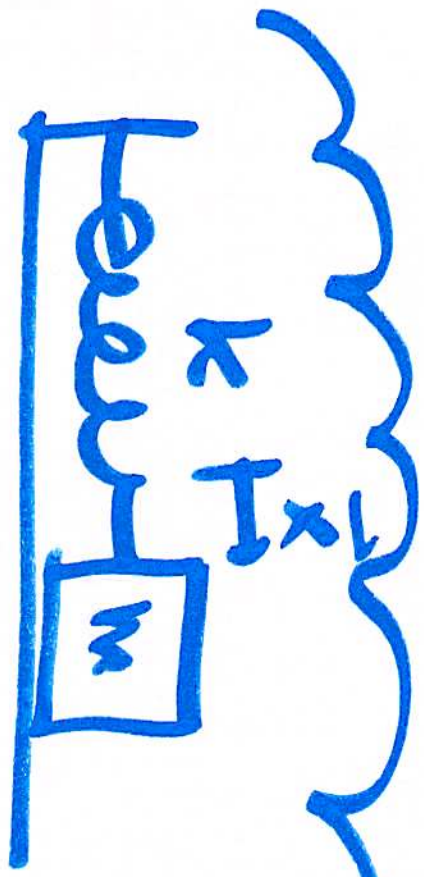


- waves - longitudinal & transverse
sound *piano string.*

- traveling & standing waves.

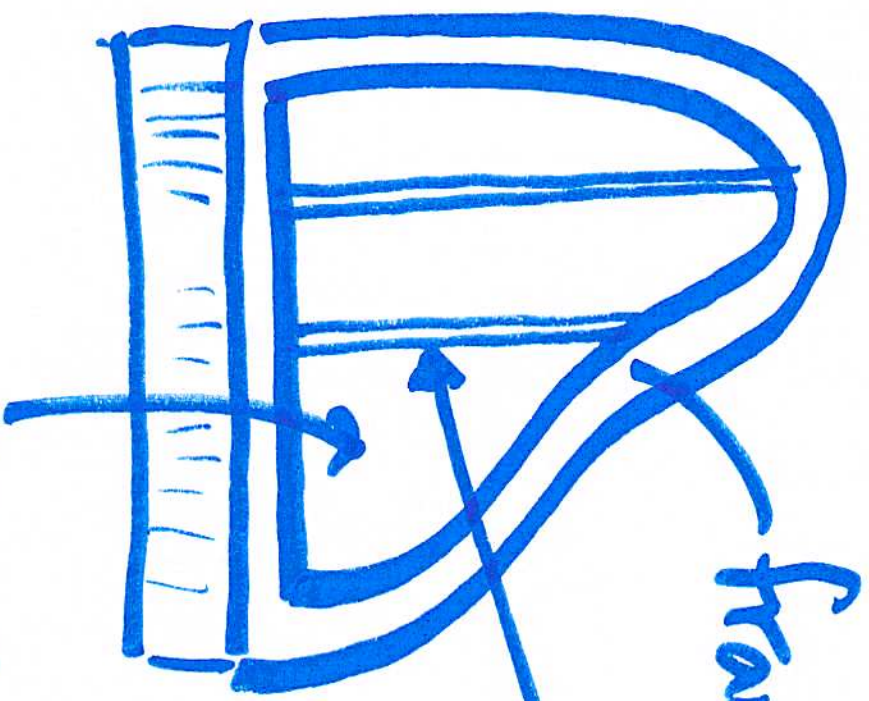


+

$$m\vec{a} = -k\vec{x}$$

$$m \frac{d^2\vec{x}}{dt^2} = -k\vec{x}$$

PS 10 prob 1.



frame 260 Hz.

widdle c (one string)

metal

$l_{max} \sim D$

tension T

$L \sim 1m$

~ 150 strings
mass of string?

metals ~ 10 ρ_{water} ρ_{metal}

? $kg \frac{m}{s^2}$

$$\frac{\pi}{4} D^2 L \sim 10^{-6} m^3$$

$$\frac{\pi}{4} D^2 L \rho \sim 10^{-5} \cdot \frac{10^4 kg}{m^3} = 0.01 kg.$$

String:

$$L \sim 1 \text{ m}$$

$$M \sim 0.01 \text{ kg} \text{ --- } 0.002 \text{ kg}$$

$$f = 260 \text{ Hz} = 260 \frac{\text{cycles}}{\text{s}}$$

$$T \sim ? \quad \cancel{\frac{M}{2}} \quad T \sim \frac{1}{2} L m f^2$$

$$T \sim \text{?} 700 \text{ N.}$$

total force on this bar: 5 N.
 $\sim 150 \cdot 700 \text{ N} \sim 10^5 \text{ N.}$

