

Newton's Law Review

Monday, April 16, 2018 2:00 PM

- 10 M.C. , 8 written (20 marks) = 30 marks

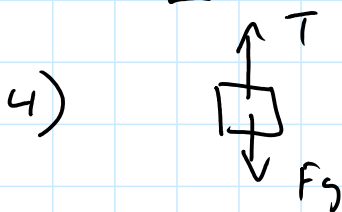
1st Law: Inertia

- objects in motion (at rest) tend to stay in motion (at rest)
- $F_{net} = 0$ (constant velocity)

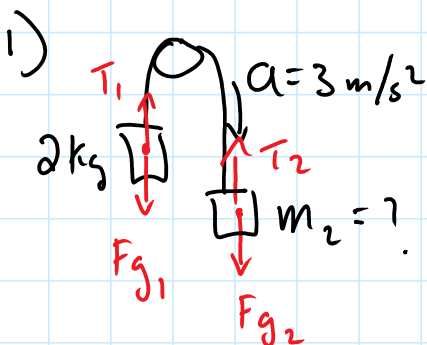
2nd Law $F_{net} \rightarrow acc$ } 1) Free body Diagram — $T, F_g, F_f, F_N,$
 $F_{net} = ma$ } 2) Make a F_{net} equ. F_{app}, F_{air}
 } 3) solve

3rd Law

- equal & opposite reaction force, tension



$a, T, mass?$



$$F_{net} = F_{g2} - \cancel{T_2} + \cancel{T_1} - F_{g1}$$

$$ma = m_2(9.8) - 19.6N$$

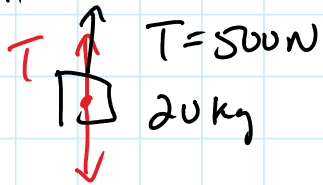
$$(m+2)(3) = m_2 \cdot 9.8 - 19.6$$

$$\begin{array}{r} 3m + 6 = 9.8m - 19.6 \\ -3m \quad +19.6 \quad -3m \quad +19.6 \end{array}$$

$$25.6 = 6.8 \text{ m}$$

$$m = 3.8 \text{ kg}$$

Ex



$$F_g = 20(9.8) \\ = 196 \text{ N}$$

Find acc.

$$F_{\text{net}} = T - F_g$$

$$ma = 500 - 196$$

$$20(a) = 304 \text{ N}$$

$$a = 15 \text{ m/s}^2$$

Ex



$a = 2.8 \text{ m/s}^2$ Find T in cable

Isolate 2 kg



$$F_{\text{net}} = F_g - T$$

$$ma$$

$$(2 \text{ kg})(2.8) = 19.6 - T$$