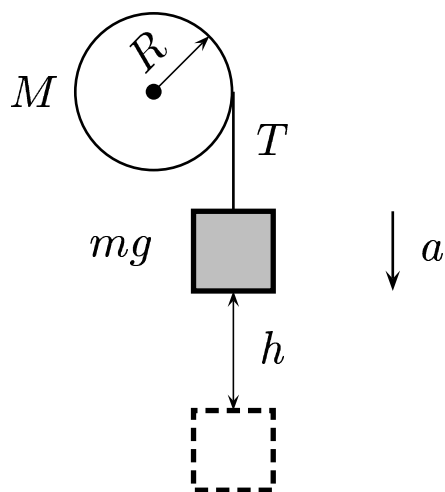


A circular disk with mass  $M$  and radius  $R$  is mounted at its center, about which it can rotate freely. A light cord wrapped around it supports  $mg$ .



Find equations of motion. Note:  $a = R\alpha$ .

- A)  $TR = MR^2\alpha$       and       $mg - T = ma$ .
- B)  $TR = MR^2\alpha$       and       $T - mg = ma$ .
- C)  $TR = \frac{MR^2\alpha}{2}$       and       $mg - T = ma$ .
- D)  $TR = \frac{MR^2\alpha}{2}$       and       $T - mg = ma$ .

Remember for a disk,  $I = \frac{M R^2}{2}$ .

Equations of motion are:  $\tau = T R = I \alpha$  and  $F = m g - T = m a$ .

Answer **C**.

10.07-01 A Disk and a Mass 2007-3-27