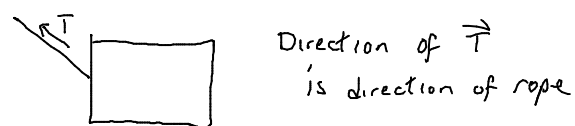


Types of Forces

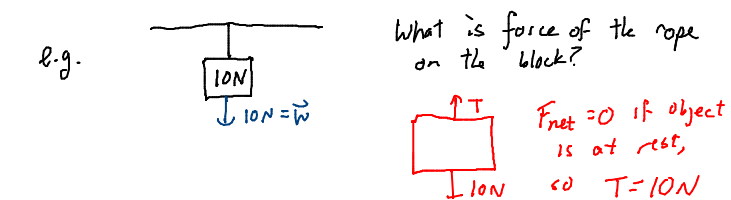
1) Weight $\vec{W} = mg \downarrow$

2) Normal \vec{N}

3) Tension \vec{T} pull, like from a rope



In a "massless" rope,
every tension exerted by it
has same magnitude $|\vec{T}|$



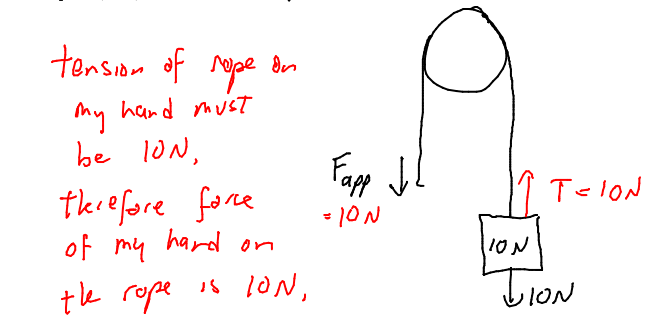
What is force of rope on the ceiling?

A) $< 10N$ B) $= 10N$ C) $> 10N$

Rope pulls on ceiling with T
and all tensions of same rope have
same magnitude.

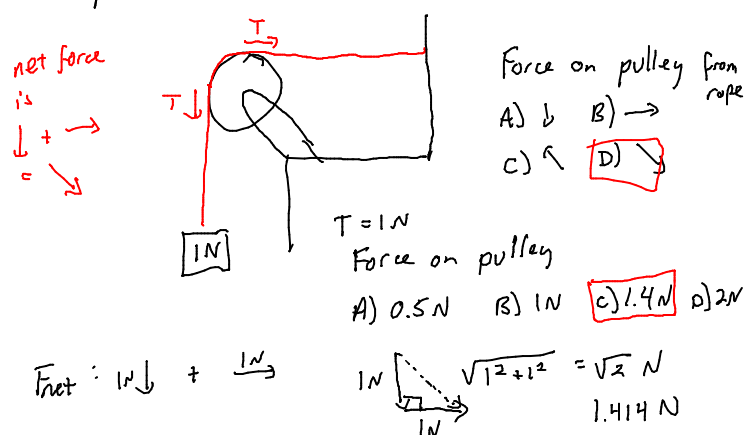
If rope had mass, then $> 10N$
because ceiling holds
block & rope up.

Pulleys change direction of rope
without altering the tension

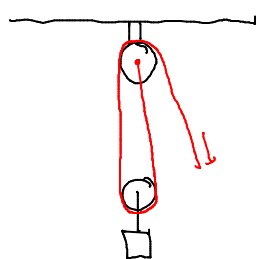


• Ideal Pulleys: massless and frictionless

Ropes exert a force on pulleys



e.g.

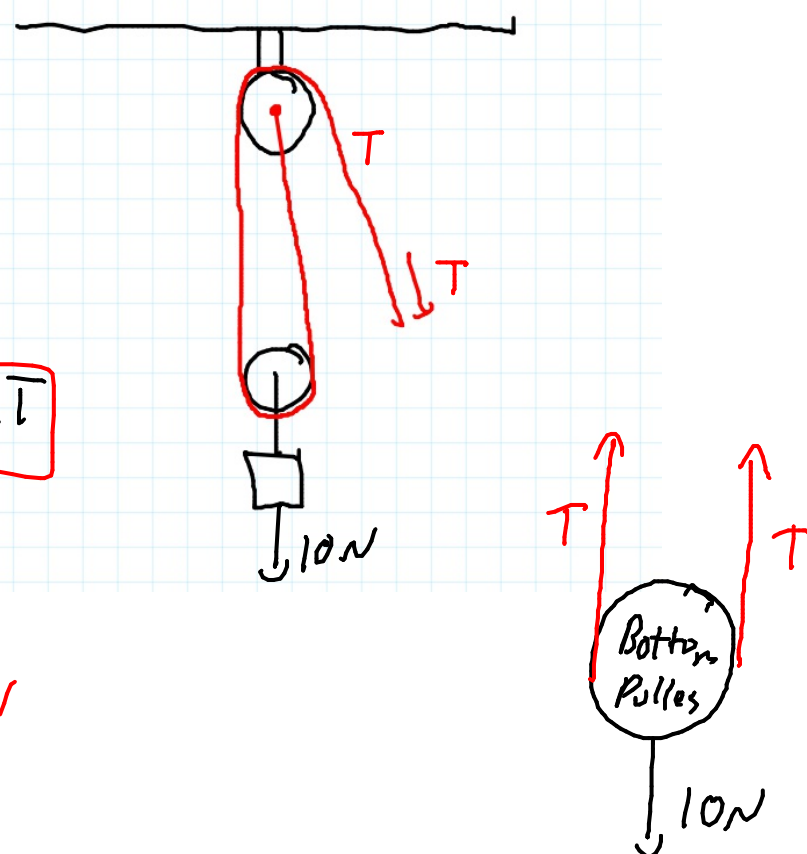


e.g.

What force is rope exerting on bottom pulley?

- A) $\frac{1}{2}T$ B) T C) $2T$
D) $4T$

$$\therefore 2T = 10N$$
$$\therefore T = 5N$$



Tension in rope is same everywhere

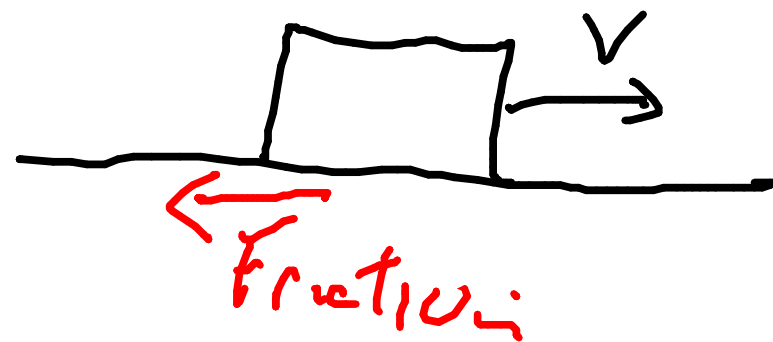
Rope exerts a force T on pulley
in both places the rope leaves the pulley,
pointing away from the pulley.



Tension is

- contact
- adjustable
- breakable
- always a pull

Friction : contact
is parallel to surface of contact



Kinetic Friction \vec{K}

when surfaces slide along each other
fixed & non breakable
points opposite direction of motion

Static Friction \vec{S}

- no sliding
- f adjustable & very breakable