

Chap. 4, The Laws of Motion

Newton's Second Law of Motion

Newton's Third Law of Motion

Forces

Gravity force (weight)

Normal force

Last class

(An example for normal
force)

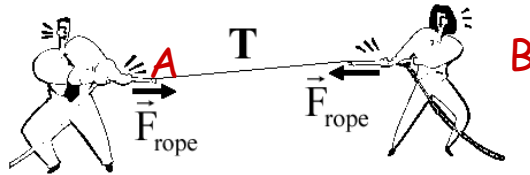
Today

Tension

Example: Object on an inclined surface (see note)

Tension: T

A taut rope exerts forces on whatever holds its ends



Tension in rope = Force on ends

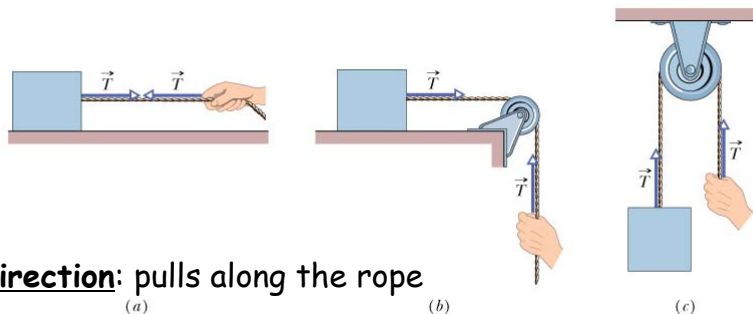
$$|\vec{F}_{\text{on A}}| = T = |\vec{F}_{\text{on B}}|$$

Direction: pulls along the rope

Magnitude: Constant along a single rope,
determined by analyzing forces

From the rope on objects at both ends

Tension in ropes going over pulleys



Direction: pulls along the rope

Magnitude: Constant along a single rope,
determined by analyzing forces

Example: Ball attached to a string (see note)