

FORCE SYSTEMS:

DEFINE FORCE IN TERMS OF ACCELERATION

$$N = \text{kg m s}^{-2}$$

$$\vec{F} = m \vec{a} \quad \dots \text{Newton's 2}^{\text{ND}} \text{ LAW.}$$

FORCE IS A VECTOR \Rightarrow NEED DIRECTION AND MAGNITUDE TO FULLY SPECIFY ANY GIVEN \vec{F}

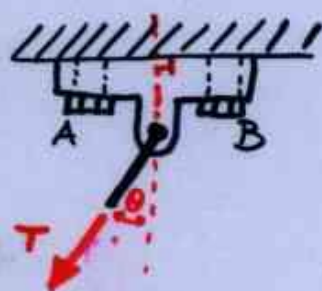
DISTINGUISH BETWEEN INTERNAL AND EXTERNAL FORCES:

EXTERNAL FORCES

\hookrightarrow TENSION T IN ROPE

\hookrightarrow REACTION FORCES IN BOLTS A, B

\hookrightarrow FORCE EXERTED BY WALL ON BRACKET



INTERNAL FORCES

\hookrightarrow STRESSES WITHIN BRACKET MATERIAL

IN THIS COURSE WE WILL STUDY EXTERNAL FORCES.

IT WILL BE ASSUMED THAT THE BODIES BEING STUDIED ARE RIGID AND DO NOT DEFORM. IT IS IMPORTANT TO BE AWARE OF THIS ASSUMPTION AS IT DOES NOT ALWAYS APPLY

A SECOND CATEGORIZATION:

CONTACT FORCES: DUE TO DIRECT PHYSICAL CONTACT BETWEEN BODIES

BODY FORCES: e.g. GRAVITY, magnetic force, BUOYANCY.