DYNAMICS

- Informally, dynamics is the study of forces and motion. More formally, dynamics is the branch of mechanics that deals with the effect that forces have on the motion of objects.
- In contrast, statics is the study of forces without motion; or more formally, the branch of mechanics that deals with forces in the absence of changes in motion. Dynamics implies change. Statics implies changelessness. <u>The change that matters is acceleration.</u>

Newton's First Law

An object remains at rest or continues moving with constant velocity unless acted upon by an unbalanced external force.

The heavier the object, the greater its inertia, and the greater its resistance to change in its state of motion.

Note: state of motion can be described as – at rest, slowing down while moving along a straight levelled path, speeding up while moving along a straight levelled path, changing direction while moving at constant speed, speeding up or slowing down while changing direction.

An object in equilibrium is:

- acted upon by forces that are balanced (all force vectors cancel out when added)
- not acted upon by any force
- at rest
- moving with constant velocity = not changing direction, not speeding up, not slowing down.

P11