INTRODUCTION

The engineering elastic analysis of structures is based on the following criteria:

(1) Equilibrium
(2) Force - extension , moment - curvature , torque - angle of twist relationships
(3) Compatibility of deformations

In general if the forces in a structure can be calculated without the aid of (3) above then it is said to be statically determinate. Otherwise it is statically indeterminate.

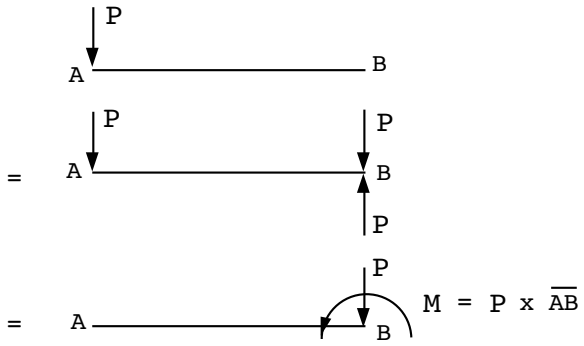
We shall be looking at various classes of structures: simply-supported beams, fixed-ended beams, pin-jointed frameworks, continuous beams, planar rigid frames without sidesway.

Equilibrium means that

Horizontal $\sum H = 0$
Vertical $\sum V = 0$
Rotational $\sum M = 0$

Some simple results

·*Shifting the line of application of a force.*



·*The moment of a couple in a plane is the same anywhere.*

·*The work done by a couple.*