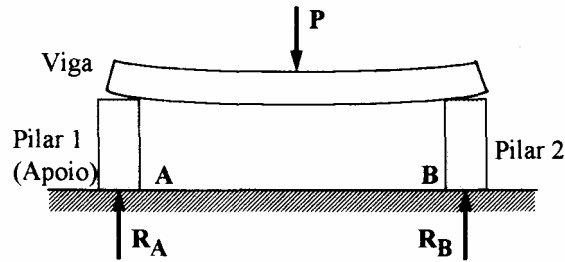


DETERMINAÇÃO DE MOMENTOS FLETORES E FORÇAS CORTANTES EM VIGAS

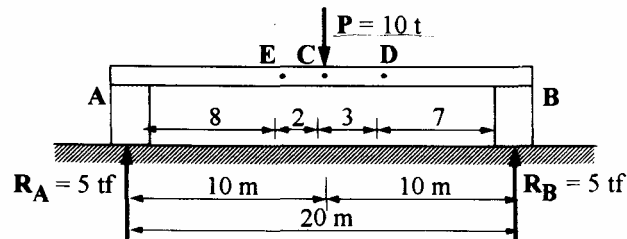
Uma viga sofrendo um carregamento vertical como abaixo, sofre em alguns de seus pontos esforços de compressão, em alguns esforços de tração e em alguns esforços de cisalhamento.

Esses efeitos são causados pela carga P e pela flexão causada por essa força. Para conhecer as condições que ocorrem devemos conhecer os diagramas de momento e de força cortante (diagrama é o desenho do esforço, ponto a ponto na estrutura). Vejamos um exemplo:



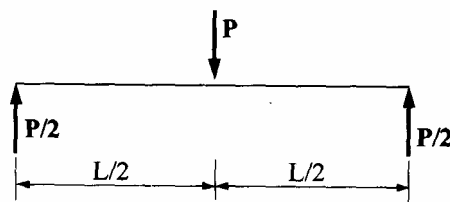
MOMENTOS FLETORES

Consideremos uma viga de madeira que suporta um peso de 10 t, e simplesmente apoiada em dois pilaretes

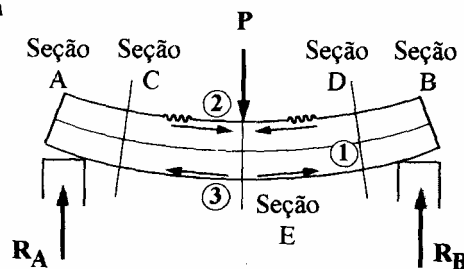


A viga acima está equilibrada, pois se verificarmos as três famosas condições:

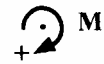
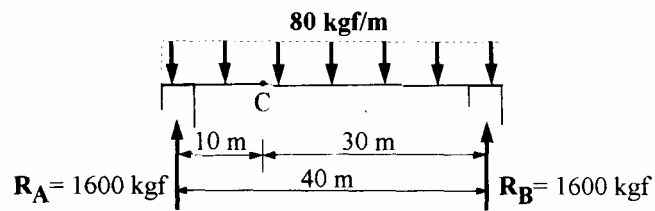
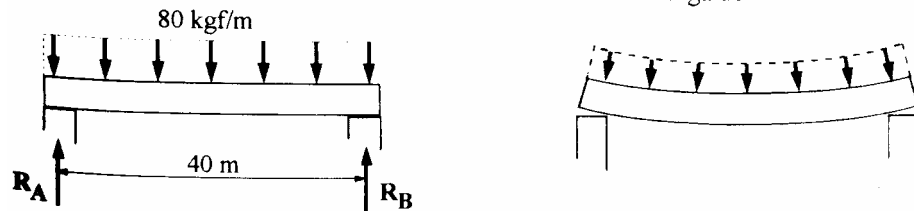
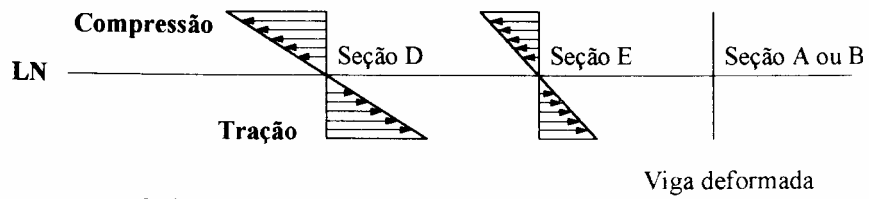
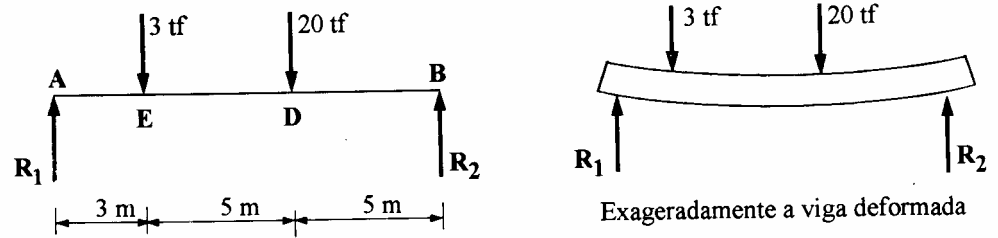
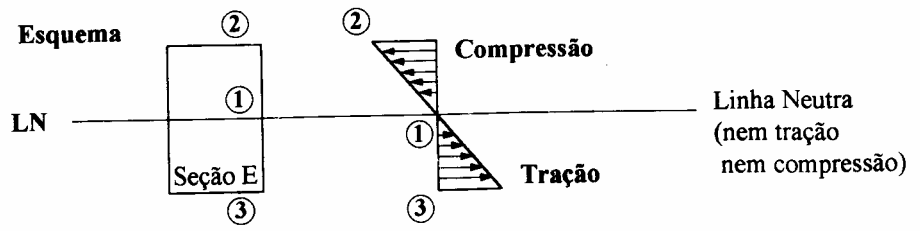
- as forças horizontais se anulam, (no caso não existem);
- as verticais de ação (10 tf) anulam pelas reações nos apoios (5 tf mais 5 tf);
- os Momentos Fletores em qualquer ponto se anulam.



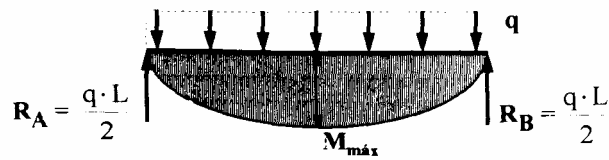
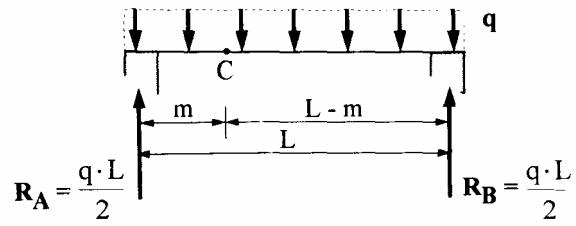
Figura



Enrugamento
face a compressão

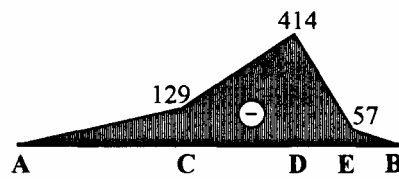
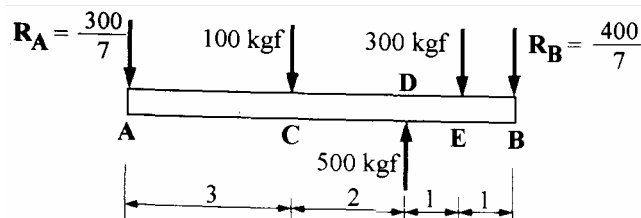
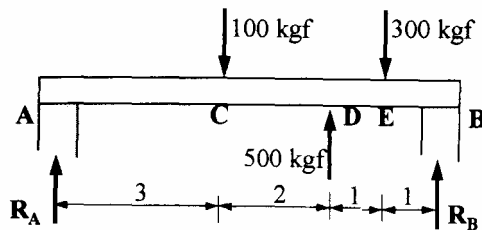


Caso Geral

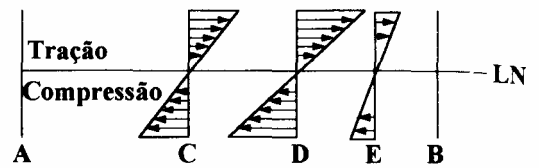


$$\text{Momento máximo} = \frac{q \cdot L^2}{8}$$

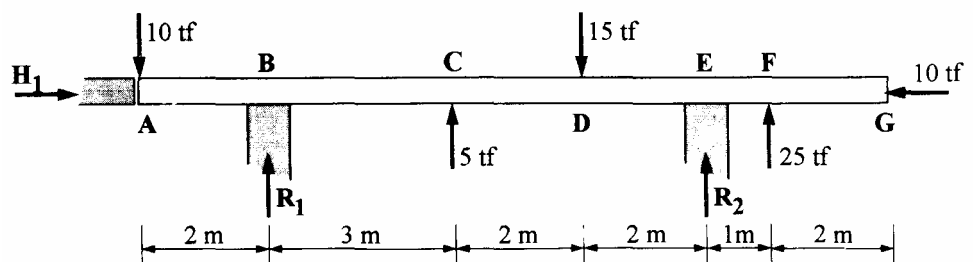
Viga com os seus múltiplos carregamentos:

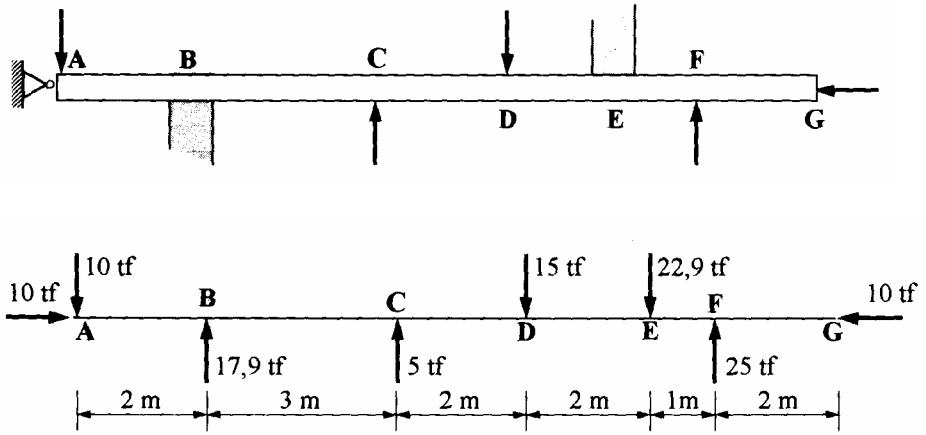


Gráfico

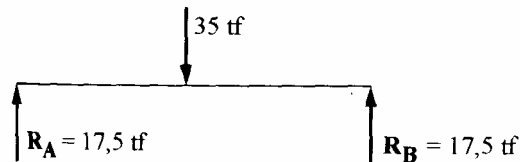
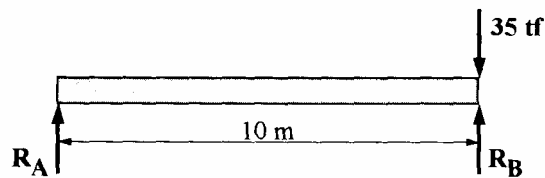
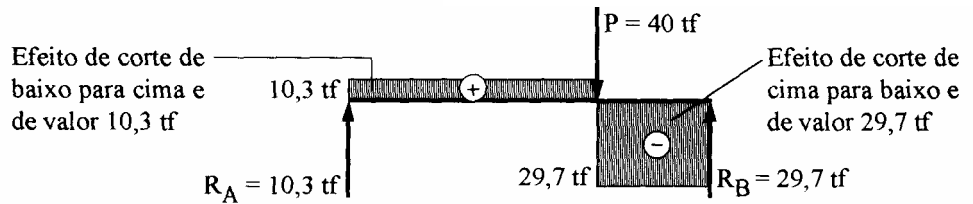
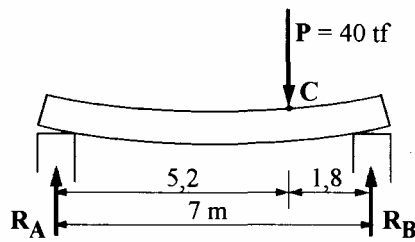


Esquema



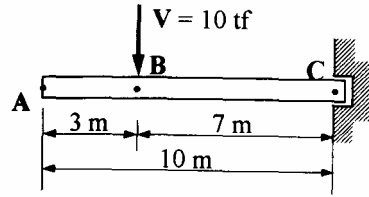
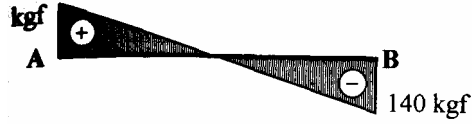
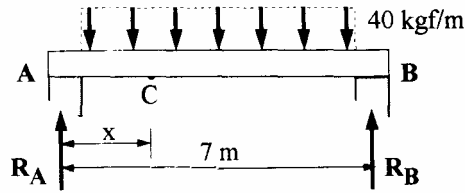


FORÇAS CORTANTES (CISALHAMENTO)

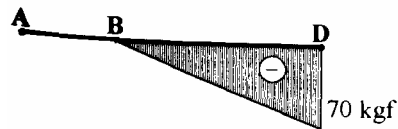
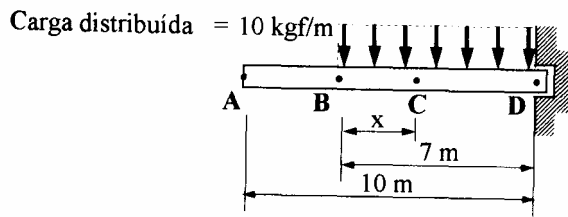


O diagrama de esforço cortante seria:





O diagrama de forças cortantes é:



Se fossemos dimensionar essa viga para cisalhamento o valor máximo seria de 70 kgf que ocorreria em D.